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A Social Psychological Approach to Sexual Orientation:
Theory and Empirical Evidence

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Psychology

by

Mariana Alejandra Preciado

2013

ABSTRACT OF THE DISSERTATION

A Social Psychological Approach to Sexual Orientation:
Theory and Empirical Evidence

By

Mariana Alejandra Preciado

Doctor of Philosophy in Psychology

University of California, Los Angeles, 2013

Professor Kerri L. Johnson, Co-Chair

Professor Letitia Anne Peplau, Co-Chair

Sexual orientation has two key aspects: actual sexual experiences (e.g., attraction, fantasy, and behavior) and beliefs about those sexual experiences (*self-perceived sexual orientation*). It is self-perceived sexual orientation that is most often measured and used to understand the mental, physical, and behavioral correlates of sexual orientation. While evidence suggests that features of the social context (e.g., social norms) are related to self-perceived sexual orientation, to date there is no theoretical model which explains the psychological mechanisms by which the social context influences these two aspects of sexual orientation. I draw from basic social psychological theory of motivated cognition to propose a novel approach to understanding both between-person and within-person variability in self-perceived sexual orientation (Chapter I). I propose that

individuals are motivated by various social contextual, cultural, and individual factors to hold a particular conception of their sexual orientation, prompting them to interpret their sexual experiences in a way that is consistent with that motivated self-perception. For instance, a man from a socially conservative family who has a same-sex experience at a party might be motivated to avoid interpreting that same-sex experience as relevant to his sexuality. He might state that it only happened because he was drunk, allowing him to maintain the self-perception that he is exclusively attracted to women. Critically, I propose that the impact of motivation on self-perceived sexual orientation is contingent on an individual's ability to interpret their sexual experiences in a way consistent with those beliefs. Thus, a man who has only ever been attracted to men and has only experienced sexual behaviors with men will have a difficult time interpreting his sexual experiences to support the motivated belief that he is heterosexual. The central tenets of this approach are tested in the studies described in Chapters II and III.

In the three studies described in Chapter II, I tested whether heterosexually identified men and women who are exposed to cues likely to motivate particular beliefs about their own sexual orientation would show differences in their self-perceived sexual orientation. Across three studies using both explicit and implicit manipulations, different measures of self-perceived sexual orientation, and both adult and college-aged participants, I found that participants exposed to cues indicating that same-sex sexuality was stigmatized in their social environment reported less self-perceived same-sex sexuality than did participants exposed to cues indicating that same-sex sexuality was supported in their social environment.

In the study described in Chapter III, I tested whether the relationship between a motivational cue (i.e., the perception that significant others experience same-sex sexuality) and self-perceived sexual orientation was moderated by the amount of same-sex experience

participants had. I found that heterosexually identified male and female participants with at least some same-sex experience (e.g., same-sex fantasies, kissing) showed a positive relationship between their perceptions of the amount of same-sex attraction experienced by significant others in their life (e.g., mothers, average citizen from their hometown) and their self-perceived same-sex sexual attraction. However, those participants with no same-sex experience showed no relationship, indicating that they had no same-sex experiences to interpret as indicating they experienced same-sex attraction.

Finally, in the study described in Chapter IV, I tested two important implications of the proposed motivated cognition approach: that self-perceived sexual orientation is weakly predictive of future sexual experience and that more specific measures less likely to be influenced by motivational factors are better predictors of future sexual experience. Among a sample of heterosexually identified men and women, I found that self-perceived sexual orientation predicted only 18% of the variance in future same-sex sexual experience. However, more specific measures of the likelihood of engaging in specific same-sex experiences predicted between 51% and 69% of the variance in future same-sex sexual experience.

In conclusion, the theoretical paper and accompanying studies offer a novel, social psychological perspective on between-person and within-person variability in self-perceived sexual orientation. Self-perceived sexual orientation, like other beliefs about the self, is subject to the influence of motivational factors. The influence of those factors is contingent on an individual's ability to interpret their sexual experiences in a motivated fashion. This approach offers insights into the psychological mechanisms underlying variability in self-perceived sexual orientation; highlights the weak relationship between self-perceived sexual orientation and actual sexual experience; and offers empirically testable predictions for future research.

The dissertation of Mariana Alejandra Preciado is approved.

Adam Fingerhut

Jennifer L. Krull

Kerri L. Johnson, Committee Co-Chair

Letitia Anne Peplau, Committee Co-Chair

University of California, Los Angeles

2013

This dissertation is dedicated to Jonathan D. Katz for helping me challenge what I accepted to be
“truth” and for planting the intellectual seeds of this research.

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Chapter I

Preciado, M. A. & Johnson, K. L. (under review). A motivated cognition approach to self-perceived sexual orientation. *Personality and Social Psychology Review*.

Chapter II

Preciado, M. A., Johnson, K. L., & Peplau, L. A. (2013). The impact of cues of stigma and support on self-perceived sexual orientation among heterosexually identified men and women. *Journal of Experimental Social Psychology*. doi: 10.1016/j.jesp.2013.01.006

Chapter III

Preciado, M. A., Johnson, K. L., & Peplau, L. A. (under review). Perceived incidence of same-sex sexuality predicts self-perceived sexual orientation among heterosexually identified men and women. *Self & Identity*.

Chapter IV

Preciado, M. A., Peplau, L. A., & Johnson, K. L. (under review). A comparison of self-report measures for the prediction of future same-sex sexual experience among heterosexually identified men and women. *Archives of Sexual Behavior*.

VITA

EDUCATION

- 2006 B.A., Psychology
Yale University
New Haven, CT
- 2008 M.A., Social Psychology
University of California, Los Angeles
Los Angeles, California
- 2011 C.Phil., Social Psychology
University of California, Los Angeles
Los Angeles, California

SELECTED FELLOWSHIPS

- 2007 Eugene V. Cota-Robles Fellowship
University of California, Los Angeles
- 2008 Interdisciplinary Relationship Science Traineeship
National Science Foundation
University of California, Los Angeles
- 2009 Graduate Research Fellowship
National Science Foundation
- 2012 Dissertation Year Fellowship
University of California, Los Angeles

PUBLICATIONS

- Frederick, D. A., Fillosof, Y. R., Gildersleeve, K. A., Maisel, N. C., Phuphanich, M. E., Poore, J. C., Preciado, M. A., Saxbe, D. E., & Usahacharoenporn, P. (2010). Fidelity: Why are people faithful to their mates? Perspectives from evolutionary psychology, sociology, and social psychology. In T. Cooke (Ed.), *Sex and society*. New York, NY: Marshall Cavendish.
- Preciado, M. A., & Peplau, L. A. (2011). Self-perception of same-sex sexuality among heterosexual women: Association with personal need for structure. *Self and Identity*, *11*(2), 137-147.
- Preciado, M. A., & Thompson, E. M. (2012). Identity-behavior congruence among

behaviorally bisexual young women: The role of individual differences in sexual identity beliefs and attitudes. *Psychology and Sexuality*, 3(3), 195-213.

Preciado, M. A., Johnson, K. L., & Peplau, L. A. (2013). The impact of cues of stigma and support on self-perceived sexual orientation among heterosexually identified men and women. *Journal of Experimental Social Psychology*. doi: 10.1016/j.jesp.2013.01.006

Preciado, M. A., & Johnson, K. L. (in press). Perceived consequences of hypothetical identity-inconsistent sexual experiences: Effects of perceiver sex and sexual identity. *Archives of Sexual Behavior*.

SELECTED PRESENTATIONS

Preciado, M. A., & LaFrance, M. (2005, July). *Sex, fantasy, romance, and identity: Lay beliefs about the stability of the components of sexual orientation in self and others*. Presentation given at the Second New View Campaign Conference, *Women and the new sexual politics: Profits versus pleasures*, Montreal, Quebec, Canada.

Preciado, M. A., & LaFrance, M. (2007, May). *Is sexual orientation mutable? Perceptions of the fluidity of sexual orientation in males and females by males and females*. Poster presented at 19th Annual APS Convention, Washington, D.C.

Preciado, M. A., Peplau, L. A., & Johnson, K. L. (2009, February). *Sexual experience, sexual flexibility, and the space in-between: The role of stigma and political environment*. Poster presented at 10th Annual SPSP Meeting, Tampa, Florida.

Preciado, M. A. (2009, May). *The impact of context on the expression of same-sex sexuality*. Invited talk presented at the UCLA Social Psychology Colloquium.

Preciado, M. A., Peplau, L. A., & Johnson, K. L. (2011, Jan). *An Experimental Approach to Exploring Heterosexual Same-Sex Sexuality: The Influence of Contextual Stigma and Support*. Poster presented at 12th Annual SPSP Meeting, San Antonio, Texas.

Preciado, M. A., Spunt, R. P., & Johnson, K. L. (2011, Jan). *Perceiving the sexual self in actions: Level of action construal affects self-perceived sexuality in heterosexually identified women*. Poster presented at the Self & Identity preconference at 12th Annual SPSP Meeting, San Antonio, Texas

Preciado, M. A., Peplau, L. A., & Johnson, K. L. (2012, Jan). *The impact of stigma and support on the expression of same-sex sexuality among heterosexual men and women*. Symposium talk given at 13th Annual SPSP Meeting, San Diego, California.

Preciado, M. A., Johnson, K. L., & Peplau, L. A. (2013, Jan). *Sexual self-perception is influenced by the meaning given to same-sex sexual experiences: Evidence from college-aged men and women*. Poster presented at the 13th Annual SPSP Meeting, New Orleans, Louisiana.

CHAPTER I:

Introduction

A close reading of the American Psychological Association's (2008) definition of sexual orientation reveals two related yet distinct constructs. The first part of the definition reads that sexual orientation is "an enduring pattern of emotional, romantic, and/or sexual attractions to men, women, or both sexes" (p. 1). This reveals that part of sexual orientation is the actual experience of sexual attraction (and related experiences of behavior and fantasy). The definition continues by stating that sexual orientation is also "a person's sense of identity based on those attractions, related behaviors, and membership in a community of others who share these attractions" (emphasis added; p. 1). The first part of this sentence indicates that sexual orientation is also composed of a person's beliefs about what those actual experiences mean for their sense of self. The second part reveals that one is likely to form beliefs about the meaning of one's sexual experiences and one's relationship to others who share those experiences.

While much research has been dedicated to the exploration of variability in actual sexual experiences (e.g., Chivers, 2005; Sanchez, Bocklandt, & Vilain, 2009) and to the development of a sexual identity (e.g., McCarn & Fassinger, 1996; Fassinger & Miller, 1996), considerably less attention has been given to the beliefs people have about their actual sexual experiences (hereinafter referred to as *self-perceived sexual orientation*). This oversight is notable as self-perceived sexual orientation, in addition to revealing individuals' beliefs about the orientation of their sexual attractions, fantasies, and behaviors, provides a key link between actual sexual experiences and the more abstract, most typically measured, sexual identity.

While lay people, researchers, policy makers, and health care practitioners are often most interested in describing and predicting the incidence of actual sexual experiences in the population, we lack the ability to directly measure those experiences and instead must utilize measures that actually tap self-perceived sexual orientation. When an individual reports that they

are straight but occasionally experience some degree of same-sex attraction, they are describing their beliefs about their sexual orientation. Certainly, these beliefs are in part constructed from a person's actual sexual experiences. In other words, an individual might report that they experience some degree of same-sex attraction because they have actually been attracted to people of the same sex. However, when viewed through the lens of basic social psychological theory and research, there are reasons to believe that self-perceived sexual orientation is also influenced by factors other than actual sexual experiences. Understanding the psychological mechanisms by which self-perceived sexual orientation is related to both actual sexual experiences and factors other than those experiences would allow researchers to better comprehend and predict variance in oft-used measures of sexual orientation (e.g., Savin-Williams, 2006).

This dissertation is characterized by three broad aims. The first aim is to offer a theoretical approach to explaining variability in self-perceived sexual orientation. The second aim is to test the two major tenets of that theoretical approach for variability in self-perceived sexual orientation. The third aim is to test one broader implication of the theoretical approach for the prediction of future sexual experience from self-perceived sexual orientation.

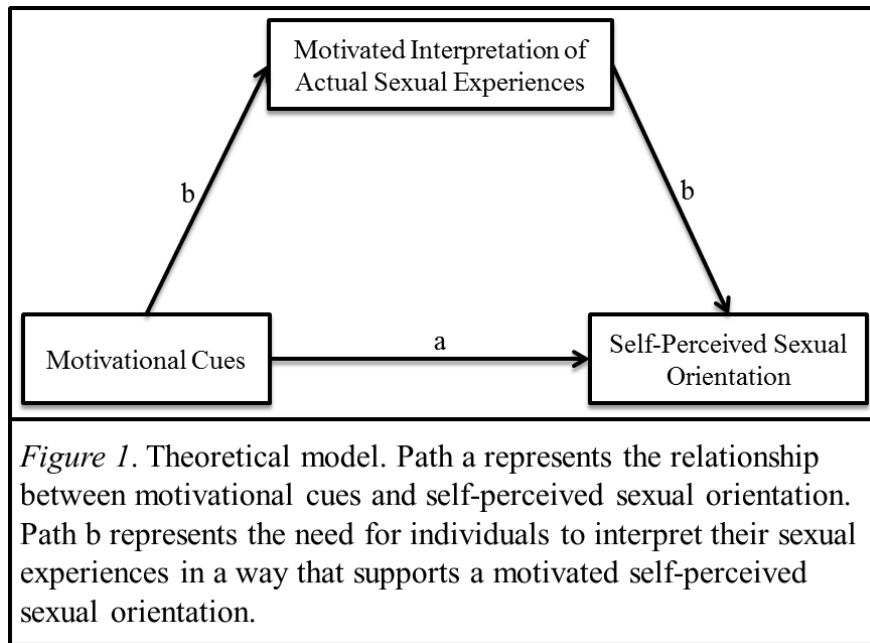
Aim 1: Theoretical Contribution

The first aim of this dissertation is to present a novel theoretical approach to the study of self-perceived sexual orientation that would allow researchers to predict between- and within-person variance in self-perceived sexual orientation from not only actual sexual experience but also social contextual, cultural, and individual factors outside of actual sexual experience. Specifically, drawing from social psychological theory of motivated cognition (e.g., Gilovich, 1991; Kunda, 1990), I propose that various social contextual, cultural, and individual factors

serve as motivational cues, influencing individuals' views of their own sexual orientation. However, individuals must draw from their experiences of sexual arousal, attraction, fantasy, and behavior in order to support their self-perceived sexual orientation. Individuals have flexibility in how they can draw from and interpret their sexual experiences to supported motivated beliefs about their sexual orientation because they can draw from multiple different experiences to support their beliefs about their sexual orientation (e.g., Klein, Sepekoff, & Wolf, 1985; Savin-Williams & Ream, 2007) and the meaning of those experiences is often ambiguous (e.g., Boykin, 2005; Reback & Larkins, 2010; Sanders & Reinisch, 1999),

For example, a woman who experiences sexual attraction mostly to men but is occasionally attracted to other women has an ambiguous set of sexual experiences from which to draw to support her self-perceived sexual orientation. When she was in high school, under the strong influence of her parents and in a community in which heterosexuality is compulsory, she may have been inclined to interpret her attraction to men as indicating that she was exclusively heterosexual, perhaps discounting her occasional same-sex attraction as a stage or just girl crushes. When she went to college, exposed to a greater range of sexual identities and in an environment more supportive of same-sex sexuality, she may have interpreted her experiences as indicating that she is mostly straight or even bisexual.

In summary, there are two major tenets of this theoretical perspective, pictured in Figure 1. Path a indicates that variability in self-perceived sexual orientation is directly related to motivational cues (The Influence of Motivation Tenet). Path b indicates that the relationship between motivational cues and self-perceived sexual orientation is contingent on individuals' ability to interpret their sexual experiences in a way that supports a motivated perception of their sexual orientation (The Support of Actual Sexual Experience Tenet).



Aim 2a: Empirical Evidence for the Influence of Motivation Tenet

The second aim of this dissertation is to present empirical evidence supporting the major tenets of the proposed theoretical approach to the study of self-perceived sexual orientation. The three studies described in Chapter III were designed to test the Influence of Motivation Tenet. In Study 1, male and female adults from an online sample were subjected to a manipulation of the perceived stigma against and support for same-sex sexuality. Following the manipulation, participants reported the degree to which they felt they experienced same-sex attraction, fantasy, and behavior. In Study 2, male and female heterosexually identified college students were subjected to a similar manipulation of stigma and support and then asked to evaluate the physical attractiveness of sexualized same-sex targets. Finally, in Study 3, male and female heterosexually identified college students were subjected to a subliminal manipulation of stigma and support and asked to report the degree to which they felt they experienced same-sex attraction, fantasy, and behavior. All three studies tested the hypothesis that exposure to cues of stigma against same-sex sexuality would motivate participants to perceive they experienced less

same-sex attraction, fantasy, and behavior than would exposure to cues of support for same-sex sexuality.

Aim 2b: Empirical Evidence for the Support of Actual Sexual Experience Tenet

The study described in Chapter IV tested the Support of Actual Sexual Experience Tenet. While people are quite adept at justifying their motivated beliefs about themselves (e.g., Pronin, Lin, & Ross, 2002; Pyszczynski & Greenberg, 1987), there are times in which people cannot amass the evidence necessary to support a particular belief about themselves (e.g., Critcher & Dunning, 2009). For instance, a man who has never experienced attraction to men and has exclusively engaged in sexual experiences with women has little basis on which to interpret his experiences as indicating that he experiences any degree of same-sex attraction. Study 4 was designed to test whether the relationship between motivational cues and self-perceived sexual orientation was most strongly present for those individuals who had ambiguous experiences that could be interpreted in a way consistent with those motivational cues. A sample of male and female heterosexually identified college students completed a lab study in which they reported the degree to which they believed various significant others (e.g., mother, best friends, average citizen from their hometown) experienced same-sex attraction. They also reported the number of instances of same-sex experience they had over the prior two years and the degree to which they perceived that they themselves experienced same-sex attraction. I expected that those participants who had actually had same-sex experiences over the prior two years would show a positive relationship between the degree to which they perceived significant others in their life experienced same-sex attraction and their own self-perceived sexual orientation. However, I expected that those participants who had no same-sex experiences over the prior two years would show no relationship between the two constructs.

Aim 3: Implications of for Prediction of Future Sexual Experience

The final aim of this dissertation is to demonstrate empirically two important implications of the proposed theoretical approach. First, among many people, self-perceived sexual orientation is only weakly predictive of actual sexual experience. Second, self-report measures that refer to specific sexual experience, and, thus, are less likely to be subject to motivational influence, are more strongly predictive of actual sexual experience. The study described in Chapter V was designed to test these two implications. A sample of male and female heterosexually identified college students completed a longitudinal study in which I attempted to predict their future same-sex sexual experience at time 2 from self-report measures administered at time 1. I pitted two classes of predictors of time 2 same-sex sexual experience against each other: historically common measures of self-perceived sexual orientation and 3 more specific measures of the likelihood to engage in same-sex sexual experiences. I expected that self-perceived sexual orientation would be weakly predictive of future same-sex sexual experiences while the three more specific measures of likelihood would be more strongly predictive of future same-sex sexual experiences.

Summary

The following theoretical paper and supporting empirical studies represent a novel, social psychological approach to the study of sexual orientation. By conceptually disentangling actual sexual experience from self-perceived sexual orientation and by drawing from basic social psychological theory, this approach allows for a mechanistic explanation of the way in which various factors are related to variability in self-perceived sexual orientation – the most frequently measured aspect of sexual orientation. The precise identification of the psychological mechanisms underlying variability in self-perceived sexual orientation would allow researchers

to better predict the development, maintenance, and change of self-perceived sexual orientation. Moreover, this approach presents a foundation for the development of better measures to predict actual sexual experience. This program of research offers the first experimental tests of the influence of factors other than actual sexual experience on self-perceived sexual orientation and has the potential to not only contribute to the literature on sexual orientation but to offer a paradigm shift in how researchers study human sexuality.

CHAPTER II:

A Motivated Cognition Approach to Self-Perceived Sexual Orientation

Abstract

Humans have the ability and propensity to reflect on their sexual orientation – to hold self-perceptions of their own sexual orientation. Research on sexual orientation often utilizes measures of self-perceived sexual orientation to characterize both between- and within-individual variability in sexual orientation and sexual experience. However, the complexity underlying an individual's self-perceived sexual orientation makes it likely that factors other than actual experiences of sexual attraction, behavior, and fantasy will influence individuals' beliefs about their sexual orientation. I argue and present supporting empirical evidence that the application of a motivated cognition approach to self-perceived sexual orientation can make novel, testable predictions about the factors outside of actual sexual experiences likely to influence self-perceived sexual orientation. I discuss the further implications of the proposed approach for the study of sexual behavior and sexual health.

Keywords: sexual orientation, self-perception, motivated cognition

“...evidence only counts as evidence and is only recognized as such in relation to a potential narrative, so that the narrative can be said to determine the evidence as much as the evidence determines the narrative.” –Lionel Gossman, *Towards a Rational Histography*, p. 26

Human sexual orientation encompasses both actual sexual experience (e.g., behavior, attraction, fantasy) and beliefs about those experiences. A woman who experiences an enduring pattern of attraction to men but also has occasional feelings of attraction to women is likely to seek an interpretation of her experiences. For instance, she may interpret her primary attraction to men as indicating that she is heterosexual, and, thus, she may discount her interest in women as inconsequential. This belief that she is heterosexual may in part form the basis of her sexual identification as “straight.” Critically, it is these thoughts and beliefs about one’s sexual experiences – hereafter referred to as *self-perceived sexual orientation* – that are often measured and utilized to describe the sexual orientation of individuals and the prevalence of same-sex and other-sex sexuality in populations (e.g., Chandra, Mosher, Copen, & Sionean, 2011). I offer an account of the psychological mechanisms by which factors other than sexual experiences influence self-perceived sexual orientation. I argue that while individuals rely on their sexual experiences as “evidence” to form their self-perceived sexual orientation, individuals are also likely to be motivated to hold a particular “narrative” about their sexual orientation (cf., Hammack, 2005), biasing their interpretation of their own experiences.

I first describe the nature of self-perceived sexual orientation, including its basis in complex and often ambiguous actual sexual experiences and its tendency to vary not just between individuals but within the same individual across time and context. I then use the social

psychological framework of motivated cognition to argue that a compelling explanation of variability in self-perceived sexual orientation is that factors other than actual sexual experience are likely to motivate people to hold particular beliefs about their sexual orientation. I present evidence from our own research supporting this notion. I argue that the application of a motivated cognition approach to self-perceived sexual orientation can provide novel, testable predictions about stability and change in self-perceived sexual orientation over time and context and offer new insights into the measurement of sexual orientation, gender differences in self-perceived sexual orientation, and sexual health. I end by discussing future directions for the use of a motivated cognition approach in the study of self-perceived sexual orientation.

The Relationship between Sexual Experience and Self-Perceived Sexual Orientation

By necessity, sexual orientation is often measured by asking people to self-report their beliefs about their sexual orientation (cf. Savin-Williams, 2006). Those beliefs might be expressed in the form of a sexual identity label¹ or a response to a continuous measure of the degree of same-sex attraction one experiences. For instance, a woman might report that she is straight and experiences some attraction to other women but that she has never engaged in sexual behaviors with other women. Such measures of sexual orientation are typically fairly abstract. For instance, respondents might be asked to indicate whether they are “only” or “mostly” attracted to members of the other sex (e.g., Chandra et al., 2011), or they might be asked to mark what best describes their sexual attractions, behaviors, and fantasies on a 7-pt. scale ranging from “Exclusively Heterosexual” to “Exclusively Homosexual” (e.g., Klein, Sepekoff, & Wolf, 1985). While it seems likely that the woman described above might indicate that she is a “2” on a 7-pt.

¹ While the adoption of a sexual identity label is also informed by, for instance, social connections to the sexual identity group, this paper is solely concerned with its grounding in the “recognition, acceptance, and identification with one’s sexual orientation” (Worthington, Savoy, Dillon, & Vergnaglia, 2002, p. 497).

scale of homosexual attraction because she has actually experienced some degree of same-sex attraction, what is less clear is the rate of exchange (cf. Preciado & Thompson, 2012). Moreover, it is not apparent why this woman identifies as straight instead of “mostly straight” (e.g., Thompson & Morgan, 2008) or bisexual.

Multiple Experiences across Time and Context

One reason for the lack of clarity regarding the relationship between self-perceived sexual orientation and actual sexual experiences is that sexual experiences are complex. Many types of experiences provide support for one’s self-perceived sexual orientation, including experiences of sexual attraction, fantasy, and behavior (e.g., Klein, 1990; Klein, Sepekoff, & Wolf, 1985). Moreover, many individuals experience differing degrees of same-sex orientation across those different types of experiences (e.g., Chandra et al., 2011; Gates, 2011; Hayes et al., 2012; Laumann, Gagnon, Michael, & Michaels, 1994; Savin-Williams & Ream, 2007; Vrangalova & Savin-Williams, 2010). A person may emphasize certain experiences while deemphasizing others. For example, the aforementioned woman may base her belief that she is straight on the fact that she has frequently engaged in sexual behaviors with men, even if she is occasionally attracted to other women. Another woman may base her belief that she is straight mostly on the fact that she is only attracted to men, even if she has never engaged in sexual behaviors with men.

Moreover, sexual experiences may vary across different times and contexts (e.g., Diamond, 2008a; Savin-Williams & Ream, 2007). For instance, Boykin (2005) described African-American men who are “down-low.” These are men who engage in clandestine same-sex behaviors while maintaining a heterosexual identity and sexual relationships with women. These covert relationships are psychologically compartmentalized such that they are perceived to

be irrelevant to sexual orientation. Similarly, a woman's college sexual experiences may be more likely than experiences taking place at other times in her life to be seen as contextual exceptions to her beliefs about her sexual orientation because of the culture of "experimentation" among women college students (see Thompson, 2007 for a review). The internet is a venue for men to engage in same-sex sexual experiences that can be easily disregarded as irrelevant to their self-perceived sexual orientation (e.g., Ross, Mannsson, Daneback, & Tikkanen, 2005; Tikkanen & Ross, 2003). Other examples of contexts in which sexual experiences may occur but may not be seen as relevant to self-perceived sexual orientation include same-sex experiences taking place within prisons (e.g., Simooya & Sanjobo, 2001), as a part of sex work (Padilla, 2008), and within convents (Curb & Manahan, 1985).

Interpersonal relationships can also serve as a context in which sexual experiences can be flexibly understood, particularly among women (e.g., Thompson, 2007). For instance, if a woman has only had same-sex experiences with one other woman, she may see those experiences as a characteristic of her relationship with that woman but not of her sexual orientation. Indeed, many women in same-sex relationships report that they are not lesbians, they just happen to be in love with a person who is a woman (Kitzinger & Wilkinson, 1995). This tendency to view sexual experiences as a characteristic of a relationship rather than oneself may be more prominent among women than men because, relative to men, women's sexuality is characterized as relational or partner-centered (e.g., Baldwin & Baldwin, 1997; DeLamater, 1987; Peplau & Garnets, 2000; Peplau, Spalding, Conley, & Veniegas, 1999). Women tend to hold beliefs that sex should take place within a relationship context (e.g., DeLamater, 1987; Rose, 1996). Additionally, reasons women give for having sex tend to be centered on relationship goals (Hatfield, Sprecher, Illemer, Greenberger, & Wexler, 1989). Women's sexual

fantasies are more likely than men's fantasies to include a familiar partner and themes of affection and commitment (Ellis & Symons, 1990).

Furthermore, women tend to define sexual acts relationally, even if the acts do not occur within the context of a specific relationship. When Regan and Berscheid (1996) asked young heterosexual men and women to define sexual desire, men tended to "sexualize" while women tended to "romanticize" the experience of sexual desire. For instance, while one man defined sexual desire as uninhibited sex, a woman defined it as "longing to be emotionally intimate and express love to another person" (Regan & Berscheid, 1999, p. 75). Romanticizing sexual experiences may make it unclear whether the experience is relevant to one's sexual orientation or just a feature of a woman's relationship with their sexual partner.

Multiple Meanings of Sexual Experiences

Another complication in the relationship between sexual experience and self-perceived sexual orientation is that specific sexual experiences can be given varying meanings (cf. Preciado & Johnson, in press). In one study, participants considered which levels of intimacy constituted "having sex" (Sanders & Reinisch, 1999). The researchers found that while most respondents (99.5%) identified penile-vaginal intercourse as sex, 81% considered penile-anal sex to be sex, and only 40% considered oral sex to be sex. Other studies have found that definitions of sex vary significantly across individuals (e.g., Pitts & Rahman, 2001; Randall & Byers, 2003; Richters & Song, 1999; Taylor & Muscarella, 2002). Specific experiences may be interpreted in multiple ways, offering flexibility in which experiences are influential on one's self-perceived sexual orientation (e.g., Anderson, Adams, & Rivers, 2012). A man who has had oral sex with another man may not perceive this as relevant to his sexual orientation and, thus, may not report that he experiences same-sex behavior because he does not identify the experience as "sex."

Additionally, one's definition of what constitutes sex may change because social contexts provide varying contingencies. Across cultures, the same behavior may be perceived as sex or not sex depending on whether it takes place within a relationship, in a procreative context, or as part of a cultural ritual (e.g., Blackwood, 1993; Herdt, 1984; Khan, 1996). These tendencies may also be observed within a single culture but across different contexts. In the spring of 1919 in the U.S., officers at the Newport, Rhode Island Naval Training Station sent enlisted men into the community to "investigate" suspected homosexuals. Though these spies had anal sex with the men under investigation, and later used this sex as a basis to bring about prosecution of these men in court, the act was not considered sex for the enlisted men as it was contextualized as an aspect of their duty to the U.S. Navy (Chauncey, 1967). That the U.S. military, an institution not historically known for its tolerance of same-sex sexuality, construed sex between two men as irrelevant to the investigating man's sexual orientation, but indicative of the other man's sexual orientation, is a testament to the power of context for reframing a sexual experience.

More recent examples highlight how different social contexts promote variability in the meaning of a sexual act. Cecil, Bogart, Wagstaff, Pinkerton, and Abramson (2002) asked male and female participants to read 16 scenarios of two hypothetical heterosexual sexual partners in which they varied the actors' genders, the type of act (vaginal, anal, or oral sex), frequency of the act, and the actors' dating status. Participants indicated whether the actors would consider each other to be sexual partners. Partners who engaged in vaginal or anal sex were more likely to be identified as sexual partners than those engaging in oral sex. Additionally, frequency of sex and relationship stability also impacted judgments. A sex act can be construed differently depending on the personal meaning (i.e., whether it's an act that makes you part of a sexual partnership) that is implied by frequency and relationship status. Similarly, heterosexually identified men who

have sexual encounters with other men use contextual factors to justify their same-sex activities (Reback & Larkins, 2010). These men attribute same-sex activities to contextual factors such as substance use or a fight with their female partner.

Finally, even the meaning of the experience of sexual attraction can vary. Historically, the intense emotional and even romantic attachment between two women has been discounted as a “crush” or “romantic friendship,” not an indication of same-sex orientation (Faderman, 1991). Faderman notes that it wasn’t until the early- to mid- twentieth century that such same-sex friendships began to be referred to as “abnormal” or “unhealthy” (p. 18). One poignant illustration of the phenomenon of these ambiguous “crushes” in college campuses is a song written by Barnard College Class of 1911 entitled “Crush Chorus” (Wilk, 2004):

When your heart goes pitter-patter

Just to meet Her on the stairs

When She smiles upon you kindly

Tho to speak you do not dare

When you jealously, when you jealously

Look upon a rival claim

That’s a crush, That’s a crush, Yes, that’s a crush.

Yet, the ambiguity of same-sex attraction is not lost in history. Currently, a popular lay term used to describe ambiguity in same-sex attraction is “girl crush.” A *New York Times* article described a girl crush as a “fervent infatuation that one heterosexual woman develops for another woman who may seem impossibly sophisticated, gifted, beautiful or accomplished” (Rosenbloom, 2005), as in “I have a ‘girl crush’ on that singer because she is so talented.” Consistent with previous work on the misattribution of arousal (e.g., White, Fishbein, & Rutsein,

1981), these women may experience a general arousal in the presence of a particular woman, which they may interpret as sexual attraction or merely a girl crush. The parallel phenomenon among men is described as a “man crush” (see McKee, 2009).

Variability in Self-Perceived Sexual Orientation

Despite these complexities in sexual experiences, historically research on sexual orientation attempted to predict which individuals would fall into roughly one of two categories: heterosexually oriented and homosexually oriented (e.g., Bem, 1996; Diamond, 2003a; Storms, 1981). However, more recently it has been noted that this question is not as simple as distinguishing which individuals identify as straight and which identify as gay or lesbian. Indeed, the incidence of same-sex sexuality varies depending on how it is measured (Savin-Williams, 2006). For instance, fewer people typically identify as gay or lesbian than report some degree of same-sex attraction or behavior. Another important issue is that individuals can identify with more nuanced sexual identity labels than straight, gay, or lesbian. For example, individuals sexually identify as bisexual, mostly straight, questioning, or mostly gay/lesbian (Diamond, 2003; Fox, 1995; Thompson & Morgan, 2008; Vrangalova & Savin-Williams, 2012), and it is unclear how much and what type of same-sex sexual experience differentiates those who identify as bisexual from those who identify as mostly straight, questioning, or mostly gay.

Moreover, given the complexity underlying self-perceived sexual orientation, perhaps it is not surprising that it tends to fluctuate not just between individuals but also across time and context within individuals. This has been found to be true among adult women (e.g., Baumeister, 2000; Diamond, 2008a, 2005a; Mock & Eibach, 2012; Peplau, 2003), adult men (e.g., Boykin, 2005; Ott, Corliss, Wypij, Rosario, & Austin, 2011), and adolescents (e.g., Rosario, Schrimshaw, Hunter, & Braun, 2006; Savin-Williams & Ream, 2007). For instance, while most who identify

as gay or lesbian will do so continuously throughout their lifespan, others may switch sexual identities multiple times (e.g., Diamond, 2008a) and others who identify as heterosexual may report engaging in sexual behaviors with both men and women in different contexts (e.g., Boykin, 2005; Reback & Larkins, 2010).

Women's self-perceived sexual orientation, in particular, has been shown to fluctuate across time and context. Diamond's (2000; 2003a; 2005a; 2008a) longitudinal study of 79 sexual minority (i.e., lesbian, bisexual, or unlabeled) women revealed that self-reported identity, attraction, and behavior significantly varied across time. For instance, Diamond (2008a) found that over a period of 10 years, 2/3 of her sample changed their identity labels at least once (e.g., from lesbian to heterosexual), and 1/3 had changed identity labels 2 or more times. The percentage of same-sex attractions women reported also fluctuated significantly across 5 timepoints. There were significant decreases in reported same-sex attraction over time among women who identified as lesbian at time one and non-linear variability in same-sex attraction among women who identified as bisexual or who were unlabeled at time one. In her book, *Sexual Fluidity: Understanding Women's Love and Desire*, Diamond proposed that the "fluidity" she documented in her longitudinal study of sexual minority women – and that had been documented in other research (see Baumeister, 2000 and Peplau, 2003 for reviews) – is a defining characteristic of female sexuality (Diamond, 2008a).

Although not as well documented, men's self-perceived sexual orientation also demonstrates variability across time and context (e.g., Kinnish, Strassberg, & Turner, 2005; Sandfort, 1997). In a longitudinal cohort study of 1000 New Zealanders, Dickson and colleagues (2003) found that men who reported at least occasional same-sex attraction increased from 4% to 6% between the ages of 21 and 26. Furthermore, they found men reported bidirectional changes in attraction –

from other-sex to same-sex and vice versa. An analysis of young men and women sampled from the first three waves of the National Longitudinal Survey of Adolescent Health (Udry & Bearman, 1998) revealed that while other-sex attraction was fairly stable across time among adolescents, self-reported same-sex attraction varied significantly across measurements among both men and women in the sample (Savin-Williams & Ream, 2007). Likewise, a recent study found that sexual minority (i.e., gay, lesbian, or bisexual) men and women demonstrated changes in their sexual identity labels at similar rates (Ott et al., 2011)

Sources of Variability in Self-Perceived Sexual Orientation

Though variability in self-perceived sexual orientation has been documented, it is important to determine the sources of this variability. Typically, theoretical accounts of both between- and within-individual variability in self-perceived sexual orientation has taken the position that this variability represents individual differences in sexual orientation (e.g., Bem, 1996; Diamond, 2005; 2008a; Storms, 1981; see Hammack, 2005 for an exception). In other words, because of some combination of biology and environment, some individuals are straight, some individuals are gay or lesbian, and some individuals have a fluid sexual orientation wherein they experience both same-sex and other-sex attraction varying across time and context.

Certainly, there is much evidence that biology plays a role in patterns of sexual attraction (see Bailey & Pillard, 1995; Mustanski, Chivers, & Bailey, 2002; Sanchez, Bocklandt, & Vilain, 2009 for reviews). For example, boys exposed to lower androgen levels in utero are more likely to identify as gay than those exposed to higher androgen levels (e.g., Meyer-Bahlburg, Dolezal, Baker, & New, 2008; Reiner, Gearhart, & Jeffs 1999), and some evidence of a heritable genetic component to sexual orientation exists in sibling and twin studies (e.g., Bailey, Dunne, & Martin, 2000; Bailey & Pillard, 1995). Self-reported sexual orientation also correlates with fingerprint

asymmetry (Hall & Kimura, 1994), age of puberty (Bogaert, Friesen, & Klentrou, 2002), height and weight (Bogaert & Blanchard, 1996), brain-wave patterns evoked by sounds (McFadden & Champlin, 2000; McFadden & Pasanen, 1999), and cerebral asymmetry (Rahman, Cockburn, & Govier, 2008). These associations have been primarily explained by hormonal or genetic mechanisms (see LeVay, 2011 for a review). More recently, researchers have examined how fluctuations in biological factors predict variability in self-perceived sexual orientation across time (e.g., Diamond & Wallen, 2011; Diamond & Dickinson, 2012). In a recent study, Diamond and Wallen (2011) found that, among women who consistently identified as lesbian, increased desire for same-sex sexual contact coincided with ovulation.

However, while a combination of biological and environmental factors may interact to sexually orient individuals towards a physiological attraction to same-sex targets, other-sex targets, or both (see Chivers, 2005 for a review), variability in self-perceived sexual orientation is not likely to be directly related to variability in physiological attraction. There are three primary reasons to expect a disconnect.

The first reason is that physiological arousal (and its related experiences of sexual fantasy and sexual behavior²) must be given meaning. For instance, if a man experiences an erection when in the presence of another woman, for the experience to factor into his self-perceived sexual orientation, he must give that experience meaning indicating that he is sexually attracted to the woman. Similarly, if a woman has a dream in which she has sex with another woman, she must define that experience as a sexual fantasy relevant to her sexual orientation for the fantasy to be reflected in her self-perceived sexual orientation.

² I acknowledge that the relationship between arousal and behavior is highly imperfect, with, for instance, many who are attracted to members of the same-sex never engaging in same-sex behaviors. However, the way in which arousal is related to behavior is beyond the scope of this paper.

The second reason is that the appropriate meaning of sexual experiences is often unclear. As I have already discussed, it is not always clear what meaning to give to particular sexual experiences. While an erection is frequently (though not always: see Sachs, 2007) interpreted as indicating sexual attraction, other experiences are likely to be quite ambiguous. For instance, a woman's dream about sex with another woman could be an indication of sexual fantasy or just an overworked brain. Furthermore, even if an experience is interpreted as sexual attraction, sexual fantasy, or sexual behavior, the experience might be discounted as relevant to one's sexual orientation. For example, a man who experiences an erection while talking about sex with other men on the internet may discount this experience of arousal as isolated to internet chats – not relevant to his sexual orientation (e.g., Ross, Månsson, Daneback, & Tikkanen, 2005).

The final reason is that people are inclined to hold particular self-views. Hammack (2005) argued that the subjective interpretation of sexual desire in large part influenced by a *cultural press* – an ideologically based system that creates the tendency for individuals, particularly men, to organize their sexual experiences in a particular way. Hammack argued that when individuals realize and acknowledge that they have same-sex desire, they are pressed to reconcile their life's narrative with the adoption of a same-sex identity. In the modern West, individuals, particularly men, are pressed to organize their life narrative of sexual desire categorically (i.e., either straight or gay), regardless of whether or not those desires have been strictly categorical.

More broadly, however, self-views are often reorganized and reformulated in response to changes in social context (e.g., Andersen & Chen, 2002; Cantor, Markus, Niedenthal, & Nurius, 1986; Showers, Abramson, & Hogan, 1998). In other words, individuals want to see themselves in particular ways, and the ways in which they want to see themselves are often contingent on what people, values, and institutions are presently salient (e.g., Horberg & Chen, 2010). Perhaps

these motivational pressures do not always prompt individuals to rewrite the narrative of their sexuality. Instead, they may be motivated to support a specific self-view in response to particular social contexts.

Certainly, the notion that sexual orientation is influenced by social contextual and cultural factors is not new. However, to date, the underlying psychological process that prompts and facilitates the subjective interpretation of sexual experiences has been unspecified. Diamond (2005b) articulated this need:

...in the absence of a workable theory outlining the specific parameters and processes through which ideas, images, and ecologies... shape subjective experiences of affect and eroticism, proponents of biologically based vs. culturally based understandings of sexuality will remain unintelligible to one another. (p. 292)

As I have already hinted, I will argue that the key to explaining variability in self-perceived sexual orientation as a function of social contextual, cultural, and individual factors is the application of the basic social psychological framework of motivated cognition.

A Motivated Cognition Approach to Self-Perceived Sexual Orientation

In the next section, I will argue the case for the utility of applying a motivated cognition framework to explain variability in self-perceived sexual orientation. I will first offer a brief summary of motivated cognition. I will then outline a model for explaining how sexual desire, sexual experience, and self-perceived sexual orientation are likely to be related to each other within a motivated cognition framework. I will also discuss a variety of social contextual, cultural, and individual factors related to self-perceived sexual orientation through the lens of a motivated cognition framework. Finally, I will present empirical research from our own lab

supporting this approach.

A Brief Summary of Motivated Cognition

In the classic paper entitled, “The Case for Motivated Reasoning,” Kunda (1990) argued that cognitions are shaped by motives – in other words, I often believe what I want to believe about the world and ourselves (cf. Gilovich, 1991). Self-views are cognitions that are particularly likely to be subject to motivational influence. For instance, evaluation of one’s own task performance tends to be highly motivated (e.g., Ehrlinger & Dunning, 2003; Jussim, Coleman, & Nassau, 1987; Lindeman, Sundvik, & Rouhiainen, 1995; Shrauger & Terbovic, 1976). In one of a series of recent studies, people who believed they were skilled at computer programming thought they had done better on the task when they were told it was a test of programming ability as compared to when they were told it was a test of abstract reasoning and vice versa (Critcher & Dunning, 2009).

Overly positive cognitions are pervasive (e.g., Taylor & Brown, 1988). For instance, one study found that men rated themselves as above the male average on all 20 separate aspects of driving skill the researchers investigated (McKenna, Stanier, & Lewis, 1991). Individuals are also unjustifiably optimistic in their perceptions of the quality of a relationship partner’s personality (e.g., Barelds & Dijkstra, 2011; Conley, Roesch, Peplau, & Gold, 2009) and attractiveness (e.g., Murray & Holmes, 1997; Murray, Holmes, Dolderman, & Griffin, 2000; see Fletcher & Kerr, 2010 for a recent review).

In the domain of sex, Peterson and Muehlenhard (2007) found that people are likely to hold definitions of what behaviors constitute sex that benefit their desired beliefs about their own sexual history. For instance, one participant in their study who indicated that she was motivated to avoid perceiving herself as lesbian indicated that a same-sex experience she had did not count

as sex because “there was no ‘penal’ [*sic*] penetration” (pp. 265). Another female participant discussed intercourse she had with a male acquaintance in which she was motivated not to believe sex had occurred because of embarrassment over the event. She justified the event by stating “he only stuck his penis in like 2 times” (pp. 265). On the other hand, the same participant indicated that her male partner was motivated to see the event as sex because he was a “virgin and didn’t want to be anymore” (pp. 265).

Despite the commonness of motivated cognitions, they are tempered by the constraints of informational cues (e.g., Kunda, 1990). People’s ability to arrive at motivated conclusions is constrained by their ability to justify the belief or “muster up the evidence necessary to support it” (Kunda, 1990, p. 483). This ability to “muster up evidence” is likely to be constrained by objective features that underlie the conclusion (e.g., informational cues). For example, one’s ability to believe that they are a very good student is constrained by grades.

In a study demonstrating this constraint, Critcher and Dunning (2009) investigated the effect of informational cues on biased performance evaluations. They only found bias in participants’ perceptions of their task performance when participants learned that the task was relevant to their perceived skill *before* they performed the task. The authors proposed that participants developed positively biased perceptions of specific aspects of their performance. For instance, a person who thought she was skilled at computer programming and believed that she was completing a test of programming skill was likely to underestimate how quickly she performed the task. That underestimation contributed to her biased perception of her overall performance. However, those participants who learned that the task was relevant to their perceived skill *after* they performed the task did not report biased evaluations of their

performance. These participants did not have biased perceptions of the specific features of their performance and, thus, could not support biased evaluations of their performance.

In spite of these constraints, people's ability to construct "reasonable" justifications for desired conclusions seems to be quite robust. Gilovich (1991) proposed that people create justifications for their motivated cognitions by employing different standards of evidence to evaluate different cognitions. People may stop searching for evidence once they have found enough to support their desired cognition (e.g., Dawson, Gilovich, & Regan, 2002); they may employ bias in the way in which they organize evidence (e.g., Dunning, Meyerowitz, & Holzberg, 1989); or they may superficially process available evidence, avoiding interpretations harmful to their motivated cognition (e.g., Ditto, Scepansky, Munro, Apanovich, & Lockhart, 1998). For instance, people employ a "confirmation bias" – the tendency to seek evidence that confirms a particular cognition – especially when they are trying to confirm a cognition in which they are invested (e.g., Klayman & Ha, 1987). When motivated to perceive themselves as academically successful, people may recall more past academic successes than failures, thus emphasizing information that confirms their motivated self-view.

So pervasive are these tendencies that justifying one's own motivated cognitions as reasonable, especially relative to others, has been referred to as the "illusion of objectivity" (Pyszczynski & Greenberg, 1987) or the "bias blind spot" (Pronin, Lin, & Ross, 2002). Overall, people perceive themselves to be less susceptible to cognitive biases than relevant comparison groups (Pronin et al., 2002; Ehrlinger, Gilovich, & Ross, 2005). It is not the case, however, that people fail to detect bias in all circumstances. While blind to their own biases, people rated their peers' self-serving attributions as highly biased.

In summary, people's self-relevant cognitions are often biased by motivational cues. The impact of motivation, however, relies heavily on informational cues, constraining one's ability to gather supportive evidence. In spite of these constraints, people prove to be adept at employing various effective strategies at gathering the necessary evidence to support their motivated cognitions.

Self-Perceived Sexual Orientation Characterized as Motivated Cognition

I propose that the principles of motivated cognition underlie variability in self-perceived sexual orientation. Specifically, I propose that various social contextual, cultural, and individual factors serve as motivational cues, prompting individuals to hold particular views of their own sexual orientation. However, individuals must draw from their experiences of sexual arousal, attraction, fantasy, and behavior (i.e., informational cues) in order to support their self-perceived sexual orientation. Insofar as sexual experiences are ambiguous in their meaning, individuals are often easily able to use their own sexual experiences to support particular self-views. Thus, a motivated cognition approach to self-perceived sexual orientation indicates that an individual's actual sexual experiences and the orientation of their physiological arousal underlie self-perceived sexual orientation. The way in which those experiences are integrated and interpreted when an individual reflects on (and reports) their sexual orientation will be dependent on what motivational cues are most salient at that time.

For example, a woman who experiences sexual attraction mostly to men but is occasionally attracted to other women has an ambiguous set of sexual experiences from which to draw to support her self-perceived sexual orientation. When she was in high school, under the strong influence of her parents and in a community in which heterosexuality is compulsory, she may have been inclined to interpret her attraction to men as indicating that she was exclusively

heterosexual, perhaps discounting her occasional same-sex attraction as a stage or just girl crushes. When she went to college, exposed to a greater range of sexual identities and in an environment more supportive of same-sex sexuality, she may have interpreted her experiences as indicating that she is mostly straight or even bisexual.

A useful metaphor for this characterization of self-perceived sexual orientation is a balance scale. On one side of the scale are the motivational cues – for instance, conservative parents motivating an individual to interpret their experiences as indicating exclusive heterosexuality. On the other side of the scale are the sexual experiences that contradict the self-perception suggested by the motivational cues – for instance, the same-sex sexual experiences had by the individual. The weight of these experiences is also determined by the ability of the individual to interpret those experiences in a way consistent with a motivated self-perception. For example, if the individual has had many same-sex experiences but they all occurred during college when the individual could discount them as just a “stage,” the experiences would have relatively low weight. If the weight of the motivational cues is greater than the contradictory sexual experiences, this approach predicts that individual’s self-perceptions will be consistent with motivational cues. If the weight of the contradictory sexual experiences is greater than the motivational cues, the individual’s self-perceptions will be consistent with those sexual experiences.

It is important to note the circumstances in which motivational cues and actual sexual experiences are in balance – in other words, when they conflict. For instance, a man whose friends and family are homophobic but who nevertheless experiences strong and exclusive same-sex attraction faces a challenge. The conflict between a potentially strong motivation to avoid perceiving himself in a way that indicates he is same-sex oriented and unambiguous information

cues that indicate his self-perceived sexual orientation *should* indicate same-sex sex attraction can be reconciled in a few ways.

First, if the man is as motivated to maintain ties with his family and friends as he is convinced of his sexual orientation, he might privately believe that he is gay but publicly identify as heterosexual. In other words, he would exhibit a closeted sexuality (e.g., Chekola, 1994). This option does not resolve the conflict of motivation and evidence, but it does allow the conflicting factors to coexist. Indeed, characterizing a closeted sexuality as a response to a conflict of motivational and informational cues is consistent with research demonstrating negative mental health outcomes of sexual orientation concealment (e.g., Frable et al., 1998). The task of maintaining ties with a social environment that is stigmatizing of one's privately held self-perceived sexual orientation may lead to mental stress and cognitive load, predicting mental health outcomes such as depression and low self-esteem (see Meyer, 2003).

Alternately, he may willingly choose to move away from those who disapprove of his sexuality, obtain new friends who support his sexuality, and resolve the internal conflict by actively changing one factor (i.e., the motivational cues). Finally, if his relationship to his family and friends is more important to him than the desire to acknowledge and integrate his sexual feelings, he may try to change his patterns of sexual attraction through, for instance, conversion therapy (e.g., Beckstead & Morrow, 2004). Hypothetically, this could reduce the conflict, though the viability and ethicality of this option has been strongly criticized by the psychological community (e.g., American Psychological Association, 2009; Haldeman, 1994).

Identifying Factors in the Motivated Cognition Approach

A motivated cognition approach to self-perceived sexual orientation provides an elegant but flexible framework for understanding the process by which various factors may influence

variability in self-perceived sexual orientation across individuals, time, and context. While I have discussed a few specific examples, this approach is not limited to those factors (e.g., college environment, parental attitudes). Many different factors are likely to serve as motivational cues, promoting bias towards a particular self-perceived sexual orientation; other factors are likely to constrain or promote the impact of motivation on self-perceived sexual orientation by reducing or increasing individuals' ability to leverage their sexual experiences to support particular self-perceptions.

Cultural Conceptions of Sexuality as Motivational Cues

Self-perceived sexual orientation may be shaped by the motivation to conform to societal conceptualizations of sexual orientation. In the United States today, individuals are expected to characterize their sexual orientation according to a categorical system of sexual identification (i.e., lesbian/gay/homosexual, straight/heterosexual, and, less accepted, bisexual; cf. Hammack, 2005). Men may feel this pressure to a much greater degree than women because women are socially sanctioned to express same-sex intimacy within a heterosexual framework (e.g., Peplau, 2001).

If the social context indicates either explicitly or by example that categorical sexuality is normative, individuals may be motivated to construe their own sexual orientation categorically. Conversely, if an individual's social context permits sexual orientation to be organized in non-categorical ways, the person may be motivated to characterize their sexual orientation in a more nuanced way. For example, in a context that rigidly distinguishes between heterosexual and homosexual individuals, a person with mostly other-sex sexual experiences but a few same-sex sexual experiences may feel compelled to identify as straight. However, in a context where others characterize themselves with diverse identity labels – for instance, unlabeled or

questioning – a person might feel comfortable identifying with a label such as “mostly straight” (Thompson & Morgan, 2008).

Moreover, the tendency to perceive one’s sexual orientation categorically may merely reflect the imprecision in widely used measurement instruments. Sexual orientation is typically measured by giving respondents three options – heterosexual, homosexual, and bisexual. However, people can easily respond to non-categorical measurements of sexual orientation (e.g., a Kinsey scale; Kinsey et al., 1948 and 1953). It is possible that frequent retrieval of a categorical description of one’s sexual orientation promotes more categorical cognitions about one’s sexual orientation. Conversely, responding to non-categorical measures of sexual orientation may promote more complex self-perceived sexual orientation.

Social Stigma and Support as Motivational Cues

Self-perceived sexual orientation may also be motivated by a desire to avoid social stigma and embrace social support. Although prejudice against sexual minorities is decreasing in the U.S., particularly among young people (e.g., Smith, 2011), it is still a relevant concern. A 2010 CBS News Poll found that 43% of Americans think homosexual relations between consenting adults are wrong. Likewise, Herek (2009) found that about half of gay and lesbian-identified respondents had experienced verbal harassment; 20% reported having experienced a person or property crime; and more than 10% had experienced employment or housing discrimination based on their sexual orientation. Gay men, in particular, are susceptible to physical violence (Herek, 2009; Herek, Cogan, & Gillis, 2002). Additionally, bisexually identified individuals are often perceived as sexually unhealthy (Spalding & Peplau, 1997) and gay and lesbian-identified individuals are seen as unfit as parents (Zanghellini, 2007).

The many negative consequences associated with stigma against same-sex sexuality may motivate people to avoid self-perceptions of their sexual orientation that indicate same-sex sexual attraction. This may be particularly relevant for individuals who identify as heterosexual or who are in the process of developing their sexual identity. Specifically, in a high-stigma context, heterosexually identified people may be motivated to maintain a heterosexual perception of their sexual orientation, regardless of their actual sexual experiences. On the other hand, social support for same-sex sexuality may promote self-perceptions that reflect an increased level of same-sex attraction, assuming one has had experiences that could be interpreted as indicating same-sex attraction.

Individuals in supportive environments who self-perceive that their sexual orientation includes same-sex sexuality may be better able to gain access to social and institutional resources (Quinn, 2004). For example, a woman who has an ambiguous same-sex experience (e.g., she kisses another woman while drunk at a party) and knows that her friends are very supportive of same-sex sexuality may be inclined to interpret that experience as relevant to her self-perceived sexual orientation (e.g., I am the kind of woman who kisses other women) and share the experience with her friends. This would allow her to gain what she expects to be a positive, supportive reaction from her friends.

Sociopolitical Groups as Motivational Cues

Additionally, self-perceived sexual orientation may be motivated by the norms dictated by one's group membership. Theories of social identity (e.g., Tajfel & Turner, 1979; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) stress that social group memberships influence people's self-relevant beliefs. As such, those who are strongly identified with, for instance, a lesbian identity may be motivated to fit their self-perceived sexual orientation to the norms and

expectations of their lesbian community. For instance, some lesbian communities differentiate between “true” lesbians, who are exclusively attracted to and sexually involved with women, and “fake” lesbians, such as “LUGs” (lesbians until graduation - women who only experiment with same-sex sexuality during college) and “has-bians” (women who used to identify as lesbian but now are in a relationship with a man; Diamond, 2008a; Rust, 1992). A woman who identifies as lesbian and believes that the lesbian community distinguishes between true and fake lesbians might be motivated to hold a self-perceived sexual orientation that indicates that she is exclusively attracted to other women. For men, group influence may occur differently. There is a pervasive lay belief that male bisexuals are really homosexuals who are either closeted or have not yet realized their “true” sexuality – namely, that they are really gay (e.g., Steinman, 2001). Thus, men actively involved in the gay community and who have both same-sex and other-sex sexual experiences may feel motivated to disregard other-sex experiences and identify as exclusively gay.

Interpersonal Relationships as Motivational Cues

Self-perceived sexual orientation may be formed in response to significant interpersonal relationships. For instance, women’s same-sex friendships often resemble romantic relationships in that they involve close physical contact and the sharing of intimate emotions (Diamond, 2002; Reis, 1998). Thompson (2007) suggested that such intimate friendships create an opportunity for women to explore their sexuality and reevaluate their beliefs about their sexual orientation. She also posited that popular media portrayals of female same-sex desire and experimentation may prompt sexual orientation questioning among heterosexually identified women.

Relationships may also drive individuals to reinterpret past sexual experiences. Many women who identify as lesbian have previously engaged in sexual behaviors (Whisman, 1996),

relationships (Peplau, Cochran, Rook, & Padesky, 1978), or even marriages (Hany, 1983) with men. In one study, researchers found that while 82% of lesbian-identified women reported having had sexual relationships with men, only 72% reported that those relationships had been meaningful (Whisman, 1996). Though this study does not conclusively indicate that some of these women reinterpreted their previous experiences, it is suggestive. While the pressure to identify as an exclusive lesbian may have contributed to the desire to downplay the importance of their previous other-sex sexual experiences, many of these women may have been motivated by their current same-sex relationships to deemphasize the importance of their previous other-sex experiences. Similarly, Diamond (2003a) found that women who adopted a heterosexual identity after having identified as lesbian or bisexual tended to reinterpret past sexual experiences (e.g., attributing past same-sex experiences to experimentation).

Finally, the perceived incidence of same-sex sexuality among significant others may motivate a particular interpretation of same-sex experiences. For instance, if a man experiences some same-sex attraction but perceives that no one he knows experiences any same-sex attraction, he may be less inclined to interpret his own ambiguous same-sex experiences as relevant to his sexual orientation. In contrast, individuals whose friends or family members are gay or who express support for same-sex sexuality may be more likely to interpret their own experiences of same-sex sexuality as relevant to their sexual orientation.

The children of gay and lesbian parents provide one source of evidence for this possibility. These children are also more open to same-sex exploration than the general population (e.g., Biblarz & Stacey, 2010; Stacey & Biblarz, 2001), especially if their parents are comfortable with and openly express their sexual orientation (e.g., Gartrell, Bos, & Goldberg, 2011). An openness to sexual exploration among the children of gay and lesbian parents seems to emerge more

clearly in self-perceived sexual orientation than in actual same-sex behavior. Among 17-year old children of lesbian parents, 49% of women and 22% of men reported at least some degree of same-sex sexual interest (Gartrell et al., 2010). These percentages are considerably larger than the 18% of women and 8% of men aged 18-19 years who reported any same-sex sexual interest in the National Survey of Family Growth (Cycle 7; NSFG; Chandra et al., 2011). However, the differences between the same-sex behavior of the 17-year old children of lesbian parents and 18-19 year old adolescents in the NSFG (Cycle 7) were less pronounced (15% vs. 12% for women and 6% vs. 4% for men). The perception that significant others experience same-sex sexuality may be important for shaping self-perceived sexual orientation.

Self-Derived Motivational Cues

Self-perceived sexual orientation may also be shaped in response to motivations that originate within the individual. For instance, while cultural influences may prompt categorical perceptions of sexual orientation, some people may be predisposed to perceive their sexual orientation categorically due to individual difference in information processing. Individuals high in need for structure desire and tend to organize one's world in simplified categories, avoiding ambiguity in cognitive representations of social and nonsocial information (Neuberg & Newsom, 1993; see Thompson, Naccarato, Parker, & Moskowitz, 2001 for a review). People high in personal need for structure simplify across a variety of domains. They are more likely to create fewer and simpler categories when organizing information about the self, the elderly, furniture, and colors (Neuberg & Newsom, 1993); to form spontaneous trait inferences, quickly creating simplified representations of other people's characters from their behavior (Moskowitz, 1993); to stereotype others and, more specifically, to form inaccurate stereotypes (Schaller, Boyd, Yohannes, & O'Brien, 1995); and to be susceptible to using non-diagnostic, heuristic information

to make judgments (Kemmelmeier, 2007). Such categorical tendencies may also extend to perceptions of one's own sexual experiences and, thus, sexual orientation such that those high in need for structure (and other similar individual differences; e.g., need for cognitive closure, Kruglanski, Webster, & Klem, 1993; Webster & Kruglanski, 1994) may be motivated to hold categorical beliefs about their sexual orientation.

Consistency of Sexual Experiences Constrains Motivational Influence

Many people identify as gay, lesbian, or bisexual in spite of stigma, discrimination, and personal risk (Herek, 2009). Even those who privately identify with a same-sex sexual identity but do not disclose that to others in their life face the negative consequences of stigma and concealment (e.g., Frable, Platt, & Hoey, 1998; Mohr & Fassinger, 2006; Ragins, Singh, & Cornwell, 2007). A man who lives in a conservative state in which same-sex sexuality is highly stigmatized may nonetheless identify as gay (either privately or publicly) if his attraction to other men is so strong and/or a history of sexual behavior with men so clear that it leaves little room for his self-perceived sexual orientation to be shaped by motivation.

The orientation of sexual arousal appears to be stronger and more categorically determinative for men than for women (see Chivers, 2005 for a review). Physiologically, men tend to exhibit bimodal sexual arousal patterns; women, in contrast, exhibit more fluid sexual arousal patterns (Chivers, Seto, & Blanchard, 2007; Rieger, Chivers, & Bailey, 2005). That is, men tend to be sexually aroused by one category of stimuli (i.e., sexualized images of men or women, but not both). Women, particularly heterosexually identified and bisexually identified women, tend to be aroused by both sexes. These findings may help explain why men's self-perceived sexual orientation appears to be less strongly influenced by contextual factors (e.g.,

Baumeister, 2000; Peplau, 2003): the experiential constraints on the influence of motivation are stronger for men than for women.

Experiential Ambiguity Promotes Motivational Influence

The same characteristics that provide for a weak relationship between sexual experiences and self-perceived sexual orientation promote the ability for individuals to interpret their experiences in a way consistent with motivational influence. For instance, the fact that self-perceived sexual orientation can be derived from various experiences of attraction, fantasy, and behavior gives individuals leeway in interpreting the meaning and relevance of those experiences for their sexual orientation (e.g., Klein, 1990; Klein, Sepekoff, & Wolf, 1985). If an individual's same-sex experiences are of one type (e.g., fantasy) and other-sex experiences of another (e.g., behavior), they may be able to selectively weight the importance of the types of experiences that are consistent with motivational cues. For instance, a man who experiences primarily same-sex behavior but has occasional sexual fantasies about women could deemphasize the relevance of sexual fantasies for his beliefs about his sexual orientation. This would allow him to perceive himself as experiencing exclusive same-sex attraction, perhaps influenced by the motivation to avoid the negative perceptions associated with male bisexuality (e.g., Eliason, 1997; Fox, 1996; Rust, 1995; Shuster, 1987; Udis-Kessler, 1996; Weise, 1992).

Furthermore, certain types of experiences are likely easier to discount than others. Within a particular time and social context, certain experiences are associated with greater social consensus regarding its relevance to sexual orientation than others. For instance, while many in the U.S. might believe that penile-vaginal intercourse or anal sex constitute "sex" and, therefore, should be counted as relevant to one's sexual orientation, fewer might feel strongly that oral sex should be an indication of sexual orientation (e.g., Sanders & Reinisch, 1999). Other cultures

may put emphasis on the self-relevance of different behaviors. For instance, in Latin American countries, the ascription of male homosexuality is centered more on role in anal sex rather than sexual object choice (e.g., Padilla, 2007a; Padilla, Vasquez del Aguila, & Parker, 2007; Padilla, 2008). Specifically, men clearly identified as homosexuals are those who take the “passive,” receptive role in anal sex. Thus, in Latin America, men who take the “active” role in anal sex with other men may not feel that the experience threatens their ability to identify as heterosexual.

Finally, the contexts in which sexual experiences occur offer explanations individuals may use to discount the relevance of those experiences for their sexual orientation. Same-sex sexual experiences occurring in environments in which there are no alternatives for other-sex experiences (e.g., prisons or convents; Curb & Manahan, 1985; Simooya & Sanjobo, 2001) may be attributed to the situation instead of to the actors’ sexual orientation. Likewise, heterosexually identified men who engage in clandestine same-sex experiences discount those experiences’ relevance to their sexual orientation by emphasizing their isolation to particular causes external to the self (e.g., fight with a wife; Reback & Larkins, 2010) or situations (e.g., they only occur online; Ross et al., 2005). Other examples of contexts offering alternate attributions for sexual experiences include sex work (e.g., Padilla, 2008) and interpersonal relationships (e.g., Kitlinger & Wilkinson, 1995).

Particular contexts also imbue sexual experiences with meaning that allows the attribution of those experiences to something outside the self. Sexual experiences occurring in college are often seen as experimentation, offering an alternate attribution (Thompson, 2007). Same-sex experiences had as a part of rituals are an aspect of the emergence into adulthood – not a signal of a chronic pattern that will persist across the lifetime (e.g., Blackwood, 1993). Inasmuch as early sexual development is perceived as a time of experimentation and exploration,

sexual experiences occurring during that time can be relatively easily discounted. For instance, though individuals who ultimately sexually identify as gay or lesbian often have other-sex sexual experiences before they have their first same-sex sexual experience (e.g., Maguen, Floyd, Bakeman, & Armistead, 2002), those early other-sex sexual experiences are not necessarily interpreted as evidence of bisexual attraction.

Empirical Evidence for the Proposed Motivated Cognition Approach

Our recent research lends empirical support to the motivated cognition approach to variability in self-perceived sexual orientation outlined in this paper. Specifically, our research offers support for the three key propositions of the approach.

The Relationship between Sexual Experience and Self-Perceived Sexual Orientation Varies

If self-perceived sexual orientation is subject to the influence of motivational cues that bias the interpretation of sexual experiences, the relationship between sexual experience and self-perceived sexual orientation should vary across individuals. In a recent study of heterosexually identified, college-aged men and women, I examined the relationship between the number of specific same-sex experiences reported over the prior 2 years and self-perceived same-sex sexual orientation (Preciado, Peplau, & Johnson, in prep).

In this study, same-sex experiences reported ranged from experiences of fantasy (e.g., imagining sex with a person of the same sex), attraction (e.g., feeling attracted to someone of the same sex), and behavior (e.g., kissing someone of the same sex). Self-perceived same-sex sexual orientation was measured using a 101-point unnumbered visual analog scale, anchored by “Exclusively Heterosexual” (0), “Equally Heterosexual and Homosexual” (50), and “Exclusively Homosexual” (100). Participants chose the point they thought best described their sexual orientation, overall; their sexual attractions; their sexual fantasies; and their sexual behaviors. As

predicted by the present motivated cognition approach, same-sex experiences only explained 35% of the total variance, indicating that among many participants, self-perceived same-sex attraction was not strongly related to the number of recent same-sex experiences they had.

In another study of young college women, I examined how individual differences in beliefs and attitudes about sexual identity (Measure of Sexual Identity Exploration and Commitment; Worthington, Savoy, Dillon, & Vernaglia, 2002) might moderate the relationship between the degree of same-sex experience reported over the prior two years and the use of a bisexual or mostly straight sexual identity (Preciado & Thompson, 2012). I found that same-sex experience was only predictive of the use of a bisexual or mostly straight sexual identity label among particular women. For instance, I found that among women who were highly uncertain of and exploratory towards their sexual identity, the amount of same-sex experience they had over the prior two years was not diagnostic of their identification as mostly straight or bisexual. On the other hand, women who were highly integrated in and committed to their sexual identity showed the strongest relationship between their same-sex experiences over the past two years and their use of a mostly straight or bisexual identity label. Thus, while some women's sexual identities seemed to be strongly related to their sexual experiences, other women's sexual identities appeared to be influenced by something other than their sexual experiences.

Motivational Cues are Related to Self-Perceived Sexual Orientation

A key proposition of our model is that motivational cues bias individuals' interpretation of their sexual experiences and, thus, their self-perceived sexual orientation. Because basic research on motivated cognition suggests that individuals are quite adept at interpreting their experiences in motivated ways, the relationship between motivational cues and self-perceived sexual orientation should emerge as a main effect across individuals.

Likewise, in one study of heterosexually identified college-aged women, I found that individual differences in need for structure (PNS; Neuberg & Newsom, 1993) were significantly related to self-perceived same-sex attraction, behavior, and fantasy (Preciado & Peplau, 2011). Self-perceived same-sex attraction, behavior, and fantasy were measured using 7-point scales, with 1 indicating that participants experienced no tendencies to have same-sex experiences and 7 indicating that participants were extremely likely to have same-sex experiences. I found that those heterosexually identified women who tended to organize social and non-social information in simplified categories (high in PNS) reported significantly more same-sex sexuality than those women low in PNS. I interpreted these effects as suggesting that women high in PNS would be motivated to perceive their sexual orientation categorically (i.e., as exclusively heterosexual), thus they would be inclined to interpret any same-sex experiences as irrelevant to their sexual orientation. On the other hand, women low in PNS would be more open to interpreting ambiguous same-sex sexual experiences as suggestive of same-sex sexuality. This effect remained significant even when controlling for conservatism on gay and lesbian issues and perceptions of the degree of same-sex sexuality experienced by other heterosexual women.

In a recent series of studies, I used experimental methods to directly test the relationship between motivational cues and self-perceived sexual orientation. Across three studies using both explicit and implicit manipulations, different measures of self-perceived sexual orientation, and differently aged samples, I found that cues of support for same-sex sexuality led heterosexually identified male and female participants to report more same-sex sexuality than did cues of stigma against same-sex sexuality (Preciado, Johnson, & Peplau, 2013). These studies indicated that the motivation to avoid stigma and seek support would bias self-perceived sexual orientation.

For example, in one study using an explicit manipulation, I randomly assigned adult participants ($M_{\text{age}} = 40$ years) to read “news articles” created for the study. The experimental articles either indicated that same-sex sexuality was stigmatized in the U.S. or that same-sex sexuality was supported in the U.S. After reading the articles and responding to questions about the articles, participants characterized their sexual behaviors, attractions, and fantasies using unnumbered 13-point scales ranging from Exclusively Heterosexual to Equally Heterosexual/Homosexual to Exclusively Homosexual. I found that participants who read the support article reported significantly more same-sex sexual behavior, attraction, and fantasy than did participants who read the stigma article.

In the study that used an implicit manipulation, I coupled images of same-sex couples with subliminally presented images of angry or happy faces in order to implicitly prime the perception that same-sex sexuality was negatively or positively viewed, respectively. Following this manipulation, participants reported the amount of same-sex sexual attraction, behavior, and fantasy they perceived they experienced. In this study, the dependent measures were assessed using 101-point visual analog scales with the same endpoints and midpoints used in the article study described above. Participants who had been exposed to the angry prime reported significantly less same-sex attraction, behavior, and fantasy than did participants who had been exposed to the happy prime. I did not observe any difference in self-perceived sexual orientation among participants who had been exposed to the angry and happy primes coupled with images of furniture. Collectively, these studies indicated that motivational cues directly impact self-perceived sexual orientation among heterosexually identified men and women.

Inability to (Re)Interpret Sexual Experiences Constrains the Influence of Motivation

Importantly, the proposed model suggests that those individuals who are unable to interpret their sexual experiences in motivated ways will not show a strong relationship between motivational cues and self-perceived sexual orientation. In the study described above in which I implicitly primed motivational cues (Preciado, Johnson, & Peplau, 2013), I also found that the effects of motivational cues were most strongly present among those participants who reported experiencing some uncertainty about their sexual identity (uncertainty subscale of Measure of Sexual Identity Exploration and Commitment; Worthington et al., 2008). This finding suggests that it was only those participants who, as indicated by their uncertainty about their sexual identity, had some flexibility in how to interpret their sexual experiences who were susceptible to the manipulation of motivational cues. Put another way, participants who were highly certain of their sexual identity and, thus, likely had strong beliefs about the meaning of their sexual experiences, were not swayed by the motivational cues.

Finally, in a study of heterosexually identified, college-aged male and female participants, I examined the relationship between the perceived prevalence of same-sex sexuality among important social influences and participants' own self-perceived sexual orientation (Preciado, Johnson, & Peplau, under review). Specifically, participants were asked to report the sexual orientation of members of their family (mother, father, sibling of closest age), their friends (best friend from high school and college), and members of their community (average hometown citizen, average UCLA student). Participants also reported their own same-sex behaviors, fantasies, and attractions. All were measured using the same 101-point visual analog scale described above. I found that the perceived prevalence of same-sex sexuality among family members, friends, and community members was positively related to self-perceived sexual orientation, even controlling for participants' reports of the actual same-sex experiences they had

over the prior two years. These results suggest that individuals may be motivated to perceive their own sexual orientation as including same-sex sexuality when they perceive that such perceptions are normative among others in their social environment.

However, in direct support of the third proposition of the motivated cognition approach, an analysis of the interaction of perceived prevalence of same-sex sexuality among social influences and participants' actual same-sex sexual experiences revealed that it was those participants who actually reported that they had experienced some degree of same-sex experience over the prior 2 years who showed the strongest relationship between perceived prevalence and self-perceived sexual orientation. Those participants who reported no same-sex experiences showed no relationship between the perceived incidence of same-sex sexuality among others and their own self-perceived sexual orientation. These results demonstrated that individuals need the "evidence" of their own experiences to support a motivated perception of their sexual orientation. Those without that evidence (i.e., those with no same-sex experiences) had nothing to interpret in a motivated fashion.

Implications of the Motivated Cognition Approach

I have discussed how variability in self-perceived sexual orientation can be characterized through the lens of a motivated cognition approach. I have also reviewed empirical evidence from our own research supporting the three primary propositions of this approach. The proposed motivated cognition approach also has implications beyond the explanation of variability in self-perceived sexual orientation. I discuss the implications for the measurement of sexual orientation, gender differences in self-perceived sexual orientation, and the relationship between self-perceived sexual orientation and sexual health.

Measurement of Sexual Orientation

This approach problematizes the reliance on self-report measures of sexual orientation. Specifically, self-report measures of sexual orientation should be utilized as measures of beliefs about one's sexual orientation and/or sexual experiences (i.e., self-perceived sexual orientation) – not direct measures of sexual orientation or sexual experiences. This subtle difference in interpretation has a few important implications.

First, self-perceived sexual orientation is sensitive to information that that may be perceived as irrelevant to measurement (e.g., cues of stigma against same-sex sexuality), and researchers should attempt to account for those factors in the measurement context (e.g., McCabe, Hughes, Bostwick, Morales, & Boyd, 2012). Likewise, a recent, large-scale study in England found that the prevalence of same-sex behavior and orientation reported by participants varied significantly in response to subtle changes in the wording of measures (Hayes et al., 2012). Researchers should also account for individual differences likely to indicate whether a respondents' self-perceived sexual orientation will align closely with their actual sexual experiences (e.g., PNS; Neuberg & Newsom, 1993).

Second, this approach reaffirms what has been argued previously by others: sexual orientation researchers should use measures that specifically tap the constructs in which they are interested (e.g., Malacad & Hess, 2011; Pathela et al., 2005; Savin-Williams, 2006). For instance, if researchers are interested in the incidence of sexual experience, they should measure experiences as specifically as possible (e.g., ask about the number of incidences of same-sex intercourse)³. The present model suggests that more abstract measures (e.g., measures of the percentage of sexual experiences that are same-sex oriented) are likely to be subject to motivational influence. Certainly, it is important to balance the accuracy of specific measurement

³ Though, even measures of specific sexual behaviors have been shown to be subject to biased reporting (e.g., Brown et al., 2012).

with the demands on participant time and effort. Future research should endeavor to develop measures of sexual experience that are brief but likely to produce accurate accounts of respondent experience.

Gender Differences

There is little question that there are important differences between men and women in sexuality. Women's sexuality is characterized as partner and relationship-oriented (Baldwin & Baldwin, 1997; Peplau et al., 1999). Women's self-reported same-sex attraction, fantasy, behavior, and identity are more fluid in that it fluctuates more across time and context (Baumeister, 2000; Diamond, 2000, 2003a, 2005a, 2008a; Peplau, 2003). Men, in contrast, tend to show arousal to one sex but not the other (Chivers, Riger, Latty, & Bailey, 2004), and men's sexuality appears to be less susceptible to sociocultural influence than women's sexuality (Baumeister, 2000; Udry & Billy, 1987; Udry, Talbert, & Morris, 1986). These differences have led some researchers to speculate that separate models of male and female sexual orientation are warranted (e.g., Diamond, 2003b, 2007; Peplau & Garnets, 2000).

However, efforts to characterize men's and women's sexuality separately often exclude individuals who differ from the average man or woman. For instance, studies show that some men do demonstrate fluidity in their sexual identity labels (Barber, 2000) and do report some same-sex attractions, fantasies, and behaviors even while identifying as heterosexual (e.g., Vrangalova & Savin-Williams, 2010). Furthermore, there exist subpopulations of men that would not be described well by a model of male sexual orientation that assumes bimodality and stability. These include men on the "down-low" who have sex with men but identify as heterosexual and are often married (e.g., Boykin, 2005); men who engage in both same-sex and other-sex sexual behaviors and are married to women (e.g., Malcolm, 2000); and behaviorally

bisexual men from outside the United States who often do not perceive their bisexuality as stigmatized, marginalized, or problematic (e.g., Blackwood, 1993).

The proposed motivated cognition approach relies on basic social cognitive processes that are unlikely to differ in process between men and women. Men and women are both likely to be motivated to hold particular beliefs about their sexual orientation and those beliefs are likely constrained by their ability to selectively interpret their sexual experiences among both sexes. Likewise, our research, described above, has found few gender differences in the tests of the relationship between motivational cues, sexual experiences, and self-perceived sexual orientation. What this indicates is that the current approach can make predictions not about male and female self-perceived sexual orientation but about individuals who vary across multiple dimensions.

For example, it has been theorized that relative to men, women's sexuality is more inherently susceptible to the influence of context (e.g., Baumeister, 2000; Peplau, 2003). The present model suggests a couple of empirically testable mechanisms for this difference. First, it could be that men's more categorically specific arousal patterns leave little room for them to interpret their sexual experiences in motivated ways. It is also possible, however, that the lack of variability in men's self-perceived sexual orientation is due to the fact that factors that motivate stability impinge more strongly on men's beliefs about their sexual orientation than they do on women's beliefs (cf. Hammack, 2005). If men are exposed to cues motivating less categorical beliefs about their sexual orientation that are strong enough to supersede cues motivating categorical beliefs, the present model predicts that those men would be likely to have less categorical beliefs about their sexual orientation.

Self-Perceived Sexual Orientation and Sexual Behavior

While this paper has focused on a motivated cognition approach to self-perceived sexual orientation, this approach has implications for actual sexual behavior. Self-views are important in directing behavior, generally (see Ajzen & Fishbein, 2005 for a review). Likewise, self-perceived sexual orientation may impact sexual experiences, as well. Specifically, this relationship between self-perceived sexual orientation and actual sexual experiences may function through mechanisms of perceived typicality, perceived agency, and behavior intention. For instance, a belief that same-sex sexual experiences are typical for one's self might make engaging in same-sex behaviors more likely. Therefore, if a man has the belief that he enjoys engaging in sexual behaviors with men, he may be more likely to pursue opportunities to do so. A sense of agency – or the belief that one has the ability to engage in a particular type of sexual behavior – might also stem partly one's self-perceived sexual orientation (e.g., I am attracted to women, thus I am able to pursue sexual behaviors with women). Finally, self-perceived sexual orientation likely plays a large role in dictating sexual behavior intention. A man at a bar is likely to pursue a sexual experience with a woman in part because he perceives himself as the kind of person who engages in sexual behaviors with women.

Self-perceived sexual orientation may also play a role in the opportunity an individual has for having experiences that are consistent with their self-perceptions. Models of identity development posit that, for many, an important aspect of taking on an identity is exploration and immersion with others who also have that sexual identity (see McCarn & Fassinger, 1996 for a review). When a woman takes on a lesbian identity, she is likely to spend time with and immerse herself in the lesbian community. Being around other lesbian-identified women who are interested in having same-sex experience creates opportunities that increase the likelihood that she will have those experiences, too (Golden, 1996).

Self-Perceived Sexual Orientation and Sexual Health

Finally, this approach has implications for sexual health. Both the content and organization of self-perceived sexual orientation appear to predict health-relevant behaviors (e.g., Doll & Beeker, 1996). For instance, Washington and colleagues (2006) found that among a sample of 1300 middle-aged male injection drug users, those whose self-reported sexual orientation (i.e., straight/heterosexual, bisexual, gay/homosexual, or don't know) varied over time tended to engage in higher risk sexual behaviors. Similarly, men who are on the down-low use condoms less consistently and are less likely to get tested for STDs than gay-identified men (e.g., Boykin, 2005; Millett, Malebranche, Mason, & Spikes, 2005; Thompson & Glaser, 2005; Wolitski, Jones, Wasserman, & Smith, 2006). In both cases, the authors postulated that self-perceived sexual orientation – specifically, beliefs indicating whether one is same-sex oriented – impact health-relevant behaviors.

There are a few possible explanations for these effects. Health messages targeted at men who have sex with men (MSM) and/or sexual minorities may not seem applicable men who actually have same-sex sexual experiences but do not hold beliefs that their sexual orientation includes same-sex attraction or behavior (Easterbrook et al., 1993; Goldbaum, Perdue, & Higgins, 1996; Lehner & Chiasson, 1998; Stokes, Vanale, & McKirnan, 1997). If a man does not perceive himself as the type of person who engages in same-sex behaviors, he is unlikely to listen to messages that target sexual minorities. Furthermore, messages may literally not reach men who do not identify with the groups for whom the messages are targeted because the messages are distributed in communities and locations where they will not be seen by those men (e.g., McKirnan, Stokes, Doll, & Burzette, 1995).

Finally, the same motivations that drive an individual to avoid holding beliefs about their sexual orientation indicating same-sex attraction or behavior may lead that individual to avoid engaging in preventative health behaviors. For instance, a recent study found that among MSM, the desire to be perceived by others as heterosexual was negatively associated with the likelihood of HIV testing (Parent, Torrey, & Michaels, 2012). Latino men have particularly strong cultural motivations to avoid perceiving themselves as gay. Latino men who identify as sexual minorities are likely to encounter very negative attitudes (Herek & Gonzalez-Rivera, 2006) and be subject to a variety of structural disadvantages, including poverty, discrimination, disconnection from family members, unemployment, and a lack of educational opportunities (see Padilla et al., 2008 for a review). As such, several studies have found that Latinos may choose to avoid disclosure of HIV status to female partners because doing so would be equated with revealing their same-sex sexual experiences (Padilla et al., 2008; Zea, Reisen, Poppen, Echeverry, & Bianchi, 2004).

By identifying the factors that influence beliefs about sexual orientation, the current approach can also be used to predict the likelihood of engaging in particular sexual health behaviors and, most importantly, identify the factors that may impede individuals from engaging in those behaviors. Health messages that acknowledge the sociocultural context of their target audience are much more successful than those that do not (Harper, 2007; Wilson & Miller, 2003). The current approach could aid in the creation of these types of specific messages that acknowledge the role of motivation and informational constraints on self-perceived sexual orientation.

Future Directions

This approach also suggests many future directions for research focused on the formation, maintenance, change, and consequences of self-perceived sexual orientation. First,

future research should test the fundamental aspects of this model among gay- and lesbian-identified samples. While I believe that the predictions of this model would be evidenced in studies using these samples, there are important differences between heterosexually identified and sexual minority populations in key factors of this approach. For instance, because to take on a sexual minority identity means one has to have rejected the compulsory assumption of heterosexuality, many gay- and lesbian- identified individuals have simply spent more time thinking about their sexual orientation than many heterosexually identified individuals (e.g., Konik & Stewart, 2004). If this is the case, it's possible that gay men and lesbians have thought more about how to interpret their sexual experiences – they have a clear understanding for when an experience is meaningful for their sexual orientation or not. As such, it's possible that contextual factors may have less impact on their self-perceived sexual orientation than those factors do on heterosexuals, at least for those gay men and lesbians who have spent a significant amount of time and effort thinking about their sexual orientation. Thus, a prediction within the present approach is that any differences between heterosexually identified and gay- and lesbian-identified participants in the susceptibility of their self-perceived sexual orientation to motivational cues could be accounted for by individual differences in the clarity of beliefs about the meaning of sexual experiences.

Another important direction for future research is to test the predictions of this approach at different stages of development. While I have focused the discussion herein to adults who have already adopted a particular sexual identity label, it is also possible that the predictions of this approach could be applied to children and adolescents in early sexual development. In the early stages of sexual development, there is a high degree of ambiguity in the meaning given to various experiences – both sexual and non-sexual – that can eventually be incorporated into

one's self-perceived sexual orientation. Previous theorists have proposed that children learn through the norms of their social environment to label their experiences with a particular sex as indicating erotic attraction, thus prompting a development of sexual orientation in line with those learned patterns (Bem, 1996; Storms, 1981). While those theorists were most interested in the acquisition of actual sexual arousal in response to particular stimuli, their theories can also be understood as describing how children learn to cognitively label their experiences.

The children of gay and lesbian parents provide one source of evidence for the early importance of motivational cues for self-perceived sexual orientation. Research indicates that these children are more open to same-sex exploration than the general population (e.g., Biblarz & Stacey, 2010; Stacey & Biblarz, 2001), especially if their parents are comfortable with and openly express their sexual orientation (e.g., Gartrell, Bos, & Goldberg, 2011). An openness to sexual exploration among the children of gay and lesbian parents seems to emerge more clearly in abstract measures of self-perceived sexual orientation than in more specific measures of same-sex behavior. Among 17-year old children of lesbian parents, 49% of women and 22% of men reported at least some degree of same-sex sexual interest (Gartrell et al., 2010). These percentages are considerably larger than the 18% of women and 8% of men aged 18-19 years who reported any same-sex sexual interest in the National Survey of Family Growth (Cycle 7; NSFG; Chandra et al., 2011). However, the differences between the same-sex behavior of the 17-year old children of lesbian parents and 18-19 year old adolescents in the NSFG (Cycle 7) were less pronounced (15% vs. 12% for women and 6% vs. 4% for men).

Future research should address not only the impact that motivational cues have on self-perceived sexual orientation early in development but also how the meaning given to sexual experiences early in development persists across time. For instance, if a young boy labels his

ambiguous feelings of attraction to his male best friend as irrelevant to his sexual orientation early on in his life, how long does that labeling persist? What type and strength of motivational cues are needed to change that labeling to indicate that he actually experiences same-sex sexual attraction? These and other questions could be addressed using longitudinal approaches.

Research should also address the mechanisms by which people may create a justification for motivationally biased self-perceived sexual orientation. Likely, any methods previously identified to support the maintenance of motivated cognitions in other domains could be usefully applied to the domain of self-perceived sexual orientation. Candidate methods include selective forgetting and retrieval (see Kudo, 2008 for a review), selective weighting (see Baumeister & Newman, 1994 for a review), compartmentalization or subtyping (Kunda & Oleson, 1995; Showers, 1992a, 1992b), and the manipulation of level of identification of sexual experiences (Trope & Liberman, 2010; Vallacher & Wegner, 1985).

Finally, future research should examine other consequences of motivational processes. For example, in cases in which people are motivated to hold beliefs about their sexual orientation that contradict their actual sexual behaviors, a person may cope with this motivating force by changing their social environment (see Gates, 2007). In the case of the man with frequent same-sex sexual attraction experiences who lives in a conservative environment, the conflict between the motivation to avoid stigma and the constraint of his experiences may become so great that he moves. By moving to an environment where people are supportive of same-sex sexuality, he can reconcile his self-perceived sexual orientation and experiences. As such, future work should also address the ability that people have to change their circumstances as a predictor of change in self-perceived sexual orientation.

Conclusion

The proposed motivated cognition approach to the study of self-perceived sexual orientation makes specific predictions about variability in self-perceived sexual orientation both between- and within- individuals, with reference to basic psychological processes that incorporate actual sexual experience and a variety of cultural, social contextual, and individual factors. Thus, the current approach can significantly contribute to our theoretical understanding of observed variability in self-perceived sexual orientation. It also offers an empirically useful framework for advancing research on the development, maintenance, change, and consequences of self-perceived sexual orientation.

CHAPTER III:

The Impact of Cues of Stigma and Support on Self-Perceived Sexual Orientation among Heterosexually Identified Men and Women

Abstract

Sexual orientation can be thought of as encompassing both actual sexual experience (e.g., behavior, attraction, fantasy) and beliefs about those experiences. I refer to those beliefs as self-perceived sexual orientation. I report the first experimental evidence that manipulating situational cues directly impacts self-perceived sexual orientation among heterosexually identified men and women. Across three studies that used distinct manipulations (both explicit and implicit), measured different outcomes, and sampled different ages, I found that cues of support for same-sex sexuality lead to self-perceived sexual orientation containing more same-sex sexuality than did cues of stigma against same-sex sexuality. I discuss the implications for understanding the role of factors outside of actual sexual experience in the development and maintenance of sexual orientation.

Keywords: sexual orientation; self-perception; motivated cognition; social stigma; social support

Though scientists and non-scientists often discuss sexual orientation as a unitary construct, sexual orientation is composed of multiple components (e.g., identity, attraction, behavior, fantasy; Savin-Williams & Ream, 2007), each of which may fluctuate across time and context (e.g., Diamond, 2008a). However, sexual orientation is also composed of two basic elements: actual sexual experiences of attraction, behavior, and fantasy, and personal *beliefs* about those sexual experiences. I refer to these beliefs as self-perceived sexual orientation. A woman might indicate on a survey that she identifies as heterosexual, is attracted to men, and yet is also somewhat attracted to women. This woman is reporting her self-perceived sexual orientation, that is, her beliefs about two aspects of her sexual orientation – her identity and attractions.

Self-perceived sexual orientation is partially tethered to actual sexual experiences – a woman may believe she is somewhat attracted to women because she experiences physiological arousal when around certain other women and has fantasies about sex with a female partner. I propose that self-perceived sexual orientation can also be influenced by factors outside of actual sexual experience. I argue that situational factors motivate people to hold self-serving perceptions of their own sexual orientation. There is correlational evidence for this hypothesis (e.g., Preciado & Peplau, 2011) and others have theorized about the influence of contextual factors on sexual orientation (e.g., Hammack, 2005), yet prior work has not demonstrated a causal link. Moreover, research has primarily focused on change in the self-perceived sexual orientation among individuals who identify as lesbian, gay and bisexual (e.g., Diamond, 2008a). I provide the first experimental evidence supporting a causal account of the influence of motivational factors on self-perceived sexual orientation among heterosexually identified women and men.

The Influence of Motivational Factors on Self-Perceived Sexual Orientation

People often believe what they want to believe about themselves (e.g., Gilovich, 1991; Kunda, 1990). Generally, people wish to believe that they are attractive, intelligent, and skilled (e.g., Critcher & Dunning, 2009; Taylor & Brown, 1988). Such motivated beliefs are maintained in part because of an ability to selectively focus on evidence that supports preferred beliefs (Critcher & Dunning, 2009; Kunda, 1990).

I propose that similar motivational processes shape self-perceived sexual orientation. A desire to avoid social stigma and to embrace social support, for example, may motivate people to think about their sexual orientation in a particular way. When the negative consequences that stem from stigma against same-sex sexuality (e.g., Herek, Cogan, & Gillis, 2002; Meyer, 2003) are salient, people may eschew perceptions of their sexual orientation that indicate same-sex attraction or experiences. Conversely, perceived social support for same-sex sexuality may embolden a person to interpret ambiguous same-sex experiences in a more open manner, indicating that they do experience same-sex sexuality.

Ambiguity in the relevance of sexual experiences to one's sexual orientation can facilitate motivated cognition. When deciding whether one experiences same-sex attraction a person can selectively focus on experiences that took place at different times or in different contexts. For example, a man might give more importance to his long-term relationship with his wife than to a fleeting same-sex affair that happened years ago. Additionally, ambiguity in the meaning of a sexual experience may also contribute to motivated cognition. For instance, while some may classify a same-sex kiss shared at a party as relevant to their sexual orientation, others may discount this behavior, reasoning that it was attributable to alcohol instead of to their sexual orientation. The meaning that people assign to sexual experiences varies by the context in which the experience occurs and the nature of the experience (e.g., Randall & Byers, 2003; Sanders &

Reinisch, 1999). Indeed, among heterosexually identified men and women, the line between a same-sex sexual attraction and a passionate level of admiration is often sufficiently blurry that it has prompted the coinage of new phrases: “girl crush” (see Rosenbloom, 2005) and “man crush” (see McKee, 2009).

Individual differences may also contribute to the impact of motivation on self-perceived sexual orientation. In a recent study, Preciado and Thompson (2012) found that the association between how much same-sex behavior women reported and their sexual identity was stronger among women who were more certain about and committed to their sexual orientation identity. For example, if high certainty and commitment women reported some same-sex behavior, they were more likely to identify as “mostly straight” or bisexual rather than as exclusively heterosexual. In contrast, women who were low in certainty and commitment showed no relationship between the amount of same-sex behavior they reported and the likelihood of identifying as “mostly straight” or bisexual. These results raise the possibility that some people, for instance those who are uncertain and uncommitted to their sexual identity, may be particularly susceptible to the influence of contextual factors on the interpretation of their sexual experiences’ relevance to their sexual orientation.

In summary, I predict that people’s self-perceived sexual orientation is directly influenced by contextual cues of stigma and support. I believe that this occurs because people are motivated to avoid stigma and seek support, thus interpreting their sexual orientation in self-serving ways consistent with that motivation. Ambiguity in the evidentiary basis of self-perceived sexual orientation facilitates motivated interpretations. Finally, because the proposed effects are grounded in basic social cognitive mechanisms, I predict that these effects will be the same for men and women.

I tested my prediction that cues of support for same-sex sexuality impel self-perceived sexual orientation toward more same-sex sexuality than do cues of stigma against same-sex sexuality for both male and female participants in three experiments using different methods and samples. In study 3, I also tested whether individual differences in certainty and commitment about one's sexual identity affect the impact of cues of support and stigma on self-perceived sexual orientation.

Study 1

Study 1 tested the impact of cues of stigma and support on self-perceived sexual orientation, measured using self-reports and a broad internet sample.

Method

Participants included 101 heterosexually identified individuals (37 men, 64 women; $M_{\text{Age}}=40$ years, $SD = 13.87$). Participants responded online to advertisements (posted on www.facebook.com and www.craigslist.org) that described the study as testing opinions about a socially relevant news article. All data were collected online via survey hosting websites.

Participants were randomly assigned to read of one of three “news articles” created for the study. The articles used the same basic format but key phrases were changed in each. The Stigma article, titled “Study Reveals American Anti-Homosexual Attitudes,” emphasized that Americans stigmatize same-sex sexuality. The Support article, titled “Study Reveals Americans are Comfortable with Homosexuality,” indicated that Americans support same-sex sexuality. The Control article, titled “Study Reveals Older Americans Still Enjoy Sex,” focused on sex, but did not mention stigma or support for same-sex sexuality and did not reference sexual orientation at all. All articles were text only and included no photographs.

After reading the article, participants completed several questions that measured their perceptions of the purpose, quality, and truthfulness of the article. Participants then completed measures of attitudes towards same-sex sexuality and other individual difference measures.

At the end of the survey, 3 dependent measures that assessed self-perceived sexual orientation were embedded in a demographics questionnaire. Participants characterized their personal experiences for each of three items, "My Sexual Behaviors," "My Sexual Attractions," and "My Sexual Fantasies," by using a continuous, unnumbered 13-point scale. The scale's endpoints and midpoint were anchored by "Exclusively Heterosexual" (1), "Equally Homosexual and Heterosexual" (7), and "Exclusively Homosexual" (13). These items were adapted from typical measures used to assess sexual orientation (e.g., Klein, Sepekoff, & Wolf, 1985). Because the effects described below were in the same direction for all three items, these three items were averaged to create one Same-Sex Sexuality Score (Cronbach's $\alpha = .66$). Higher numbers on the score indicate greater self-reported same-sex sexuality than lower numbers.

Not surprisingly, given the recruitment of heterosexually identified participants, this composite score was positively skewed (Skewness = 1.26). The data set included 3 outliers (values greater than 1.5 times the interquartile range, identified using box plots). To ensure that these outliers did not exert undue influence, I stratified the outcome variable by condition and Winsorized it at 2.5 *SDs* (Wilcox & Keselman, 2003). Details of the Winsorization process are included in the Appendix. The final Same-Sex Sexuality Score variable had a mean of 1.83 (*SD* = .10; range 1 – 5), indicating that, on average, participants rated their same-sex sexuality as just under 1 point above the lowest possible score on the 13-point scale.

Upon completion, participants were told the purpose of the study, debriefed, and given an opportunity to send questions to the experimenter.

Results and Discussion

All statistical models reported below were checked for violations of normality and homogeneity in the distribution of errors. All indices fell within acceptable ranges.

I initially used hierarchical regression to test whether participant sex moderated the effect of condition. As expected, the effect of condition (dummy coded into 2 vectors) did not vary by participant sex, $R^2\Delta = .01$, $F(2, 94) = .33$, $p = .719$. However, Same-Sex Sexuality Scores marginally differed by sex such that women had higher Same-Sex Sexuality Scores than men, $t(96) = 1.94$, $p = .060$. Consequently, I controlled for participant sex in the subsequent analysis.

I predicted that higher Same-Sex Sexuality Scores would be obtained in the Support Condition than in the Stigma Condition. To test this, I regressed Same-Sex Sexuality Score onto condition.

Same-Sex Sexuality Scores varied significantly by condition, $R^2 = .07$, $F(2, 96) = 3.47$, $p = .035$. Note that the effect of condition is significant even without controlling for participant sex, $R^2 = .07$, $F(2, 97) = 3.60$, $p = .031$. As predicted and seen in Figure 1, Same-Sex Sexuality Scores were significantly higher in the Support Condition ($EM = 1.76$, $SE = .29$) than in the Stigma Condition ($EM = 1.17$, $SE = .29$), $t(96) = 2.42$, $p = .017$.

Because I did not have specific predictions about the difference between the experimental conditions and the control condition, I adjusted for multiple comparisons to test differences relative to the control condition (Sidak, 1967). With this adjustment, the Support Condition was marginally higher than the Control Condition ($EM = 1.25$, $SE = .27$), $t(96) = 2.16$, $p = .065$, but the Stigma Condition did not differ significantly from the Control Condition, $t(96) = .34$, $p = .931$.

These findings provided initial support for the hypothesis that situational cues of Stigma/Support for Same-Sex Sexuality would influence self-perceived sexual orientation among both men and women, as measured using self-report measures often used in research on sexual orientation. Although the evidence from Study 1 is consistent with the hypothesis, I remained sensitive to the fact that self-reported same-sex sexuality might be particularly prone to demand characteristics¹. I examined self-perceived sexual orientation in a less direct way in Study 2.

Study 2

Study 2 tested the impact of cues of stigma and support on perceived attractiveness of same-sex targets. This outcome measure was less direct than the explicit self-reports of same-sex attraction used in Study 1, yet it tapped participants' motivation to report same-sex attraction.

Method

Participants included 106 heterosexually identified college students (40 men, 66 women; $M_{\text{Age}} = 19$ years, $SD = 1.34$). Participants were recruited for a laboratory study of opinions about different aspects of college life.

Participants were randomly assigned to read one of three sets of statistics about college life. These statistics were accompanied by an illustrative picture (e.g., a statistic regarding physical assault was accompanied by a picture of a young man with a black eye). In the Stigma Condition, statistics indicated that same-sex sexuality is stigmatized (e.g., "A recent study found that over 90% of non-straight students who drop out of college report that they were verbally or physically assaulted by another student because of their sexuality."). In the Support Condition,

¹ I sought to disguise the true purpose of the study by the subtle placement of the dependent measures within the demographic question items. Comments by participants suggested that this technique was successful. During debriefing, participants indicated their thoughts about the purpose of the study. Many had no insight whatsoever, but those who did stated that they thought the study sought to examine *attitudes* towards same-sex sexuality. No participant indicated that self-reports of sexual orientation were the focus of the study.

statistics indicated that same-sex sexuality is supported (e.g., “A recent study found that over 90% of non-straight college students report that they feel very accepted on their college campus.”). In the Control Condition, statistics presented neutral information about college (e.g., statistics about meal plans).

After reading the statistics, participants completed items that measured their attitudes about the statistics. Following these items, participants completed measures of attitudes towards same-sex sexuality and a demographics questionnaire.

The dependent measure followed in a separate task at the end of the study. Participants were told that they would be rating sexualized photographs taken from advertisements. They were shown 5 sexualized, though fully clothed, images of same-sex individuals, and they rated the physical attractiveness of each photo on a 5-point scale ranging from 1 (Not at All) to 3 (Somewhat) to 5 (Very). I asked participants to rate the physical attractiveness of the individual in each photo (as opposed to how physically attracted they personally were to the person in the photograph) because I was concerned about creating a threat response among heterosexually identified male participants. I reasoned that phrasing the measures more impersonally would promote honest responding. Photos were obtained from advertisements including models in sexualized positions or with sexualized clothing and from adult entertainment websites.

I used sexualized same-sex photos to create an ambiguous sexual experience and to avoid priming participants with heterosexuality, which might have counteracted the experimental manipulation. Ratings of attractiveness were high in internal consistency across the 5 photos (Cronbach’s $\alpha = .91$ for male photos, $.85$ for female photos). I created a Same-Sex Attractiveness Score by averaging each participant’s rating across the 5 photographs. This score was normally

distributed but had 2 outliers in the Support Condition (values greater than 1.5 the interquartile range, identified using box plots).

To account for the outliers, I stratified the outcome by condition and Winsorized the data at 2.5 *SDs* (Wilcox & Keselman, 2003). However, there were no values above 2.5 *SDs* above the mean, thus the process replaced no values. Thus, the final outcome variable had a mean of 2.80 (*SD* = 1.05), indicating that, on average, participants rated photographs close to “somewhat” attractive.

Upon completion, participants were told the purpose of the study, debriefed, and given an opportunity to ask questions.

Results and Discussion

All statistical models reported below were checked for violations of normality and homogeneity in the distribution of errors. All indices fell within acceptable ranges.

I initially used hierarchical regression to test whether the effect of condition varied by participant sex. As in Study 1, the impact of condition (dummy coded into 2 vectors) did not vary by participant sex, $R^2\Delta = .002$, $F(2, 91) = .105$, $p = .901$. However, there was a main effect of participant sex such that women participants gave higher Same-Sex Attractiveness Score ratings than did men, controlling for the effect of condition, $t(95) = 3.87$, $p < .001$. I controlled for participant sex in the subsequent analysis to account for its influence on the outcome.

I predicted that participants in the Support Condition would have higher Same-Sex Attractiveness Scores than would participants in the Stigma Condition. To test this, I regressed Same-Sex Attractiveness Score onto condition. This model was checked for heterogeneity and normality of error variance.

As seen in Figure 2, Same-Sex Sexuality Scores differed significantly by condition, $R^2\Delta = .06$, $F(2, 93) = 3.389$, $p = .038$. Note that the effect of condition is even stronger without controlling for participant sex, $R^2 = .10$, $F(2, 94) = 4.92$, $p = .009$. As predicted, Same-Sex Attractiveness Scores were significantly higher in the Support Condition ($EM = 2.20$, $SE = .32$) than in the Stigma Condition ($EM = 1.61$, $SE = .29$), $t(93) = 2.51$, $p = .014$.

To compare the experimental conditions to the control condition, I adjusted for multiple comparisons (Sidak, 1967). Neither the Support Condition, $t(93) = 1.84$, $p = .133$, nor the Stigma Condition, $t(93) = .60$, $p = .553$ differed significantly from the Control Condition ($EM = 1.75$, $SE = .28$), though trends were similar to Study 1. Specifically, the Support Condition elicited higher Same-Sex Attractiveness Scores relative to the Control Condition but the Stigma Condition's Same-Sex Attractiveness Scores were only slightly lower than in the Control Condition².

Studies 1 and 2 supported my hypothesis that cues of stigma and support would differentially impact self-perceived sexual orientation for both men and women. I found this pattern among samples of heterosexually identified adults and college students and using different manipulations and measures of self-perceived sexual orientation. The measure of perceived same-sex attractiveness in Study 2 was phrased objectively and, thus, was somewhat removed from *personal* perceptions of the attractiveness of targets. However, that I found effects with the more objective measure suggests that results might be even stronger with a more subjective measure of same-sex attractiveness. Although the outcome measure in Study 2 was

² Expected means for this analysis differed from the overall mean of the outcome because the expected means are adjusted for the effect of participant sex.

less direct than in Study 1, I remained aware that these findings may have been vulnerable to demand characteristics³. I further addressed this issue in Study 3.

Study 3

Study 3 tested the impact of *subliminal* cues of stigma and support on self-perceived sexual orientation. I predicted that, relative to subliminal cues of stigma, subliminal cues of support would shift self-perceived sexual orientation toward same-sex sexuality. I also assessed individual differences that might influence this process. Drawing on prior work (Preciado & Thompson, 2012), I assessed individual differences in participants' certainty about, commitment to, exploration of, and integration of their sexual orientation identity. I also assessed the tendency to think about and reflect on one's sexuality. I predicted that participants with a weaker sense of how to interpret their sexual experiences' relevance to their sexual orientation (i.e, those with high uncertainty, low commitment, high exploration, low integration, and little time spent thinking about their sexuality) would be most likely to be affected by subliminal cues of stigma and support.

Method

Participants included 130 heterosexually identified college students (38 men, 92 women; $M_{\text{Age}} = 20$ years, $SD = 2.55$). Participants were recruited for a laboratory study of attitudes and perceptions.

I adapted the manipulation from Murphy and Zajonc (1993). I described the manipulation as a test of rapid judgments of social targets. Participants were randomly assigned to one of four conditions: a Same-Sex/Angry Condition, Same-Sex/Happy Condition, a Furniture/Angry

³ As in Study 1, during debriefing, many participants provided no comments, but those who did indicated that they thought that the study examined attitudes towards same-sex sexuality. No participant indicated that self-reports of sexual orientation were the primary focus.

Condition, or a Furniture/Happy Condition. In each condition, participants completed 20 trials in which they viewed a fixation cross (1 sec), a subliminal prime (~16 ms), a visual mask (500 ms), and an image of either a male or female same-sex couple (in the Same-Sex Conditions) or a piece of furniture (in the Furniture Conditions; see Figure 3). Participants then indicated how much their peers would like that couple or piece of furniture on a scale from 1 (Strongly Dislike) to 4 (Strongly Like) (self-paced). The prime in the Angry Conditions depicted an angry face (selected randomly from a set of 4 angry male and 4 angry female faces); the prime in the Happy Conditions depicted a happy face (selected randomly from a set of 4 happy male and 4 happy female faces). All faces were taken from The NimStim set of facial expressions (Tottenham et al., 2009).

Immediately following the task, participants responded to 6 mood items (agitation, anger, calmness, happiness, pleasantness, and unhappiness) adapted from the Profile of Mood States (Pollock, Cho, Reker, & Volavka, 1979). Participants rated the degree to which they felt each mood at that moment on a scale of 1 (Not at All) to 4 (Extremely).

I reasoned that pairing either an angry or a happy face with the notion of peer attitudes towards same-sex couples, as indicated by the question regarding their peers' attitudes towards the same-sex couple viewed following the prime, would subliminally prime a sense of negative and positive attitudes towards same-sex sexuality, respectively. I utilized photos of furniture coupled with the angry and happy faces to test whether the effects were merely due to a manipulation of mood or a generalized response to perceived negativity/positivity. Based on the debriefing, the manipulation appeared to be subliminal. Only 3 of the 130 participants stated that they saw any image prior to each photograph of a same-sex couple. These participants were dropped from analyses.

Participants then completed a demographics questionnaire that included three dependent measures. Participants rated their own sexual behaviors, attractions, and fantasies on unnumbered 101-point visual analog scales, anchored at the endpoints and midpoint by "Exclusively Heterosexual" (0), "Equally Homosexual and Heterosexual" (50), and "Exclusively Homosexual" (100). As in Study 1, the effects were in the same direction for all three items, so they were averaged to create one Same-Sex Sexuality Score (Cronbach's $\alpha = .57$). Higher Same-Sex Sexuality Scores indicated that participants reported greater same-sex sexual behaviors, attractions, and fantasies than did lower scores. This variable was positively skewed (Skewness = 2.41) with 12 outliers (values greater than 1.5 the interquartile range, identified using boxplots).

To ensure that analyses were not unduly influenced by these outliers, the outcome variable was stratified by condition and Winsorized at 2.5 *SDs* (Wilcox & Keselman, 2003). Details of the Winsorization process are included in the Appendix. The final Same-Sex Sexuality Score variable had a mean of 2.29 (*SD* = 4.67; range 0 – 18.60), indicating that participants on average reported a low degree of same-sex sexuality.

Finally, participants completed two individual difference measures included to test whether the impact of condition was strongest among participants unlikely to have a strong sense of how to interpret the meaning of their sexual experiences. The Measure of Sexual Identity Exploration and Commitment (MoSIEC; Worthington, Navarro, Savoy, & Hampton, 2008) is composed of four scales assessing uncertainty (Chronbach's $\alpha = .565$), commitment (Chronbach's $\alpha = .695$), exploration (Chronbach's $\alpha = .829$), and integration (Chronbach's $\alpha = .816$). People high in uncertainty do not have clearly defined beliefs about their sexual orientation (sample item: "My sexual orientation is clear to me" [reverse coded]). People high in commitment are strongly committed to their current beliefs about their sexual orientation (sample item: "I have a firm

sense of what my sexual needs are”). People high in exploration actively explore different conceptions of their sexual orientation (sample item: “I am actively trying new ways to express myself sexually”). People high in integration have a strong desire for cohesiveness among different aspects of their sexual orientation such as their identity and behavior (sample item: “My sexual orientation is compatible with all the other aspects of my sexuality”). I also included the Sexual Consciousness scale of the Sexual Awareness Questionnaire (SAS; Snell, Fisher, & Miller, 1991) as a measure of participants’ tendency to think about and reflect on their sexuality (Chronbach’s $\alpha = .870$). Sample items include: “I’m very aware of my sexual feelings” and “I know what turns me on sexually.” Thus, individuals with lower sexual consciousness would be less likely to have a strong sense of how to interpret their experiences.

Upon completion, participants were told the purpose of the study, debriefed, and given an opportunity to ask questions.

Results and Discussion

All statistical models reported below were checked for violations of normality and homogeneity in the distribution of errors. All indices fell within acceptable ranges. I initially tested whether the judgments of the photographs differed as a function of condition. The interaction of stimulus type (Furniture or Same-Sex photos) and mood prime (Angry or Happy) did not interact to predict perceived peer attitudes towards the couple in the photograph, $F(1, 125) = .26, p = .61$. Moreover, judgments did not differ between the Angry and Happy Conditions for Same-Sex photos, $F(1, 81) = .53, p = .47$.

I then used ANOVA to test whether the stimulus type (Furniture or Same-Sex photos) and mood prime (Angry or Happy) interacted with participant sex to predict the Same-Sex Sexuality Scores. Analyses revealed a significant main effect of sex, $F(1, 116) = 4.86, p = .03$,

with female participants reporting more same-sex sexuality ($EM = 2.89, SE = .83$) than male participants ($EM = .83, SE = .79$), but sex did not interact significantly with condition in any of the following analyses. Because of the main effect, I maintained sex as a covariate in the following analyses.

I first examined whether there was a difference in Same-Sex Sexuality Scores between the Furniture and Same-Sex Conditions (collapsing across mood prime). Participants in the Furniture Conditions ($EM = 4.30, SE = .70$) reported significantly more same-sex sexuality than did participants in the Same-Sex Conditions ($EM = .59, SE = .52$), $F(1, 128) = 4.33, p = .040, \eta^2 = .033$. I then tested whether Same-Sex Sexuality Scores differed by mood prime. There was no significant difference in reports of same-sex sexuality between the Angry and Happy Conditions (collapsing across stimulus type), $F(1, 127) = .19, p = .666$.

However, the interaction of stimulus type and mood prime was significant, $F(1, 113) = 5.76, p = .02, \eta^2 = .049$. I deconstructed the interaction by examining the difference between the Angry and Happy Conditions within the Furniture and Same-Sex Conditions, separately. Within the Furniture Conditions, the difference between the Angry and Happy Conditions in reports of same-sex sexuality was not significant, $F(1, 43) = 1.55, p = .220$.

However, in the Same-Sex Conditions, there was a significant difference between the Angry and Happy Conditions, $F(1, 69) = 5.95, p = .020, \eta^2 = .079$. As expected, participants reported more same-sex sexuality in the Happy Condition ($EM = 1.33, SE = .36$) than in the Angry Condition ($EM = .02, SE = .41$). This difference remained significant without controlling for sex, $F(1, 70) = 5.87, p = .018, \eta^2 = .077$.

I also tested whether, within the Same-Sex Conditions, the difference between the Angry and Happy Conditions was due to a manipulation of mood. I examined the correlations between

Condition (0=Angry, 1=Happy) and the mood items. The only items to show a significant relationship with condition were happiness, $r = -.231$, $p = .034$, and pleasantness, $r = -.219$, $p = .045$. However, neither of these mood measures was significantly related to reports of same-sex sexuality, all r s $< .15$, all p s $> .15$, and the effect of condition remained strong and significant, even after controlling for mood, $F(1, 67) = 5.19$, $p = .026$, $\eta^2 = .072$.

In a secondary analysis, I also tested whether the effect of the support/stigma manipulation was strongest among participants who were likely to experience ambiguity regarding the interpretation of their sexual experiences. I did this by examining the difference between the Angry and Happy Conditions for the Same-Sex photos, as moderated by each of the five individual differences I measured. It should be noted that the mean scores of the individual difference measures did not vary by condition, all t s $< .80$, all p s $> .400$.

Using multiple regression, I found a significant interaction of Condition and the Uncertainty subscale of the MoSIEC, $b_{\text{int}} = 2.80$ ($SE = 1.08$), $t(67) = 2.61$, $p = .011$, $R^2\Delta = .073$. Specifically, I found that for participants who scored average or high in Uncertainty (1 SD above the mean), the difference between the Angry and Happy Conditions was significant, all t s > 3.50 , all p s $< .005$. However, for those participants low in Uncertainty (1 SD below the mean), the difference between the Angry and Happy Conditions was not significant, $t(67) = -.05$, $p = .961$. See Figure 4. No other interactions were statistically significant⁴.

Study 3 provides evidence that cues from the social environment impact self-perceived sexual orientation among men and women, even when they are perceived subliminally. While the subliminally perceived angry and happy faces did not significantly impact the judgments of

⁴ Two interactions were marginally significant. The interactions of Condition and Sexual Consciousness, $b_{\text{int}} = -1.59$ ($SE = .89$), $t(67) = -1.79$, $p = .077$, $R^2\Delta = .038$, and the interaction of Condition and Integration, $b_{\text{int}} = -1.69$ ($SE = .97$), $t(67) = -1.74$, $p = .087$, $R^2\Delta = .038$. Neither the interactions of Condition and Commitment, $b_{\text{int}} = -.801$ ($SE = .99$), $t(67) = -.809$, $p = .422$, nor the interaction of Condition and Exploration, $b_{\text{int}} = .778$ ($SE = .72$), $t(68) = 1.084$, $p = .282$, was statistically significant.

individual same-sex couples, the coupling of the concept of same-sex sexuality and happy/angry faces did significantly impact self-perceived sexual orientation. While participants reported less same-sex sexuality in the same-sex conditions than in the furniture conditions, within the same-sex condition, participants reported more same-sex sexuality in response to a subliminally primed happy face than a subliminally primed angry face.

Moreover, Study 3 provided preliminary evidence supporting the proposed mechanisms of these effects: contextual cues can motivate people to interpret their sexual experiences in a particular way, leading to self-perceived sexual orientation consistent with a motivated perception. I found that participants who reported uncertainty regarding their understanding of their sexuality were especially likely to show an effect of condition on their self-perceived sexual orientation, indicating that those without well-formed beliefs about their sexual orientation are particularly susceptible to motivated interpretations of their sexual experiences.

General Discussion

I have provided the first experimental evidence that factors outside of actual sexual experience causally shape self-perceived sexual orientation. The fact that these short manipulations, delivered via text and images, affected self-report measures of sexual orientation is noteworthy. In everyday life, cues of societal stigma or support, such as actually hearing homophobic statements uttered by close friends or family members (e.g., Anhalt & Morris, 1998), are likely to have a larger impact on people's self-perceived sexual orientation than reading statistics on a computer screen or experiencing a subliminal priming manipulation.

In all three studies, situational cues of stigma/support for same-sex sexuality altered self-perceived sexual orientation. In Study 3, this effect was shown to occur only when cues of positive and negative peer attitudes were linked to same-sex sexuality. I did not find an effect of

situational cues on self-perceived sexual orientation when they were linked to photographs of furniture. In Studies 1 and 2 in which the control condition was intended to be a baseline to which the experimental conditions could be compared, only support cues led to differences relative to a control condition. This asymmetric effect may be in part explained by the relatively small size of these samples, reducing my power to detect small but significant differences between cues of stigma and the control conditions. However, it also seems likely that the stigma manipulations were similar to participants' expectations, especially given that stigma against same-sex sexuality is widespread in the U.S. today (CBS, 2011). Supporting this view, in Study 1, the stigma article was rated as significantly more believable ($M = 5.00$, $SE = .27$) than was the support article ($M = 4.10$, $SE = .27$), $t(61) = 2.38$, $p = .021$. Perhaps the best way to assess the relative impact of cues of stigma and support would be to look for change within participants over time, accounting for participants' baseline levels of same-sex sexuality and perceived stigma/support. Future research should utilize both longitudinal and experimental methods to assess the differential impact of cues of stigma and support relative to baseline.

The present research also obtained effects using both explicit and implicit manipulations of perceived stigma against and support for same-sex sexuality. The implicit manipulation in Study 3 helps assuage concerns about demand characteristics and also suggests that less overt cues of stigma and support in one's social context may contribute to self-perceived sexual orientation. While openly anti-gay sentiment may certainly motivate people's interpretations of their sexual experiences, the results of Study 3 suggest that even subtle facial expressions indicating distaste for same-sex sexuality may impact self-perceived sexual orientation.

Interestingly, while subliminally presented happy and angry faces coupled with same-sex couples in Study 3 did affect self-reported sexual orientation, they did not impact reported peer

attitudes towards the individual same-sex couples. It is possible that other factors likely to influence judgments of individuals (e.g., attractiveness; Dion, Berscheid, & Walster, 1972) were stronger than the effect of the subliminally primed faces. Alternately, participants' perceptions of their peers' attitudes, with which they are likely to have much experience, may have been less easily influenced by the manipulation than their perceptions of broader attitudes towards same-sex sexuality. Future research should investigate the relative impact of perceived peer attitudes and broader societal attitudes towards same-sex sexuality on self-perceived sexual orientation.

A strength of this research is that all three studies used different measures of self-perceived sexual orientation. Study 1 used a 13-point self-reported same-sex sexuality scale; Study 2 used a measure of perceived attractiveness of same-sex targets; and Study 3 used a 101-point self-reported same-sex sexuality visual analog scale. Because previous research has found that self-reported sexual orientation can vary depending on the method of measurement (Hayes et al., 2012; Savin-Williams, 2006), the fact that I found consistent effects across three different measures is noteworthy. Moreover, in Study 3, tangential to the predictions, I found a large difference in self-reported sexual orientation between those participants who had just viewed pictures of furniture relative to those who had just viewed pictures of same-sex couples. Given that participants were heterosexually identified, viewing pictures of same-sex couples may have made them feel that they experienced relatively less same-sex sexuality as compared to those couples, suppressing what they would have reported had they seen pictures of furniture. This suggests that self-reported sexual orientation is highly sensitive to information that may be perceived as irrelevant to measurement. Those wishing to assess sexual orientation using self-reports should pay particular attention to the cues of social stigma and/or support created by the measurement context or other information included in the survey or study. For instance, research

that first assesses perceived stigma towards same-sex sexuality in respondents' social context and then assesses the respondent's own sexual orientation may inadvertently motivate participants to avoid reporting same-sex experiences.

Another strength of this research is that the effects of stigma and support were found among samples of heterosexually identified individuals of varying ages recruited from both college and the Internet. While prior research on change in self-perceived sexual orientation has focused on those identifying as lesbian or bisexual (e.g., Diamond, 2008b), the present research indicates that social context can also impact the self-perceived sexual orientation of heterosexually identified individuals. Indeed, because the proposed effects are situated in basic social cognitive processes, I expect that these effects should extend to those who identify as gay, lesbian, and bisexual, as well. Specifically, I would expect that the effects of stigma and support on self-perceived sexual orientation depend on two factors: (1) an individual's ability to interpret their sexual experiences in self-serving ways and (2) the type of interpretation that will best support a self-perception that is viewed positively within that individual's current social context. For instance, while many lesbian-identified women have had sexual experiences with men (e.g., Hany 1983), the fact that these heterosexual relationships occurred in the past allows women to discount their importance for their current identity (Whisman, 1996). This tendency to disregard other-sex experiences may reflect pressure for lesbian women to perceive themselves as "real" lesbians as opposed to women temporarily experimenting with same-sex sexuality (e.g., Rust, 1992).

I predicted and found that men and women responded similarly to situational cues of stigma and support. In contrast, prior correlational research has been interpreted as indicating that men's sexuality is less susceptible to contextual effects than women's (for reviews see

Baumeister, 2000 and Peplau, 2003). Others have theorized that “one of the fundamental, defining features of female sexual orientation is its *fluidity*” (Diamond, 2008b, pp. 3). To my knowledge, this research provides the first experimental tests of the impact of context on men and women’s self-perceived sexual orientation. The results suggest that men’s self-perceived sexual orientation may be subject to the same interpretational process as women’s. Social cues appear to influence how both men and women interpret their same-sex experiences.

One possible explanation is that the differences observed between the sexuality of men and women in other studies stems less from individuals’ susceptibility to social influence and more from differences in the societal context for men and women. It has frequently been noted that violations of gender norms result in more negative consequences for men than women (e.g., Eisler & Blalock, 1991; Pleck, 1981; 1995). Indeed, heterosexual men’s attitudes are more negative toward gay and bisexual men than toward lesbians and bisexual women (Herek, 2002). In these studies, the only gender differences that emerged were main effects such that heterosexually identified men reported less same-sex sexuality than did heterosexually identified women. This difference may reflect general differences between men and women’s social contexts, although previous research also suggests that women experience more bisexual patterns of physiological attraction than do men (Chivers, Rieger, Latty, & Bailey, 2004; Chivers, Seto, & Blanchard, 2007). Future research should more closely examine the impact of contextual cues of stigma and support on men’s self-perceived sexual orientation.

Finally, in Study 3, I found that those participants who were uncertain about their sexual identity were most susceptible to the manipulation of contextual cues. This result suggests that individuals with a weak sense of the relevance of their sexual experiences to their sexual orientation may be particularly vulnerable to the effect of contextual cues on the motivated

interpretation of their sexual experiences. It should be noted, however, that the uncertainty scale had low reliability (Cronbach's $\alpha = .565$), and the other individual difference measures I assessed did not significantly interact with the stigma/support manipulations. So, while the present research provides some suggestive evidence for the role of individual differences in the susceptibility of self-perceived sexual orientation to contextual cues, future research should more closely examine the effect of perceived ambiguity of sexual experiences on self-perceived sexual orientation. It would also be useful to determine whether the moderating effects of individual differences in beliefs about one's sexual orientation identity and sexuality can be replicated from more general individual differences in the tendency to process information clearly and categorically. Previous research has examined the relationship between Personal Need for Structure (Neuberg & Newsom, 1993) and self-perceived sexual orientation, finding that women higher in need for structure report significantly less same-sex sexuality than those lower in need for structure (Preciado & Peplau, 2011). Future research could also examine other related individual differences, such as need for cognitive closure (Kruglanski, Webster, & Klem, 1993; Webster & Kruglanski, 1994). Based on previous research, I would expect that individuals with a greater preference for order and structure and greater discomfort with ambiguity in information processing and judgment would have a more difficult time interpreting their sexual experiences in self-serving ways, resulting in a diminished relationship with contextual cues of stigma and support.

Likewise, it would be useful to investigate developmental effects on the perceived ambiguity of sexual experiences. I might expect that older individuals would experience less ambiguity regarding their sexual experiences than would younger individuals still developing

their understanding of their own sexual orientation. Thus, younger individuals might be more susceptible to contextual cues of stigma and support.

The inclusion of physiological measures in future research could also shed light on the role of ambiguity in the influence of social context on self-perceived sexual orientation. People vary in the specificity of their physiological reactions to same-sex stimuli, other-sex sexual stimuli, or both (e.g., Chivers et al., 2004, 2007; Rieger, Chivers, & Bailey, 2005). A lack of consistency of physiological reactions may offer those individuals greater flexibility in interpreting their sexual experiences of attraction in self-serving ways, thus increasing the effect of contextual cues of stigma and support on self-perceived sexual orientation.

Conclusion

Prior work has theorized that self-perceived sexual orientation is not a pure reflection of one's sexual experiences, yet until now evidence of the impact of contextual cues on self-perceived sexual orientation was based solely on correlational research. These experimental studies provide a first step in understanding the process by which factors outside of actual sexual experience influence sexual orientation. These results shed light on the social cognitive mechanisms underlying change in self-perceived sexual orientation across time and context (e.g., Diamond, 2008a). While some have proposed that particular individuals may have a unique capacity to experience change in their sexual orientation across time and context (e.g., Diamond, 2008b), this research suggests that these changes may also arise from basic processes of motivated cognition in people's beliefs about their sexual orientation.

As researchers attempt to understand the ways in which both biological and situational factors influence sexual orientation (e.g., Hammack, 2005; LeVay, 2011), this cognitive approach may prove useful. While biological factors may influence basic physiological reactions

to male and female sexual stimuli, it is important to remember that individuals must give *meaning* to those reactions. The interpretations that individuals give to their experiences of arousal, attraction, and sexual behavior are influenced by social contextual factors, such as the perception of stigma against or support for same-sex sexuality. I believe that both actual sexual experiences and beliefs about those experiences should be studied as important and distinct yet related constructs. This approach offers novel predictions and, importantly, a way to reconcile biological and social contextual research on sexual orientation.

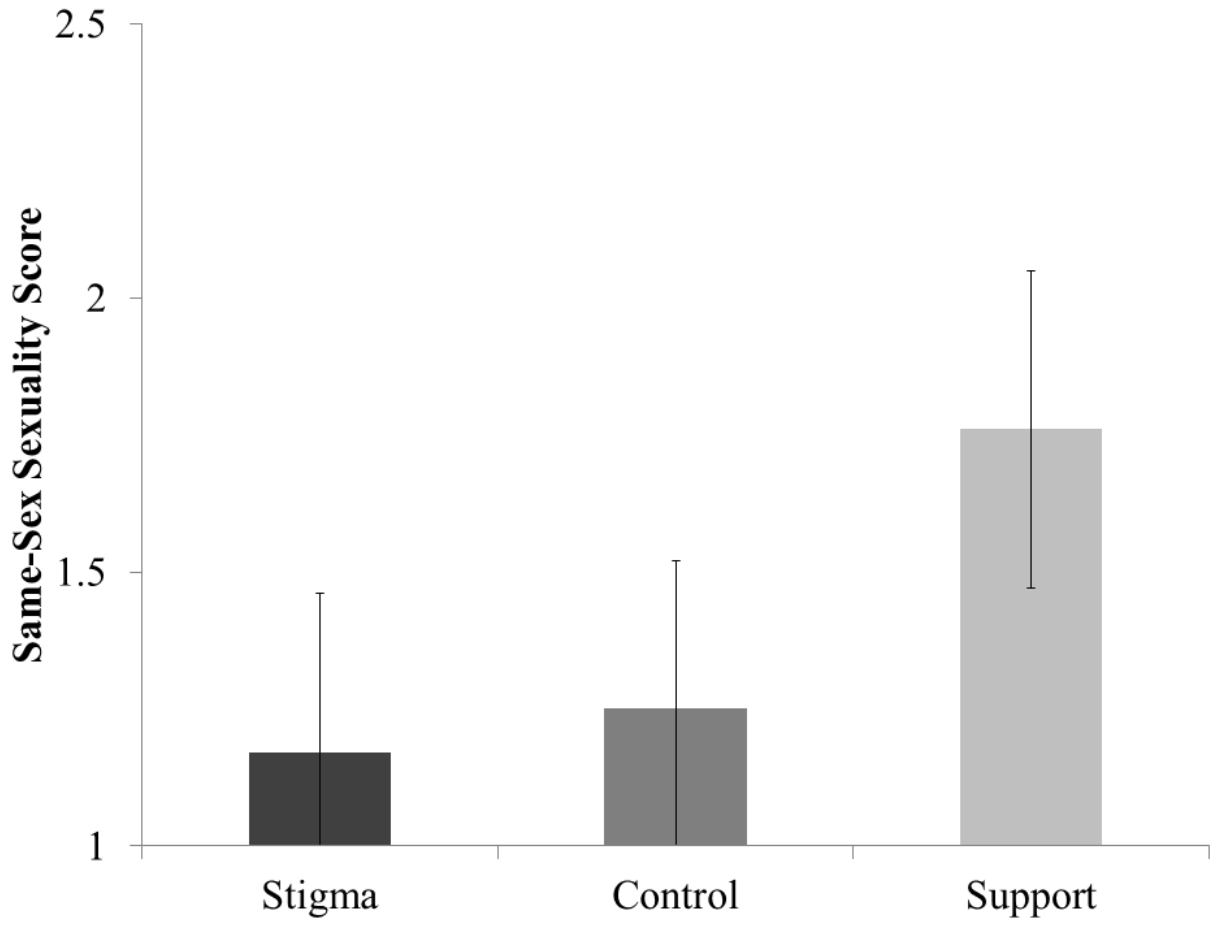


Figure 1. Predicted means of Same-Sex Sexuality Score by condition, estimated collapsed across participant sex in Study 1.

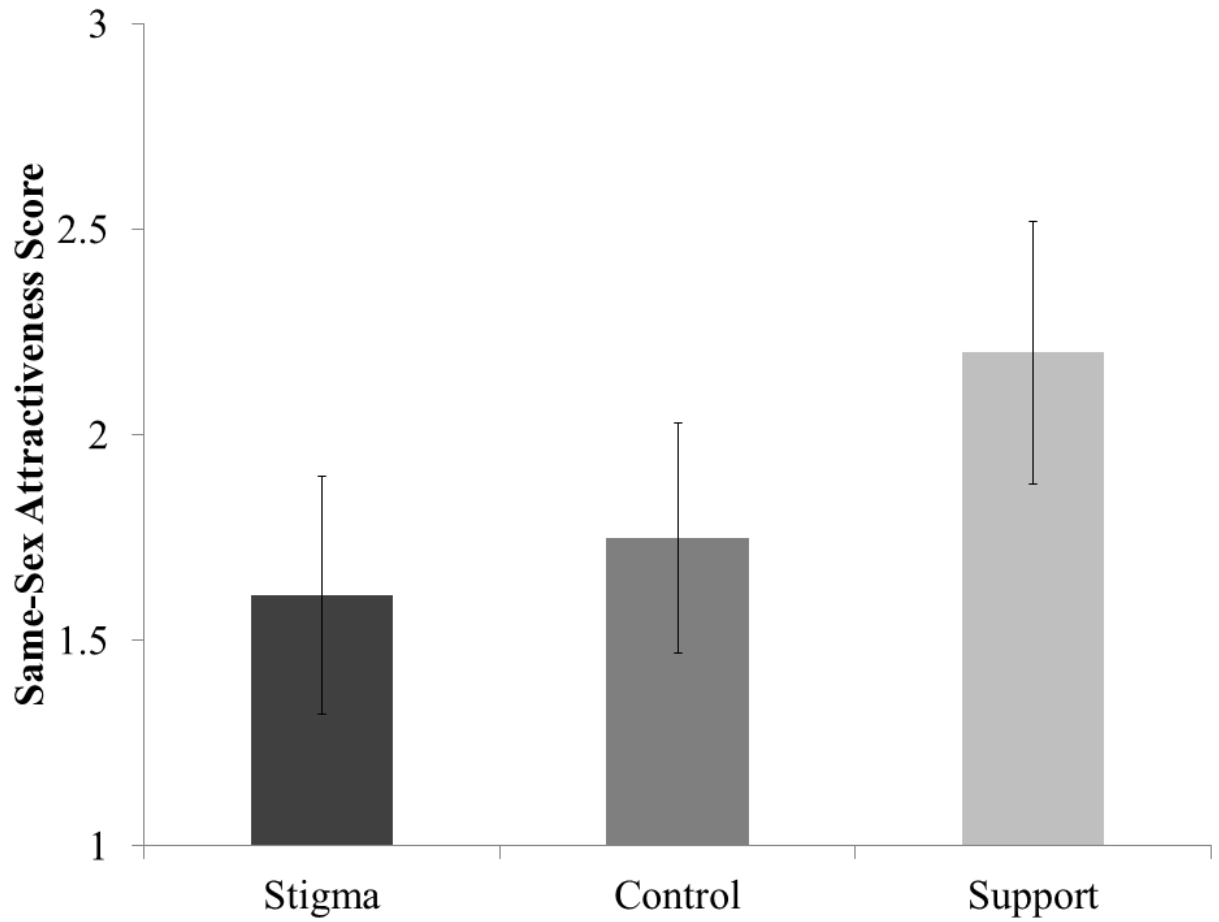


Figure 2. Predicted means of Same-Sex Attractiveness Score by condition, estimated collapsed across participant sex in Study 2.

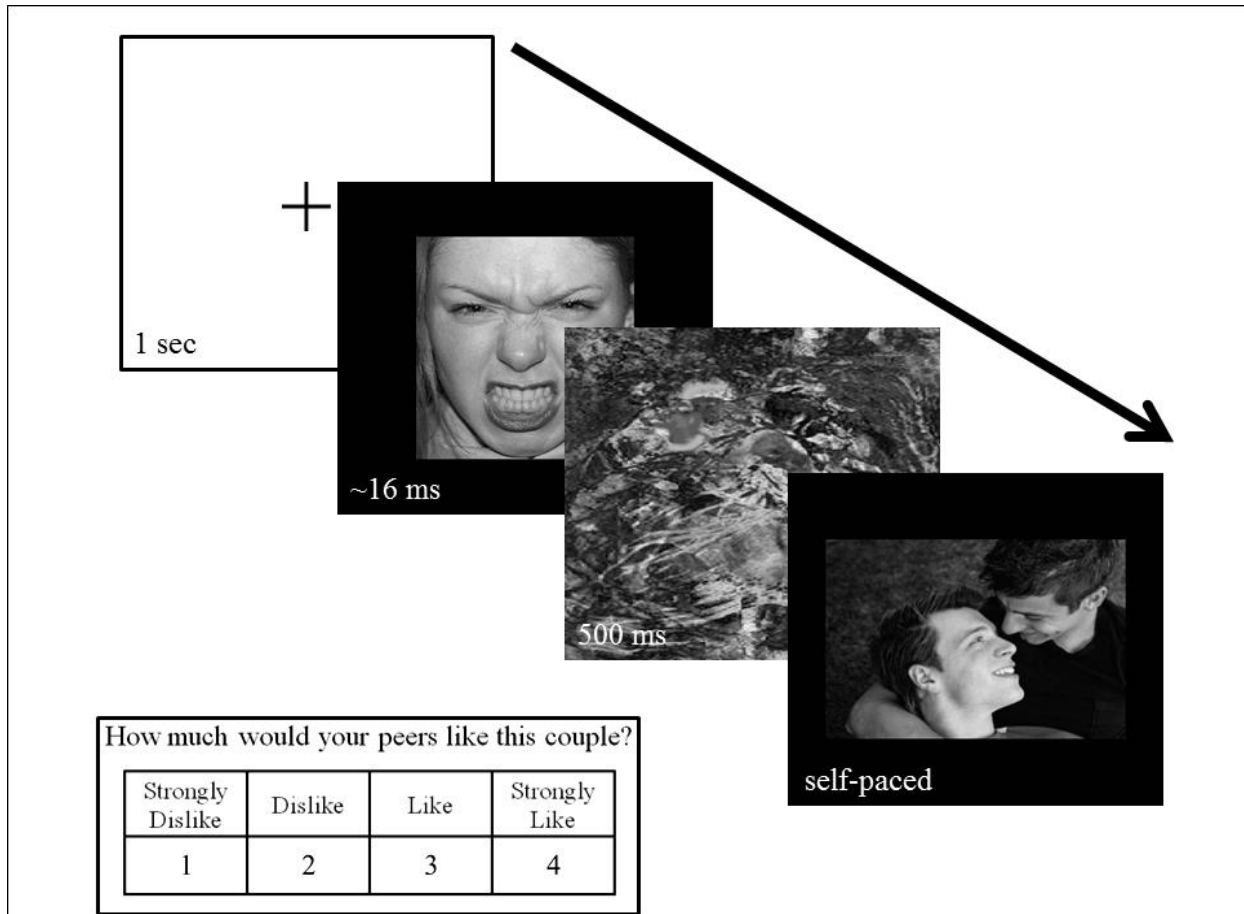


Figure 3. An illustrative trial from the subliminal manipulation in Study 3.

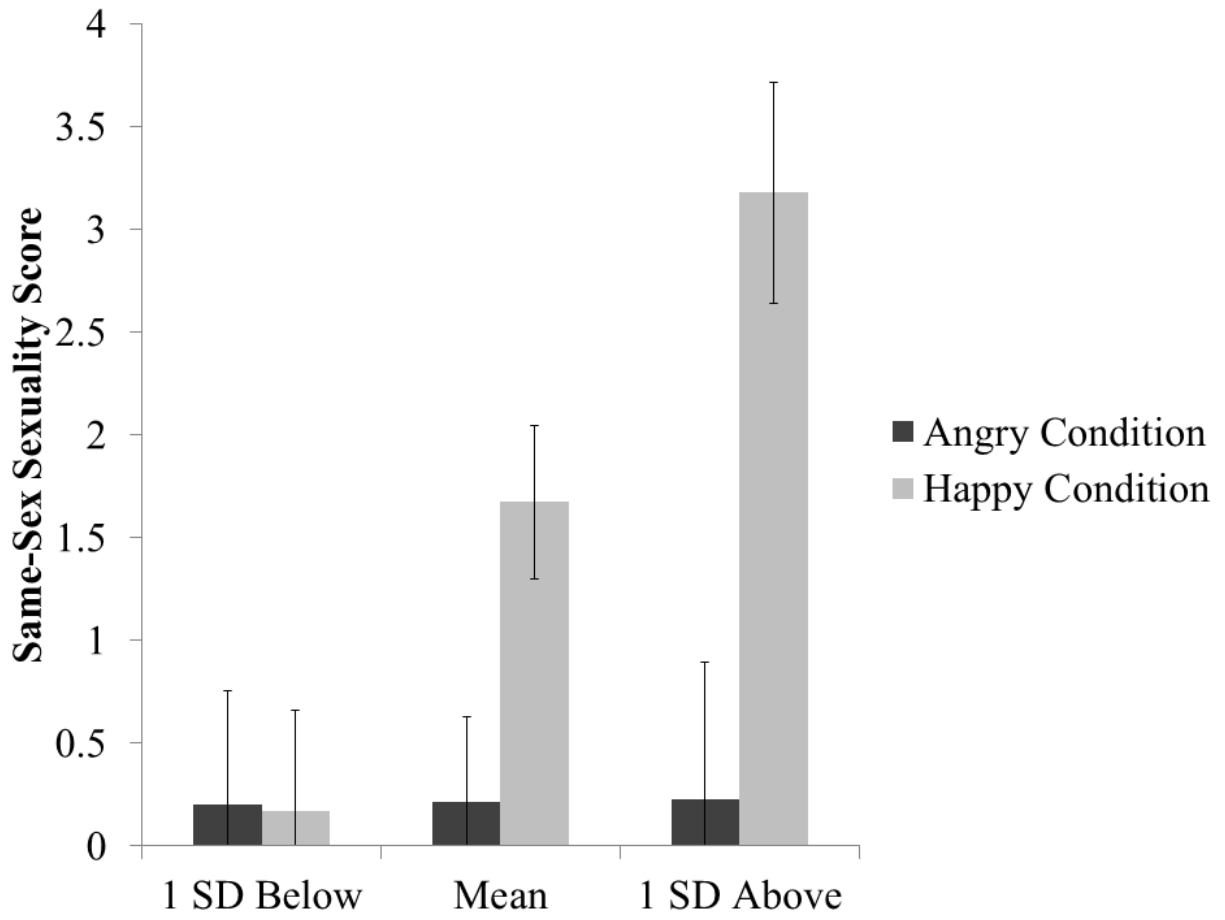


Figure 4. Predicted means of Same-Sex Sexuality Score by condition, stratified by level of sexual identity uncertainty, controlling for participant sex in Study 3.

Appendix

Study 1 – Analytical Details

The Winsorization procedure replaced any values above 2.5 *SDs* above the mean with the next value in the dataset. This replaced 2 values in the Stigma Condition, 0 values in the Support Condition, and 1 value in the Control Condition. I then re-examined boxplots to identify and eliminate any remaining extreme values (i.e., values greater than three times the interquartile range; there were none). I present analyses for the Winsorized data, but it is important to note that all analyses were conducted on both the original and Winsorized data set. The effects were comparable.

Study 3 – Analytical Details

The Winsorization replaced 4 values in the Stigma Condition and 4 in the Support Condition. I then examined boxplots to identify and eliminate any remaining extreme cases. I eliminated 5 cases identified by boxplots as extreme (3 times the inter-quartile range) in the Stigma Condition. I present analyses for the Winsorized data, but it is important to note that all analyses were conducted on both the original and Winsorized data set. While analyses conducted on the original data set did not result in significant differences between the Same-Sex Conditions, the trends in the data were in the hypothesized direction.

CHAPTER IV:

The Relationship between Perceived Social Prevalence of Same-Sex Sexuality and Self-Perceived Sexual Orientation among Heterosexually Identified Men and Women

Abstract

People's beliefs about their sexual orientation are undoubtedly influenced by their actual sexual experiences. However, self-perceived sexual orientation can also be influenced by factors outside of sexual experience. Using a sample of college-aged heterosexually identified men and women, the present study examined the relationship between self-perceived sexual orientation and the perceived prevalence of same-sex sexuality among self-relevant others (family, friends, college and hometown). Results indicate that perceived prevalence of same-sex sexuality was positively related to self-perceived sexual orientation, beyond what was explained by self-reported same-sex experience. Perceived prevalence among people who are especially salient during adolescence (i.e., high school best friend and average hometown citizen) was most strongly and uniquely related to self-perceived sexual orientation. Similar patterns emerged for both men and women, suggesting a common mechanism by which perceived prevalence of same-sex sexuality affects self-perceived sexual orientation.

Keywords: sexual orientation, self-perception, social influence, same-sex behavior

Human sexual orientation consists of two components: one's actual sexual experiences of attraction, fantasy, and behavior, and one's beliefs about those sexual experiences.

Undoubtedly, whether a person believes they are attracted to people of the same sex is influenced by the existence and frequency of same-sex attraction that person has experienced. However, people's beliefs about their sexual orientation can also be influenced by factors outside of their actual experiences (e.g., Preciado, Johnson, & Peplau, 2013; Preciado & Peplau, 2011).

Specifically, people's interpretation of their sexual experiences may serve motivational goals to maintain a desired self-conception. Here, I examine one factor that may be related to how heterosexually identified individuals interpret their same-sex experiences and understand their own sexual orientation: the perceived prevalence of same-sex sexuality among self-relevant others.

Motivated Interpretations of Same-Sex Sexual Experiences

There is a great deal of evidence that some people who sexually identify as heterosexual experience some degree of same-sex sexual attraction, fantasy, and/or behavior (e.g., Hayes et al., 2012; Laumann, Gagnon, Michael, & Michaels, 1994; Gates, 2011; Savin-Williams & Ream, 2007; Vrangalova & Savin-Williams, 2010). For instance, an analysis of over 13,000 respondents from the United States showed a sizable discrepancy between self-reports of identity and self-reports of attraction. While only 6.3% of women and 4.3% of men identified as anything other than heterosexual or straight (e.g. gay, bisexual), 16.7% of women and 6.5% of men reported at least some degree of attraction to same-sex others (Chandra, Mosher, Copen, & Sionean, 2011).

The discrepancy between sexual identity and attraction may stem in part from ambiguity in the meaning of a same-sex experience. Situational factors may serve to justify same-sex

experience, reducing the perceived relevance of an act for one's sexual identity. In one study, heterosexually identified men who reported a same-sex sexual encounter in the previous year tended to cite extenuating circumstances (e.g., a fight with a female partner or substance abuse) to explain their behavior as irrelevant to their identity (Reback & Larkin, 2010). Age and lifespan development may also make a difference. For instance, because of the perception that the college years are characterized by sexual experimentation, particularly for women (e.g. Thompson, 2007), some may feel that same-sex experiences in college are less important to their identity than those that occur after graduation. Further, people vary in their beliefs regarding whether certain experiences should be characterized as "sex" (e.g., Randall & Byers, 2003). While a majority of people agree that penile-vaginal intercourse is sex, one study found that only 38% of women and 44% of men agreed that oral sex constitutes sex (Sanders & Reinisch, 1999).

This ambiguity inherent in both the definition of sexual activity and its relevance for one's sexual orientation may enable people to selectively focus on and interpret their sexual experiences in motivated ways that protect preferred self-perceptions – a tendency that is widespread (e.g., Gilovich, 1991; Kunda, 1990). Given that same-sex sexuality is widely stigmatized (Herek, Cogan, & Gillis, 2002; Meyer, 2003), it is not surprising that people might be motivated to view their sexual orientation as heterosexual, regardless of whether they have actually experienced sexual encounters with same-sex others. Indeed, self-perceived sexual orientation can vary in response to perceived stigma against same-sex sexuality (Preciado, Johnson, & Peplau, 2013) and to the desire to perceive the self as exclusively heterosexual (Preciado & Peplau, 2011). For instance, a man who finds himself attracted to his male best friend in college may be motivated to disregard the relevance of his attraction for his sexual orientation if he comes from a conservative family that stigmatizes homosexuality. On the other

hand, a woman who shares a kiss with another woman while at a high school party may interpret that experience as indicating same-sex attraction if her circle of friends advocates a more fluid conceptualization of sexual orientation.

Perceived Prevalence of Same-Sex Sexuality as an Indicator of Motivation

Another factor that may indicate a motive to a particular interpretation of same-sex experiences is the perceived prevalence of same-sex sexuality among self-relevant others. For instance, if a man experiences some same-sex attraction but perceives that no one he knows experiences any same-sex attraction, he may be less inclined to interpret his own ambiguous same-sex experiences as relevant to his sexual orientation. In contrast, individuals whose friends or family members are gay or who express support for same-sex sexuality may be more likely to interpret their own experiences of same-sex sexuality as relevant to their sexual orientation. This relationship between the perceived prevalence of same-sex sexuality and self-perceived sexual orientation could be causal (i.e., individuals perceive greater same-sex attraction in themselves because they feel enabled to do so by their beliefs about other's sexual orientation) or it could represent a broader perception of the supportiveness of the social context. For instance, an individual may both perceive that they and others experience more same-sex attraction because their social environment provides cues indicating the acceptability of same-sex attraction.

The children of gay and lesbian parents provide one source of evidence for the relationship between the perceived prevalence of same-sex sexuality and self-perceived sexual orientation. A preponderance of evidence demonstrates that the children of gay and lesbian parents are as well-adjusted and happy as the children of heterosexual parents (e.g., Bos, van Balen, & Van den Boom, 2007; Golombok, 2007; Lavner, Waterman, & Peplau, 2012; Tasker, 2005). At the same time, these children are also more open to same-sex exploration than the general population (e.g.,

Biblarz & Stacey, 2010; Stacey & Biblarz, 2001), especially if their parents are comfortable with and openly express their sexual orientation (e.g., Gartrell, Bos, & Goldberg, 2011).

An openness to sexual exploration among the children of gay and lesbian parents seems to emerge more clearly in self-perceived sexual orientation than in actual same-sex experience. Among 17-year old children of lesbian parents, 49% of women and 22% of men reported at least some degree of same-sex sexual interest (Gartrell et al., 2010). These percentages are considerably larger than the 18% of women and 8% of men aged 18-19 years who reported any same-sex sexual interest in the National Survey of Family Growth (Cycle 7; NSFG; Chandra et al., 2011). However, the differences between the same-sex behavior of the 17-year old children of lesbian parents and 18-19 year old adolescents in the NSFG (Cycle 7) were less pronounced (15% vs. 12% for women and 6% vs. 4% for men).

Gay and lesbian parents who are comfortable with their own sexuality provide positive social models of same-sex sexuality that may contribute to their children interpreting their own experiences of same-sex attractions as relevant to their sexual orientation. More generally, the perception that self-relevant others experience same-sex sexuality, especially among others from the critical period of adolescent sexual development, may be important indicators of the motivational cues that shape self-perceived sexual orientation.

Present Research

I predicted that the degree to which people perceive that same-sex sexuality occurs among self-relevant others (referred to henceforth as *perceived prevalence*) would be associated with self-perceived sexual orientation. Specifically, I predicted that greater perceived prevalence would be associated with an increased tendency to report same-sex sexual attraction, even controlling for one's actual same-sex experiences. I believed that this effect would occur because

motivational cues affect the likelihood that one's own same-sex experiences will be interpreted as relevant to one's sexual orientation. Thus, I expected that the positive relationship between perceived prevalence and self-perceived sexual orientation would be present only for those who actually had same-sex experiences. Because the proposed mechanism concerns the cognitive interpretation of sexual experiences, I did not expect these effects to differ between men and women.

Finally, I tested the relative strength of the relationship between self-perceived sexual orientation and different sources of perceived prevalence (e.g., family members, friends). I expected that those sources most relevant during the sexually critical period of adolescence (specifically family members, high school friends, and average hometown citizen) would be most strongly predictive of self-perceived sexual orientation.

Method

In accordance with the suggestions of Simmons, Nelson, and Simonsohn (2012), I report how I determined my sample size, all data exclusions (if any), all manipulations, and all measures in the study.

Participants

Participants were 167 heterosexually identified undergraduates from a large public university in southwestern United States (48% female, 52% male) who participated in exchange for course credit. I recruited participants for the entirety of one academic year. Fourteen non-heterosexually identified participants were excluded from this study because there were not enough in that sample to conduct analyses regarding the differences between heterosexually identified and non-heterosexually identified participants, and I did not want to ignore potential differences between the groups. Participants were mostly Asian/Pacific-Islander (45%),

Caucasian (26%), or Latino(a)/Hispanic (12%). On average participants were 20 years of age ($SD=2.76$). Participants were recruited through the psychology department subject pool to participate in “The Self Study.” The study description indicated that participants would respond to questions about their sexuality, beliefs, and attitudes.

Measures

The present research focuses on measures of self-perceived sexual orientation, perceived prevalence of same-sex sexuality, and same-sex experience.

Self-perception of sexual orientation. Participants identified which of three options best described their sexual orientation (i.e., heterosexual/straight, gay/lesbian, bisexual) and also completed a continuous measure of self-perceived sexual orientation. Using a 101-point unnumbered visual analog scale, anchored by “Exclusively Heterosexual” (0), “Equally Heterosexual and Homosexual” (50), and “Exclusively Homosexual” (100), participants chose the point they thought best described their sexual attractions (Preciado & Peplau, 2011; Preciado & Thompson, 2012). Because of the skewed nature of this variable, I was concerned about the influence of extreme outliers. Thus, I analyzed scores which winsorized observations more than 2.5 SDs away from the mean (Wilcox & Keselman, 2003). The winsorization process replaced 4 observations from the original variable (3 female, 1 male). The final self-perceived sexual orientation variable had a mean of 4.12 ($SD=8.51$; range 0 – 32). See the Appendix for analyses with the original variables.

Perceived prevalence of same-sex sexuality. Participants indicated what they thought best described the sexual orientation of members of their family (mother, father, sibling of closest age), their closest friend from high school, their closest friend from college, the average student from their college, and the average person from their hometown. Participants responded

to these items using the same 101-point unnumbered scale they used to describe their own sexual orientation. For any of these items, participants could choose “No Answer” as a response if the item did not apply to them (e.g., for participants without a sibling). See Table 1 for the percentage of participants reporting a value greater than 0, means, and standard deviations of these measures. I did not attempt to winsorize these items because values could reasonably run the full length of the scale (e.g., friends could be straight – first half of scale – or gay – second half of scale).

Same-sex experience. To measure participants’ same-sex sexual experience, I adapted a survey of prior sexual experiences (Preciado & Thompson, 2012). Participants indicated how many times they had engaged in each experience in the previous two years, regardless of the situation. The experiences ranged in intimacy from imagining kissing a same-sex partner to engaging in same-sex sexual intercourse (see Table 2). Participants indicated the frequency of each experience from “0 times” (coded as 0), “1-2 times” (coded as 1), “3-4 times” (coded as 2), “5-6 times” (coded as 3), or “6+ times” (coded as 4). I summed across all experiences to create one index of same-sex experience ($\alpha=.751$). This variable was also winsorized at 2.5 *SDs* to account for outliers, replacing 4 observations (all female). The final same-sex experience score had a mean of 6.79 ($SD=6.66$). See the Appendix for analyses with the original variables. The majority of men (66%) and women (91%) reported at least one instance of same-sex experience. See Table 2 for descriptive statistics of same-sex experience for men and women.

Procedure

Participants arrived individually to the lab to complete a larger 45-minute study on sexuality, of which the current study was part. The larger study included the following sections of measures, including those described in the present investigation, all presented in a randomized

order: self-perceived sexual orientation; attitudes towards one's own sexuality; beliefs about the attitudes and sexual orientation of others; attitudes towards LGB individuals; an implicit association task; history of sexual experiences; and individual differences in social desirability, fear of negative evaluation, and personal need for structure. All measures were administered via computer. To maximize privacy, the computer screen and the participant were hidden from view of the research assistant by a partition. Afterward, participants completed a demographics questionnaire.

Upon completion, participants had an opportunity to email questions or concerns to the study's senior experimenters and to voice any questions or concerns to the research assistant. While a few participants mentioned that they found answering questions about their same-sex experiences uncomfortable, most who made any statement indicated that they found the study interesting and enlightening.

Results

All analyses were conducted using multiple regression models. For each analysis, I first tested whether the hypothesized effect significantly interacted with participant sex. The only significant interaction with sex is described in the relevant section below. In all other cases, participant sex was dropped from the model. It should be noted that all main effects described below were unchanged when models were run with participant sex as a covariate. The two analyses whose results differed when conducted without the winsorized variables are described in the Appendix. The results found without the winsorized variables were consistent with my hypotheses, but I focus on the more conservative analyses of the winsorized variables here.

Relationship between Sexual Experience and Self-Perception

First, to establish the relationship between same-sex experience and self-perceived sexual orientation, I regressed self-perceived sexual orientation on same-sex experience. Self-perceived sexual orientation was positively related to same-sex experience, $b=.74$ ($SE=.08$), $t(146)=8.79$, $p<.001$. The number of same-sex experiences reported over the past 2 years explained 35% of the variance in self-perceived sexual attraction (see Figure 1).

Explaining Variance in the Association between Experience and Self-Perception

Although I found a positive relationship between same-sex experience and self-perceived sexual orientation, much of the variance in self-perceived sexual orientation remained unexplained. I predicted that perceived prevalence would independently explain variance in self-perceived sexual orientation beyond what was explained by prior same-sex experience. I hypothesized that participants who had same-sex experiences but perceived a low incidence of same-sex sexuality among self-relevant others would be unlikely to interpret their own experiences as relevant to their sexual orientation and so would not believe that their sexual orientation included same-sex attraction. On the other hand, participants who had same-sex experiences and perceived a high incidence of same-sex sexuality among self-relevant others would be likely to interpret those experiences as relevant to their sexual orientation, and so would believe that their sexual orientation included same-sex attraction. I tested this hypothesis by analyzing the relationship between each source of perceived prevalence and self-perceived sexual orientation, controlling for same-sex experience.

Critically, I predicted that this effect would be present particularly among those participants who had same-sex experiences that could be interpreted as relevant to their sexual orientation. In other words, I expected that people who had not had any same-sex experiences would have nothing to interpret and, thus, would not be influenced by the perceived prevalence

of same-sex sexuality among self-relevant others. In a second set of analyses, I tested this possibility by regressing self-perceived sexual orientation on a source of perceived prevalence, same-sex experience, and their interaction, controlling for participant sex. All simple effects from the interaction analyses described below are presented in Table 3.

Mother's Sexual Orientation. I first tested whether the degree of same-sex sexuality perceived in participants' mothers' sexual orientation was related to self-perceived sexual orientation, controlling for same-sex experience. As expected, mother's sexual orientation was significantly related to self-perceived sexual orientation, over and above what was explained by same-sex sexual experience, $b=.08$ ($SE=.03$), $t(145)=2.57$, $p=.011$.

I then tested whether mother's sexual orientation was most strongly related to self-perceived sexual orientation among those with same-sex experience. As expected, mother's sexual orientation was significantly related to self-perceived sexual orientation for those participants with high levels of same-sex sexual experience (1 *SD* above the mean), $t(144)=3.03$, $p=.003$; it was unrelated for those with average, $t(144)=1.03$, $p=.304$, or no same-sex sexual experience, $t(144)=-.45$, $p=.656$, resulting in a significant interaction, $b_{int}=.01$ ($SE=.00$), $t(144)=2.53$, $p=.012$. The interaction of same-sex experience and mother's sexual orientation explained 5% additional variance in self-perceived sexual orientation beyond what was explained by same-sex experience.

Father's Sexual Orientation. I first tested whether the degree of same-sex sexuality perceived in participants' fathers' sexual orientation was related to self-perceived sexual orientation, controlling for same-sex experience. Father's sexual orientation was not significantly related to self-perceived sexual orientation, over and above what was explained by same-sex sexual experience, $b=.05$ ($SE=.03$), $t(144)=1.56$, $p=.120$. Father's sexual orientation also did not

significantly interact with participants' level of same-sex experience, $b_{\text{int}}=.00$ ($SE=.00$), $t(143)=.89$, $p=.373$.

Sibling's Sexual Orientation. I first tested whether the degree of same-sex sexuality perceived in participants' siblings' sexual orientation was related to self-perceived sexual orientation, controlling for same-sex experience. For this analysis, I found differing effects for male and female participants, $b_{\text{int}}=-.17$ ($SE=.07$), $t(131)=-2.45$, $p=.015$. Among female participants, I found that sibling's sexual orientation was significantly related to self-perceived sexual orientation, over and above same-sex experience, $b=.21$ ($SE=.05$), $t(131)=4.56$, $p<.001$. However, among male participants, sibling's sexual orientation was not significantly related to self-perceived sexual orientation, controlling for same-sex experience, $b=.04$ ($SE=.05$), $t(131)=.69$, $p=.493$.

I then tested whether the degree of same-sex sexuality perceived in participants' siblings' sexual orientation was most strongly related to self-perceived sexual orientation among those with same-sex sexual experience. I, again, found differing effects for male and female participants, three-way $b_{\text{int}}=-.06$ ($SE=.02$), $t(128)=-3.29$, $p=.001$. Among male participants, as expected, sibling's sexual orientation was significantly related to self-perceived sexual orientation for those participants with average, $t(128)=2.77$, $p=.006$, and high levels of same-sex sexual experience, $t(128)=3.04$, $p=.003$; it was unrelated for those with no same-sex sexual experience, $t(128)=-1.50$, $p=.135$, resulting in a significant interaction, simple $b_{\text{int}}=.05$ ($SE=.02$), $t(129)=2.96$, $p=.004$. The interaction of same-sex experience and sibling's sexual orientation explained 8% additional variance in self-perceived sexual orientation beyond what was explained by same-sex experience among men.

Among women, the relationship between sibling's sexual orientation and self-perceived sexual orientation did not vary as a function of same-sex experience. Thus, the interaction of sibling sexual orientation and same-sex sexual experience was not significant, $b_{int}=-.01$ ($SE=.01$), $t(128)=-1.46$, $p=.147$. The main effect of sibling sexual orientation explained 13% additional variance in self-perceived sexual orientation beyond what was explained by same-sex experience among women

High School Best Friend's Sexual Orientation. I first tested whether the degree of same-sex sexuality perceived in participants' high school best friends' sexual orientation was related to self-perceived sexual orientation, controlling for same-sex experience. As expected, high school best friend's sexual orientation was significantly related to self-perceived sexual orientation, over and above what was explained by same-sex sexual experience, $b=.15$ ($SE=.02$), $t(144)=6.40$, $p<.001$.

I then tested whether the degree of same-sex sexuality perceived in participants' high school best friends' sexual orientation was most strongly related to self-perceived sexual orientation among those with same-sex experience. As expected, high school best friend's sexual orientation was significantly related to self-perceived sexual orientation for those participants with average, $t(143)=4.29$, $p<.001$, and high levels of same-sex sexual experience, $t(143)=7.52$, $p<.001$; it was unrelated for those with no same-sex sexual experience, $t(143)=1.11$, $p=.267$, resulting in a significant interaction, $b_{int}=.01$ ($SE=.00$), $t(142)=4.23$, $p<.001$. The interaction of same-sex experience and high school best friend's sexual orientation explained 20% additional variance in self-perceived sexual orientation beyond what was explained by same-sex experience.

College Best Friend's Sexual Orientation. I first tested whether the degree of same-sex sexuality perceived in participants' college best friends' sexual orientation was related to self-perceived sexual orientation, controlling for same-sex experience. As expected, college best friend's sexual orientation was significantly related to self-perceived sexual orientation, over and above what was explained by same-sex sexual experience, $b=.09$ ($SE=.03$), $t(143)=3.57$, $p<.001$.

I then tested whether the degree of same-sex sexuality perceived in participants' college best friends' sexual orientation was most strongly related to self-perceived sexual orientation among those with same-sex sexual experience. As expected, college best friend's sexual orientation was significantly related to self-perceived sexual orientation for those participants with average, $t(142)=2.22$, $p=.028$, and high levels of same-sex sexual experience, $t(142)=4.18$, $p<.001$; it was unrelated for those with no same-sex sexual experience, $t(142)=.33$, $p=.739$, resulting in a significant interaction $b_{int}=.01$ ($SE=.00$), $t(142)=2.45$, $p=.016$. The interaction of same-sex experience and college best friend's sexual orientation explained 7% additional variance in self-perceived sexual orientation beyond what was explained by same-sex experience.

Average College Student's Sexual Orientation. I first tested whether the degree of same-sex sexuality perceived in the average college student's sexual orientation was related to self-perceived sexual orientation, controlling for same-sex experience. As expected, average college student's sexual orientation was significantly related to self-perceived sexual orientation, over and above what was explained by same-sex sexual experience, $b=.09$ ($SE=.03$), $t(142)=2.53$, $p=.012$.

I then tested whether the degree of same-sex sexuality perceived in the average college student's sexual orientation was most strongly related to self-perceived sexual orientation among

those with same-sex sexual experience. As expected, the average college student's sexual orientation was significantly related to self-perceived sexual orientation for those participants with high levels of same-sex sexual experience, $t(141)=3.75, p<.001$; it was unrelated for those with no same-sex sexual experience, $t(141)=-.43, p=.666$, and marginally related for those with average levels of same-sex experience, $t(141)=1.77, p=.079$, resulting in a significant interaction, $b_{int}=.01$ ($SE=.00$), $t(141)=3.12, p=.002$. The interaction of same-sex experience and the average college student's sexual orientation explained 9% additional variance in self-perceived sexual orientation beyond what was explained by same-sex experience.

Average Hometown Citizen. I first tested whether the degree of same-sex sexuality perceived in the average citizen's sexual orientation was related to self-perceived sexual orientation, controlling for same-sex experience. As expected, average citizen's sexual orientation was significantly related to self-perceived sexual orientation, over and above what was explained by same-sex sexual experience, $b=.11$ ($SE=.03$), $t(144)=3.16, p=.002$.

I then tested whether the degree of same-sex sexuality perceived in the average citizen from the participant's hometown's sexual orientation was most strongly related to self-perceived sexual orientation among those with same-sex sexual experience. As expected, the average hometown citizen's sexual orientation was significantly related to self-perceived sexual orientation for those participants with high levels of same-sex sexual experience, $t(143)=3.42, p=.001$; it was unrelated for those with no same-sex sexual experience, $t(143)=.23, p=.819$, and marginally related for those with average levels of same-sex experience, $t(143)=1.68, p=.095$, resulting in a significant interaction, $b_{int}=.01$ ($SE=.00$), $t(143)=2.43, p=.016$. The interaction of same-sex experience and the average hometown citizen's sexual orientation explained 8%

additional variance in self-perceived sexual orientation beyond what was explained by same-sex experience.

Comparing Explanatory Power of Sources of Perceived prevalence

Finally, I tested which of the sources of perceived prevalence that were found to be predictive of self-perceived sexual orientation (i.e., mother, sibling, high school best friend, college best friend, average college student, and average hometown citizen) explained the most variance.

To do this, I noted the R^2 of each source from models analyzing only those participants who had reported at least some same-sex experience ($n=130$; 56% female, 44% male). I expected that the most influential sources of perceived prevalence would be those encountered when participants were likely to be initially forming interpretations of the meaning of their sexual experiences in their teenage years – namely, family members, high school best friend, and average hometown citizen. As predicted, in these initial analyses, I found that high school best friend explained the most variance in self-perceived sexual orientation (33%), followed by average hometown citizen (17%) and sibling (16%). College best friend explained 14% of the variance in self-perceived sexual orientation, and average college student explained 9% of the variance. Unexpected was that mother's sexual orientation predicted only 7% of the variance in self-perceived sexual orientation.

Discussion

These findings provide evidence that self-perceived sexual orientation reflects more than actual same-sex experience. Instead, whether sexual experiences are interpreted as meaningful to one's sexual orientation is related to the perceived prevalence of same-sex sexuality among self-relevant others, even controlling for same-sex experience. When participants reported at least

some same-sex sexual experience, the perception that self-relevant others (mothers, siblings, friends, and representatives of broader social groups) experienced same-sex attraction was positively related to self-perceived same-sex attraction. Moreover, the interaction of perceived prevalence and sexual experience explained a significant amount of variance in self-perceived sexual orientation beyond what was explained by same-sex experience, ranging across sources from 5% – 20% additional variance explained.

These effects were generally similar for both men and women, a finding that is consistent with the notion that the cognitive process underlying the interpretation of sexual experiences does not differ by sex (cf. Preciado, Johnson, & Peplau, 2013). Indeed, the only significant difference between men and women was that the relationship between sibling sexual orientation and self-perceived sexual orientation among women was not moderated by level of same-sex experience. For both men and women, perceived prevalence of same-sex sexuality among siblings was related to self-perceived sexual orientation.

Some have asserted that men's sexual orientation may be less susceptible to contextual effects than women's sexual orientation (for reviews see Baumeister, 2000 and Peplau, 2003). These results suggest that observed differences in the self-perceived sexual orientation of men and women may emerge as a function of societal context, specifically in the form of more rigid gender norms for men relative to women (Pleck, 1981). For instance, males, on average, may be more likely to have male friends and/or role models who are male and, thus, are influenced by the strong norm that males should hold a categorical sexual orientation (e.g., either straight or gay; Hammack, 2005). This lack of exposure to non-categorical sexual attraction among others in their social environment may influence males to interpret their sexual experiences in a way consistent with a categorical sense of their sexual orientation.

I found that sources of perceived prevalence most prominent during adolescence sexual development – high school best friend, average hometown citizen, and sibling -- would be particularly important. Although mother's sexual orientation did explain variance in self-perceived sexual orientation, it explained the least amount of variance out of all sources. This may reflect the important effect of non-familial influences on sexual behavior during the teen years (e.g., Furman & Buhrmester, 1992; Harris, 1995; Warner, Giordano, Manning, & Longmore, 2011).

I believe that the relationship between perceived prevalence and self-perceived sexual orientation exists because it indicates a motivational influence on how people interpret their sexual experiences and therefore understand their sexual orientation. The fact that the association between perceived prevalence of same-sex sexuality and self-perceived sexual orientation was present even after accounting for the effect of actual sexual experiences suggests that the effects were not driven merely by an underlying relationship between perceived prevalence and actual same-sex experience. Instead, the results indicate that something other than actual sexual experiences influences people's self-perceived sexual orientation – in this case, that is motivational cues from one's social environment prompting the interpretation of one's sexual experiences as indicating same-sex sexual attraction. The interaction analyses further support this notion, as the relationship between perceived prevalence and self-perceived sexual orientation was only present if participants had sexual experiences that could be interpreted as indicating same-sex attraction.

I contend that these findings provide compelling evidence that self-perceived sexual orientation is based in the motivated interpretation of sexual experiences. People pull from their social environment for cues indicating the meaning they should give to their sexual experiences.

The present research serves as a foundation for guiding novel research investigating social contextual influences on the development, maintenance, and change of self-perceived sexual orientation. For instance, adolescent sources of perceived prevalence of same-sex sexuality were most predictive among this sample of students who were mostly in their first or second year of college. It is important to note that the relative importance of different social contextual sources of information might differ across time. For example, college students later in their undergraduate careers might be more strongly influenced by college friends than high school friends; older adults may be more strongly influenced by friends, co-workers or neighbors.

Conclusion

Sexual orientation is an important aspect of human psychology with many implications for mental, physical, and social functioning. Although much research has focused on the origins, development, and consequences of sexual orientation, a neglected yet critical aspect of self-perceived sexual orientation is one's interpretation of their own experiences. A shift to focus research efforts on the influences and consequences of self-perceived sexual orientation may offer novel insights into the way in which social context affects human sexual orientation.

Table 1			
<i>Descriptives of Perceived Prevalence</i>			
	Non 0 Response	<i>M</i>	<i>SD</i>
Mother	24%	11.86	30.17
Father	26%	12.63	30.92
Sibling	34%	12.66	28.99
Best Friend (High School)	44%	17.00	31.07
Best Friend (College)	43%	16.45	31.37
Average College Student	96%	30.39	20.02
Average Hometown Citizen	85%	21.14	22.28

Table 1. The percentage of participants reporting a value greater than 0, means, and standard deviations of sexual orientation for each source of perceived prevalence.

Table 2

Same-Sex Experiences among Male and Female Participants

	Women		Men	
	<i>N</i>	Percent	<i>N</i>	Percent
Imagined Kissing	55	71%	25	29%
Imagined Sex	31	40%	16	19%
Had a Sexual Dream	23	30%	10	12%
Had a Sexual Daydream	16	21%	6	7%
Viewed Erotic Material	32	41%	12	14%
Searched for Attractive Celebrity Images Online	55	71%	24	28%
Found Celebrities Sexually Attractive	45	58%	15	18%
Masturbated to Sexual Thoughts	9	12%	5	6%
Sexually Aroused by Friend	6	8%	2	2%
Had a Crush	6	8%	5	6%
Felt Heart Beat Faster when Close to a Friend	13	17%	11	13%
Became Excited when Seeing a Specific Person	18	23%	20	24%
Fell in Love	1	1%	2	13%
Held Hands	63	81%	23	27%
Light Kissing	20	26%	2	24%
Making Out	6	8%	2	2%
Caressed Chest (Over Clothes; P or R)	8	10%	10	12%
Caressed Chest (Under Clothes; P or R)	3	4%	0	0%
Genital Touching (P or R)	2	3%	5	6%
Oral Sex (P or R)	1	1%	2	2%
Vaginal/Anal Penetration (P or R)	1	1%	0	0%

Note: "P or R" refers to Performed or Received

Table 2. Number (*N*) and percentage of participants reporting at least one instance of each same-sex experience type, for male and female participants.

Table 3

Simple Effects for Interaction of Perceived Prevalence and Level of Same-Sex Experience

	No Same-Sex Experience		Average Same-Sex Experience		1 SD Above Average Same-Sex Experience	
	b	SE	b	SE	b	SE
Mother	-0.037	0.051	0.042	0.035	0.123***	0.032
Sibling (Male Ps)	-0.107	0.072	0.242**	0.088	0.599**	0.200
Sibling (Female Ps)	0.383***	0.152	0.341***	0.108	0.296***	0.067
Best Friend – High School	0.045	0.035	0.112***	0.025	0.179***	0.023
Best Friend – College	0.008	0.041	0.070*	0.028	0.133***	0.027
Average College Student	-0.012	0.048	0.067†	0.035	0.147***	0.038
Average Hometown Citizen	0.017	0.053	0.068†	0.040	0.121**	0.036

Table 3. The relationship between self-perceived sexual orientation and perceived prevalence stratified by source (x-axis) and level of same-sex experience (no same-sex experience, average same-sex experience, 1 *SD* above the mean on same-sex experience). † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

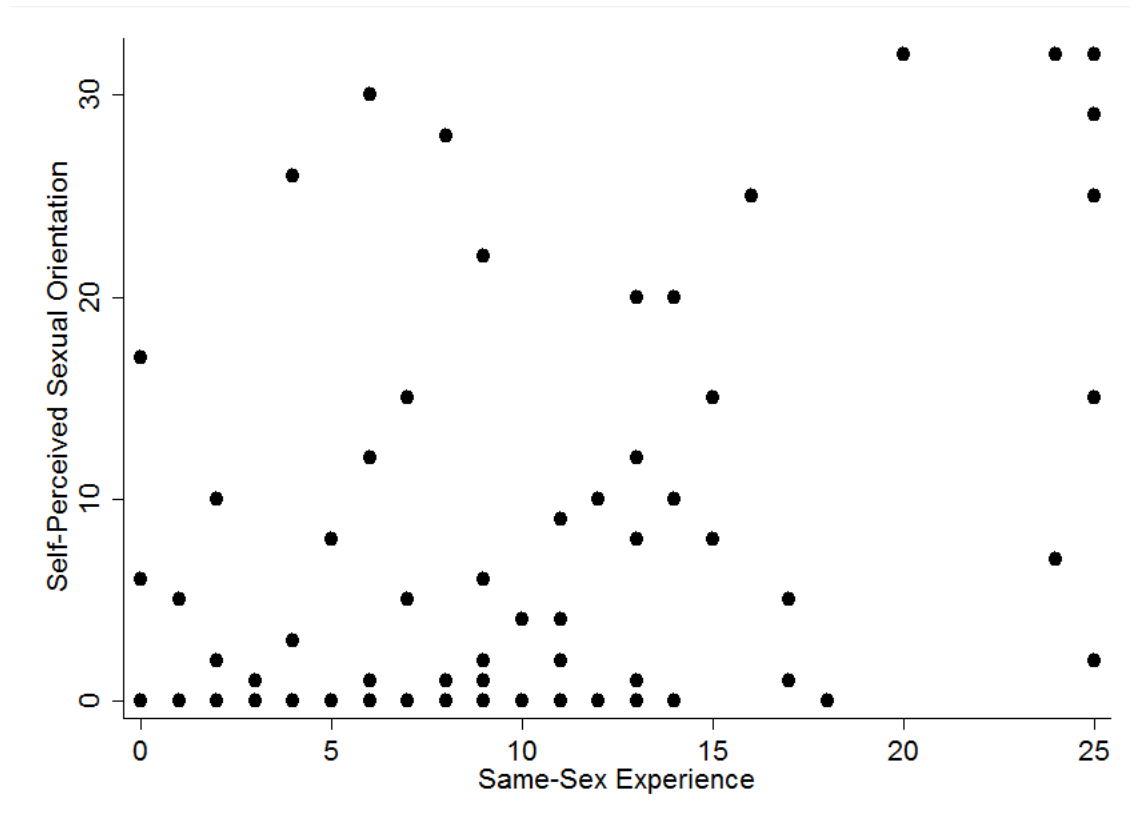


Figure 1. Scatter plot of self-perceived sexual orientation and same-sex experience, both winsorized at 3 SDs.

Appendix

I ran all models with and without the winsorized variables. The analyses with the winsorized variables are more conservative as they replace outliers 2.5 *SDs* above the mean on self-perceived sexual orientation and same-sex experience with the next highest value in the data. I report those analyses in the manuscript. Analyses ran with the original unwinsorized variables were largely unchanged with two exceptions, reported below.

Father Sexual Orientation Analysis:

I first tested whether father's sexual orientation was related to self-perceived sexual orientation, over and above same-sex experience. Analyses with the original variables confirmed my hypothesis. Father's sexual orientation was significantly related to self-perceived sexual orientation, over and above same-sex experience, $b=.19$ ($SE=.04$), $t(144)=4.85$, $p<.001$.

I then tested whether father's sexual orientation significantly interacted with same-sex experience in predicting self-perceived sexual orientation. When I ran the analysis with the original variables, I found that, as expected, father's sexual orientation was significantly related to self-perceived sexual orientation among those with high levels of same-sex experience, simple $b=.18$ ($SE=.04$), $t(143)=4.83$, $p<.001$, but not among those with average levels, simple $b=.04$ ($SE=.05$), $t(143)=.87$, $p=.383$, or no same-sex experience, simple $b=-.07$ ($SE=.07$), $t(143)=-1.05$, $p=.296$, resulting in a significant interaction, $b_{int}=.02$ ($SE=.00$), $t(143)=4.31$, $p<.001$.

Sibling Sexual Orientation Analysis:

I tested whether sibling's sexual orientation significantly interacted with same-sex experience in predicting self-perceived sexual orientation. In the analysis with the original variables, the 3-way interaction of sibling sexual orientation, same-sex experience, and participant sex was only marginally significant, three-way $b_{int} = .03$ ($SE = .02$), $t(128) = 1.70$, $p =$

.092. Instead, the interaction of perceived prevalence and same-sex experience was significant, $b_{\text{int}} = .03$ (SE = .00), $t(132) = 7.80$, $p < .001$, such that, as expected, those with high, simple $b = .37$ (SE = .04), $t(132) = 10.47$, $p < .001$, or average levels of same-sex experience, simple $b = .16$ (SE = .04), $t(132) = 3.89$, $p < .001$, showed a positive relationship between sibling sexual orientation and self-perceived sexual orientation, but those with no same-sex experience, simple $b = -.02$ (SE = .06), $t(132) = -.41$, $p = .679$, did not.

CHAPTER V:

Assessing Sexual Behavior: A Comparison of Self-Report Measures for the Prediction of Same-Sex Sexual Experience among Heterosexually Identified Men and Women

Abstract

Sexual orientation is often measured by asking individuals to report their self-perceived sexual orientation, the underlying assumption being that self-perceived sexual orientation is an indicator of actual sexual experiences of attraction, fantasy, and behavior. Yet, self-perceived sexual orientation is influenced by factors other than actual sexual experiences, bringing into question its utility in describing the incidence of same-sex sexual attraction, fantasy, and behavior in a population. The present research tests three alternate self-report measures for use in predicting same-sex sexual experience among a sample of 56 heterosexually identified college-aged men and women. Results indicate that while self-perceived sexual orientation is modestly predictive of same-sex sexual experience, both the perceived likelihood of engaging in specific same-sex sexual experiences and one's history of volitional same-sex sexual experiences are strongly and uniquely predictive of same-sex sexual experience. These measures fully account for the variance in same-sex sexual experience explained by self-perceived sexual orientation. I discuss the utility of these self-report measures for use in research on sexual experience and sexual orientation.

Keywords: same-sex sexual behavior; sexual orientation; self-perception; behavior prediction

The American Psychological Association's (2008) definition of sexual orientation highlights two key aspects. The first is "an enduring pattern of emotional, romantic, and/or sexual attractions to men, women, or both sexes." The second is "a person's sense of identity based on those attractions, related behaviors, and membership in a community of others who share these attractions" (p. 1). In other words, sexual orientation is composed of two related yet distinct components: actual experiences of sexual attraction (and related experiences of behavior and fantasy) and beliefs about what those experiences mean for a person's sense of self. Those beliefs include both individuals' categorical sexual identity and more nuanced beliefs about the degree of same-sex sexuality they experience. I refer to these beliefs collectively as *self-perceived sexual orientation*. These beliefs are subject to influence by factors other than actual sexual experiences – for instance, the social context (e.g., Preciado, Johnson, & Peplau, 2013). Thus, the usefulness of self-perceived sexual orientation for predicting sexual experience is suspect. Indeed, prior research has found that the method by which same-sex sexuality is measured results in differing estimates for the prevalence of same-sex sexuality in the population (e.g., Savin-Williams, 2006; Gates, 2011). I propose that self-report measures that reference the likelihood of specific same-sex sexual experiences are stronger predictors of same-sex sexual experiences than are more abstract measures of self-perceived sexual orientation.

The Importance of Predicting Same-Sex Sexual Experience

Some people who identify as heterosexual nonetheless experience same-sex sexual experiences that may include attraction, fantasy, and/or behavior (e.g., Chandra, Mosher, Copen, & Sionean, 2011; Hayes et al., 2012; Laumann, Gagnon, Michael, & Michaels, 1994; Gates, 2011; Savin-Williams & Ream, 2007). Research on college students has found percentages of heterosexually identified individuals reporting some same-sex attraction ranging from 38% to

79% for women and 20% to 43% for men (Knight & Hope, 2012; Vrangalova & Savin-Williams, 2010). However, while some heterosexually identified men and women incorporate same-sex sexual experiences into their self-conception of their sexual orientation (e.g., Thompson & Morgan, 2008; Vrangalova & Savin-Williams, 2012), others do not (Preciado & Thompson, 2012). For instance, a man might have same-sex sexual experiences yet report that he is exclusively heterosexual and experiences no same-sex attraction.

Those who have a conflict between their self-perceived sexual orientation and actual sexual experiences may suffer negative effects for their mental health. Studies have found that concealing same-sex attraction for fear of stigmatization has negative effects on self-esteem (e.g., Frable, Platt, & Hoey, 1998; Quinn & Chaudoir, 2009). In extreme cases, such as when a heterosexually identified individual engages in frequent, clandestine same-sex intercourse, a mismatch of sexual identity and behavior among men can lead to serious risks to both mental health (Lapinski, Braz, & Maloney, 2010; Reback & Larkins, 2010) and sexual health (Boykin, 2005; Siegel, Schrimshaw, Lekas, & Parsons, 2008; Wolitski, Jones, Wasserman, & Smith, 2006). For example, in one analysis of interviews with Dominican male sex workers, the vast majority of whom identified as straight or heterosexual, researchers found that most men in their sample employed risky strategies to manage the stigma associated with their same-sex behavior as a part of their sex work. Specifically men both avoided disclosure of their sexual behaviors to their families and female sexual partners and avoided the use of condoms with female partners – a behavior that might prompt suspicion and a lack of trust (Padilla et al., 2008).

Accurate prediction of the prevalence of same-sex sexual experience among heterosexually identified individuals is informative not only for capturing which individuals are likely to experience stigma-associated mental health consequences, but also for predicting which

heterosexually identified individuals are likely to adopt a sexual minority label in the future. Those who ultimately adopt a sexual minority label often experience an initial period of exploration during which they may identify as heterosexual while engaging in same-sex experiences (see Worthington, Navarro, Savoy, & Hampton, 2008 for a review). The prediction of same-sex behavior among heterosexually identified individuals can offer insight into the development of same-sex identity.

Such prediction is not just useful for those researchers interested in the development of sexual identity but also for the study of the fluidity of sexual identity. For instance, in a longitudinal study of women who originally identified with a non-heterosexual sexual identity, Diamond (2003) found that over a period of 5 years, a quarter of the sample relinquished their lesbian/bisexual identities for either heterosexual labels or in favor of no identity label. Other studies have found that those who adopt bisexual identities are particularly likely to show fluctuations in their sexual identity labels over time (e.g., Kinnish, Strassberg, & Turner, 2005; Mock & Eibach, 2012). The accurate prediction of same-sex sexual experience can be used to develop better models for predicting which individuals are likely to show fluctuation in their sexual identity labels across their lifespan.

Predictors of Same-Sex Sexual Experience

Categorical measures of self-perceived sexual orientation do not offer strong predictions of same-sex sexual experiences, as indicated by the fact that some heterosexually identified individuals nonetheless experience same-sex attractions and behavior. Thus, in addition to measuring sexual identity (e.g., heterosexual/straight, gay, lesbian, bisexual), researchers utilize continuous measures of individuals' self-perceived same-sex sexual attraction, behavior, and fantasy (e.g., Klein, Sepekoff, & Wolf, 1985; Preciado et al., 2013; Vrangalova & Savin-

Williams, 2010). For instance, a heterosexually identified woman might report that 80% of her sexual attractions are oriented toward men and 20% towards women. It seems plausible that individuals who report some degree of same-sex orientation in their sexuality would be more likely to experience same-sex sexual experiences compared to individuals who report exclusively heterosexual experiences.

Yet, recent research suggests that even continuous measures of self-perceived sexual orientation are subject to influence by factors other than an individual's actual experiences of attraction, fantasy, and behavior. For instance, in one prior study, I found that heterosexually identified women high in need for structure – a cognitive style associated with the tendency to organize information in black and white terms – were likely to report less self-perceived same-sex attraction, behavior, and fantasy than women low in need for structure (Preciado & Peplau, 2011). Similarly, in one set of experiments with heterosexually identified men and women, I found that explicitly and implicitly priming stigma against or support for same-sex sexuality significantly altered self-reported same-sex attraction, behavior, and fantasy (Preciado et al., 2013). Specifically, the perception of stigma against same-sex sexuality resulted in participants reporting less same-sex attraction, behavior, and fantasy than did the perception of support for same-sex sexuality.

One important reason that self-perceived sexual orientation can be influenced by personality and contextual factors is that the relevance of a particular sexual experience for one's sexual orientation is ambiguous. Given that sexual experiences can fluctuate across time and context, experiences in certain contexts (e.g., while in college) may be discounted as unimportant relative to other experiences (e.g., after graduation). Moreover, the very meaning attributed to particular sexual experiences can vary depending on the context in which the experience occurs

and the nature of the experience (e.g., Randall & Byers, 2003; Sanders & Reinisch, 1999). For instance, a man may discount the relevance of having oral sex with another man while drunk because oral sex “is not really sex.” Moreover, the fact that he was under the influence of alcohol makes the experience attributable to something other than his sexual orientation (cf. Reback & Larkins, 2010). Thus, that man may not perceive that his sexual orientation includes same-sex attraction or behavior in spite of his same-sex experiences.

The accurate prediction of same-sex sexual experiences among heterosexually identified men and women will require the use of measures that are less open to motivationally influenced interpretations. Indeed, others have argued that researchers interested in sexual orientation should use measures that specifically tap the constructs in which they are interested (e.g., Malacad & Hess, 2011; Pathela, Blank, Sell, & Schillinger, 2006; Savin-Williams, 2006). For instance, if researchers are interested in the prevalence of sexual experience, they should measure experiences directly (e.g., ask about the number of instances of same-sex intercourse). However, prior work using measures of specific same-sex experiences has mostly measured *past* sexual experience (e.g., Preciado & Thompson, 2012) or the frequency of sexual experience without reference to a particular time frame (e.g., Morgan, Steiner, & Thompson, 2008; Morgan & Thompson, 2010). Given that sexual experiences can vary across time and context, it is important that researchers be able to predict what individuals are likely to do in the future.

For the prediction of sexual experience, measures tapping the likelihood that individuals will engage in specific, concretely defined sexual experiences in the future would be most useful. Asking a person whether they will engage in any same-sex experiences in the future may result in a response biased by motivated interpretations of what “counts” as a sexual experience – the person may count genital contact but discount less physically intimate behaviors, such as kissing.

On the other hand, asking a person whether they will engage in the specific behavior of same-sex kissing in the future is relatively less likely to be subject to such motivated interpretations of the meaning of the behavior.

However, there are several methods that could be used to assess the likelihood of future sexual experiences. The most face-valid is a measure simply asking respondents to indicate how likely it is that they will engage in specific sexual experiences in the future. Alternately, components of the likelihood of engaging in a particular behavior could be measured separately. Prior theoretical and empirical work on behavior prediction suggests that both an individual's intention to engage in the behavior and the resources they have to do so are critical to predicting future behavior (Ajzen, 1991; Fishbein & Ajzen, 1975). In the case of same-sex sexual experience among heterosexually identified individuals, the intention to engage in same-sex sexual experiences is better characterized as *Specifically, it may be useful to assess both an individual's willingness to engage in an experience (e.g., Ajzen, 1991; Eagly & Chaiken, 1993) and an individual's opportunity to engage in the experience (e.g., Rhodes, Blanchard, & Matheson, 2006). As applied to same-sex sexual experiences, an individual might be likely to engage in, for instance, same-sex kissing if they have both the opportunity to do so (e.g., a willing partner) and the will to act on that opportunity.*

Finally, other research indicates that individuals are not perfectly adept at predicting their own future actions (Vallone, Griffin, Lin, & Ross, 1990). Individuals often fail to allow for or correctly assess other factors that may influence their behavior (Koehler & Poon, 2006; Ross, 1987; Ross & Nisbett, 1990). For instance, individuals may perceive that they are willing to engage in same-sex kissing but neglect to incorporate the fact that in the past they have, for instance, not had willing partners with whom to engage in same-sex experiences. Thus, measures

of prior volitional same-sex sexual experience may be a useful method by which to capture the likelihood of engaging in future sexual experience. The degree to which individuals willingly engaged in same-sex experiences in the past may be more predictive of the likelihood that they will engage in same-sex experiences in the future than would their own beliefs about the likelihood of those experiences.

The Present Research

I predicted that, due to its abstract nature and tendency to be influenced by factors other than actual sexual experience, measures of self-perceived sexual orientation would be less strongly predictive of future same-sex sexual experience than other self-report measures of the likelihood of engaging in specific future same-sex sexual experiences. I tested the predictive power of three different sets of measures tapping the likelihood of engaging in future same-sex sexual experience: face-valid measures of the perceived likelihood of engaging in same-sex sexual experiences; measures of the willingness of participants to engage in same-sex sexual experiences and the perceived opportunity they had to engage in same-sex sexual experiences; and measures of prior volitional same-sex sexual experience. I compared the variance in future same-sex sexual experience explained by each measure. I also conducted exploratory analyses to test whether the same pattern of results would hold for the prediction of a subset of same-sex sexual experiences: specifically, those had with a partner.

Method

In accordance with the suggestions of Simmons, Nelson, and Simonsohn (2012), I report how I determined my sample size, all data exclusions (if any), all manipulations, and all measures in the study.

Participants

During the fall and winter quarters of one academic year, college students from a large public university in the southwestern United States were recruited from the psychology subject pool to participate in an online longitudinal study of their beliefs about their own sexual orientation and their sexual experiences. I elected to recruit participants for the entirety of the fall and winter quarters and ceased recruitment at the end of winter quarter. A total of 227 participants signed up for the study and completed the first of two surveys (Time 1). Of these, 162 consented to be contacted regarding follow-up studies.

In the quarter immediately following their completion of Time 1 (e.g., winter quarter for those completing in fall), participants were invited to participate in a follow-up study (Time 2). These invitations were repeated every third week until either the participant responded or the academic year ended. Those who were contacted in winter quarter but did not complete the Time 2 survey were contacted again in spring quarter (around March). Of the initial 162 invited to participate in Time 2, 56 heterosexually identified participants completed it. I excluded the 9 gay and 1 lesbian identified participant who completed the follow-up as the sample size was not large enough for me to make comparisons based on sexual identity, and I did not want to mask differences between the groups by ignoring sexual identity.

This final sample of heterosexually identified participants included 30 women and 26 men. On average, participants were 20 years old ($SD = 3.16$) and had completed 2.74 years of college ($SD = 1.08$). Participants were mostly Asian/Pacific-Islander (50%), Caucasian (29%), or Hispanic (11%). Of the remaining participants, 7 were Middle-Eastern, and 3 reported multiple racial/ethnic identifications.

I compared those who completed Time 2 to those who did not on various characteristics (i.e., age, sex, self-perceived sexual orientation, prior same-sex sexual experience). Of

characteristics measured, the only significant difference between those who opted to complete the follow-up and those who did not is that at Time 1 the latter reported that they experienced significantly more same-sex sexual behavior than did the former, $t(190) = 1.708, p = .049$.

Measures

The Time 1 and Time 2 surveys were part of a larger study of sexual orientation, behavior, and attitudes. Both surveys included all of the same measures with the exception of individual differences (Personal Need for Structure – Neuberg & Newsom, 1993; Sexual Consciousness scale of the Sexual Awareness Questionnaire - Snell, Fisher, & Miller, 1991) and attitude/belief measures (belief that sexual orientation is due to genetics, choice, biology of environment; attitudes towards gay, lesbian, and bisexual individuals). These were only measured at Time 1. Both Time 1 and Time 2 also included a measure of the perceived typicality of same-sex sexual experiences for the respondent. In the present research I focused on Time 1 measures of self-perceived sexual orientation, likelihood of engaging in same-sex sexual experiences, willingness to engage in same-sex sexual experiences, opportunity to engage in same-sex sexual experiences, prior same-sex sexual experiences, and agency experienced during prior same-sex sexual experiences. I focused on Time 2 measures of same-sex sexual experience. I utilized self-perceptions and reported actual sexual experiences at Time 1 to predict same-sex sexual experience reported at Time 2.

Self-perceived sexual orientation (Time 1). Participants completed four continuous measures of sexual orientation. Using a 101-point unnumbered visual analog scale, anchored by “Exclusively Heterosexual” (0), “Equally Heterosexual and Homosexual” (50), and “Exclusively Homosexual” (100), participants chose the point they thought best described their sexual orientation, overall; their sexual attractions; their sexual fantasies; and their sexual behaviors

(Preciado & Peplau, 2011; Preciado & Thompson, 2012). These four measures were strongly interrelated (Cronbach's $\alpha = .923$), so I averaged them into one measure of self-perceived sexual orientation ($M = 7.13$, $SD = 12.29$).

Because I was concerned about outliers in this positively skewed variable (Skewness = 2.12, $p < .001$), I also created a self-perceived sexual orientation variable that was Winsorized at 2.5 SD s (Wilcox & Keselman, 2003). Specifically, I replaced the 3 values in the variable that were above 2.5 SD s above the mean with the next highest value. The final Winsorized variable had a mean of 6.61 ($SD = 10.74$; Skewness = 1.86, $p < .001$). I analyzed both the original and Winsorized variables to determine whether outliers were biasing effects.

Likelihood of same-sex sexual experience (Time 1). Participants reported their perceptions of the likelihood that they would engage in specific sets of same-sex sexual experiences in the future. Participants were asked about five groups of same-sex sexual experiences, derived from a published measure of sexual experiences (e.g., Preciado & Thompson, 2012), that varied in the degree of physical intimacy: romantic/attraction experiences (e.g., crush or experience of arousal); solo experiences, not involving a partner (e.g., imagining sex or imagining kissing); low physical intimacy partnered experiences (e.g., holding hands); moderate physical intimacy partnered experiences (e.g., caressing someone's chest); and partnered experiences involving genital contact (e.g., oral sex). See Appendix for a list of the experiences and their groupings. For each of the five groups of experiences, participants reported the likelihood that they would engage in each group in the next month, the next six months, and the next year. Responses were measured using a 4-point scale ranging from "Extremely Unlikely" to "Extremely Likely."

Initially, I created average likelihood ratings for next month (Cronbach's $\alpha = .705$; $M = 1.26$, $SD = .41$), next 6 months (Cronbach's $\alpha = .693$; $M = 1.29$, $SD = .45$), and next year (Cronbach's $\alpha = .754$; $M = 1.33$, $SD = .51$). Though I originally included these indices as separate predictors, I found that they functioned identically in these analyses. Thus, I averaged the five ratings to yield a single index of *likelihood* (Cronbach's $\alpha = .977$; $M = 1.30$, $SD = .45$).

Willingness to engage in same-sex sexual experience (Time 1). Participants indicated their willingness to engage in the same groups of same-sex experiences described above if an opportunity were to present itself in the future. The response to each group of experiences was measured on a 4-point scale ranging from "Not at All Willing" to "Extremely Willing." I averaged the responses to each group to yield a single index of *willingness* (Cronbach's $\alpha = .867$; $M = 1.40$, $SD = .66$). See Appendix for the full text of the measure.

Opportunity for same-sex sexual experiences (Time 1). For the same groups of experiences, participants indicated their perception of the extent to which they would have the opportunity to engage in each group of acts if they wished. Specifically, participants were asked, "If you wanted to have any of the following experiences, how much opportunity would have to do so?" Participants responded on a 4-point scale ranging from "No Opportunity" to "A Lot of Opportunity." I averaged these ratings to yield a single index of *opportunity* (Cronbach's $\alpha = .837$; $M = 1.98$, $SD = .83$). See Appendix for the full text of the measure.

Prior same-sex sexual experiences (Time 1). Participants described their same-sex sexual experiences during the past two years. See Appendix for the full list of experiences. Specifically, they indicated how many times they had engaged in each of the individual sexual experiences referred to in the four groups of experiences described above, regardless of the situation that led to the act. Participants indicated the frequency of each experience from "0

times” (coded as 0), “1-2 times” (coded as 1), “3-4 times” (coded as 2), “5-6 times” (coded as 3), or “6+ times” (coded as 4). Applying the method used in Preciado & Thompson, 2012, I summed across all experiences to create one index of the amount of *past same-sex sexual experience* (Cronbach’s $\alpha = .862$; $M = 7.34$, $SD = 9.38$).

This variable can be interpreted as the degree of same-sex experience had by the respondent. The possible range of the variable is 0 – 112 for women (max = 28 experiences x 4) and 0 – 104 for men (max = 26 experiences x 4). Male participants’ list of experiences excluded two items referencing vaginal penetration (see Appendix). Most women (87%) and men (62%) reported at least one instance of same-sex sexual experience in the prior two years.

Reports of past same-sex sexual experiences were positively skewed (Skewness = 1.68, $p < .001$). Thus, I created an additional Winsorized variable which replaced 2 values over 2.5 SD s above the mean. The mean for the Winsorized same-sex sexual experience variable was 6.93 ($SD = 8.14$; Skewness = 1.11, $p = .001$). I analyzed both the original and Winsorized variables to determine whether outliers were biasing effects.

Agency experienced during prior same-sex sexual experiences (Time 1). To capture not only whether or not participants had same-sex sexual experiences but also whether those experiences were volitional, participants indicated their experience of agency associated with specific same-sex sexual experiences that occurred during the prior two years. For each experience, participants reported the degree to which they felt “personally involved” in initiating the experience. Participants were instructed:

“For example, if you thought about and planned having the experience, that would indicate a high degree of your involvement. If you had the experience as part of a dare, that would be a low degree of your involvement.”

For each experience, participants rated their experience of agency on a 4-point scale ranging from “Not at All Involved” to “Highly Involved.” I averaged the ratings into one measure of agency (Cronbach’s $\alpha = .907$; $M = 1.23$, $SD = .34$). See Appendix for the full text of the measure and scale.

Future same-sex sexual experiences (Time 2). Between 1 and 5 months after the initial survey ($M_{\text{days}} = 82.16$, $SD = 19.89$), participants described the same-sex sexual experiences that they had since the first interview. Specifically, they indicated how many times they had engaged in each sexual experience from the same list used in the Time 1 survey, regardless of the situation that led to the act. Participants indicated the frequency of each experience as having occurred “0 times” (coded as 0), “1-2 times” (coded as 1), “3-4 times” (coded as 2), “5-6 times” (coded as 3), or “6+ times” (coded as 4). I summed across all experiences to create one index of the amount of *same-sex sexual experience* between Time 1 and Time 2 (Cronbach’s $\alpha = .890$; $M = 2.93$, $SD = 6.28$). Most women (67%) and just under a third of men (31%) reported at least one instance of same-sex sexual experience between Time 1 and Time 2.

Reports of future same-sex sexual experiences were positively skewed (Skewness = 3.92, $p < .001$). Thus, I created an additional Winsorized variable which replaced 2 values over 2.5 SD s above the mean. The mean for the Winsorized same-sex sexual experience variable was 2.18 ($SD = 3.15$; Skewness = 1.57, $p < .001$). I analyzed both the original and Winsorized variables to determine whether outliers were biasing effects.

Procedures

Time 1. After signing up to participate in the study, participants were directed to the online survey instrument, hosted by www.qualtrics.com. Participants were instructed that the survey would include questions regarding how they felt about their own sexual orientation. Each

section of the survey (self-perceived sexual orientation, likelihood, willingness, opportunity, sexual experiences, and agency) was then presented in a randomized order. At the end of the survey, participants read a debriefing script and were given the opportunity to email questions or comments to the researchers. Participants were also asked whether they would be willing to be contacted regarding follow-up studies. Those who consented were asked to provide a contact email address. All participants completing the Time 1 survey were assigned one experimental credit.

Time 2. Those who elected to participate in the second survey were given a chance to win one of three \$25 Amazon.com gift certificates. The follow-up survey was identical to the first survey with the exception that participants were asked to report on their perceptions of the same-sex experiences they had since the first survey and the individual differences measures included in the first survey were not included. On average, participants completed the follow-up survey 82 days after the first survey ($SD = 19.89$; range 47 – 151 days). Gift certificates were distributed in the summer of that academic year.

Results

Analytic Strategy

I used regression to conduct each of the following analyses. I initially included participant sex and time between surveys as factors in each analysis. No effect involving these variables reached significance. Additionally, controlling for participant sex or the time between surveys left the results unchanged. Thus, I dropped those variables from analyses and discussed the results without controls. Finally, I tested whether use of the Winsorized self-perceived sexual orientation or same-sex sexual experience variables altered the pattern of results. In no case did

results differ with the Winsorized variables, thus I only report the analyses with the original variables.

Finally, because I was concerned about a lack of power given the size of the sample, in my description of the results, I emphasized the variance in future same-sex sexual experience predicted by each predictor (R^2) and the relative variance predicted compared to other predictors ($R^2\Delta$). These measures of effect size allowed me to present the explanatory power of each predictor, regardless of its associated p-value.

Occurrences of Same-Sex Sexual Experience

I first ran descriptive analyses among the sample of 56 participants who completed both surveys to assess which same-sex sexual experiences occurred in the 2 years prior to the study and between Time 1 and Time 2. In the two years prior to the study, the three most common experiences among female participants were same-sex hand holding ($n = 19$), finding female celebrities in a magazine sexually attractive ($n = 17$), and looking for photos of female celebrities they found attractive ($n = 15$). The three most common experiences among male participants were imagining sex with a man ($n = 13$), looking at or reading erotic material featuring men ($n = 7$), and experiencing a sexual dream about a man ($n = 6$). The most intimate experiences mentioned in the sample were performing/receiving vaginal penetration (2 female Ps) and touching genitalia/having genitalia touched (1 male P). Female participants reported significantly more past same-sex sexual experience ($M = 17.08$, $SD = 16.43$) than did male participants ($M = 4.52$, $SD = 7.11$), $t(54) = 3.61$, $p < .001$.

Between Time 1 and Time 2, the three most common experiences among female participants were finding female celebrities in a magazine sexually attractive ($n = 10$), same-sex hand holding ($n = 10$), and imagining kissing a woman ($n = 9$). Among male participants, the

three most common experiences were finding male celebrities in a magazine sexually attractive ($n = 3$), looking for photos of celebrities they found attractive ($n = 3$), and imagining sex with a man ($n = 2$). The most intimate experiences mentioned in the sample were kissing/fondling breasts (1 female P) and touching genitalia/having genitalia touched (1 male P). Female participants reported significantly more same-sex sexual experience between Time 1 and Time 2 ($M = 7.48, SD = 12.45$) than did male participants ($M = 1.04, SD = 2.02$), $t(54) = 2.61, p = .012$. See Table 1 for descriptives of the types of experiences reported by men and women in the sample.

Self-Perceived Sexual Orientation Predicts Future Sexual Experience

I expected that self-perceived sexual orientation would be modestly predictive of same-sex sexual experience at Time 2. As predicted, self-reports of same-sex sexual experiences between Time 1 and Time 2 increased as a function of participants' self-reported same-sex orientation, $b = .22$ ($SE = .07$), $t(54) = 3.40, p = .001$. Importantly, while the relationship between self-perceived sexual orientation and same-sex sexual experience at Time 2 was significant, self-perceived sexual orientation predicted only 18% of the variance in future same-sex sexual experience ($R^2 = .176, p = .001$).

Likelihood of Same-Sex Sexual Experience Predicts Future Sexual Experience

I predicted that several measures tapping the likelihood of having same-sex sexual experiences would be more strongly predictive of future same-sex sexual experience than would self-perceived sexual orientation. In these analyses, I used likelihood measures from Time 1 to predict experiences that occurred between Time 1 and Time 2. I first assessed the predictive power of each method of measuring likelihood separately.

I first examined a face-valid measure of the perceived likelihood that the participant would have same-sex sexual experiences in the future. As expected, I found that likelihood was strongly predictive of same-sex sexual experience at Time 2, predicting 62% of the variance in same-sex sexual experience, $b = 11.03$ (SE = 1.17), $t(54) = 9.46$, $p < .001$, $R^2 = .624$, $p < .001$. Moreover, this effect remained significant even controlling for the effect of self-perceived sexual orientation, $b = 11.58$ (SE = 1.45), $t(53) = 8.00$, $p < .001$. On the other hand, the effect of self-perceived sexual orientation was no longer significant controlling for perceived likelihood, $b = -.04$ (SE = .06), $t(53) = -.65$, $p = .520$. Over and above perceived likelihood, self-perceived sexual orientation predicted less than 1% of the variance in same-sex sexual experience at Time 2, $R^2\Delta = .004$.

Next, I analyzed two indicators of likelihood: willingness to engage in same-sex sexual experiences and the perceived opportunity to have same-sex sexual experiences. I expected that those who perceived they were both willing to and had the opportunity to engage in same-sex sexual experiences would experience future same-sex sexual experience. Thus, I predicted same-sex sexual experience at Time 2 from the interaction of willingness and opportunity. As expected, the interaction of willingness and opportunity was significant, $b_{\text{int}} = 4.68$ (SE = 2.24), $t(52) = 2.09$, $p = .041$. It was those participants with high willingness and high opportunity who experienced the most same-sex sexual experience between Time 1 and Time 2; those with low willingness and low opportunity experienced no same-sex experience between Time 1 and Time 2. See Figure 1.

The interaction of willingness and opportunity predicted 51% of the variance in same-sex sexual experience ($R^2 = .509$, $p < .001$). This interaction became marginally significant when controlling for self-perceived sexual orientation, $b_{\text{int}} = 4.38$ (SE = 2.25), $t(51) = 1.95$, $p = .057$,

indicating that this effect was partially accounted for by self-perceived sexual orientation. However, it's worth noting that, regardless of its marginal significance, the interaction of willingness and opportunity predicted 36% of the variance over and above what was predicted by self-perceived sexual orientation, $R^2\Delta = .359$.

On the other hand, the effect of self-perceived sexual orientation became non-significant when controlling for the interaction of willingness and opportunity, $b = .06$ (SE = .059), $t(51) = 1.06$, $p = .296$, indicating that the variance explained by self-perceived sexual orientation was fully accounted for by the interaction of willingness and opportunity. Likewise, over and above the interaction of willingness and opportunity, self-perceived sexual orientation predicted less than 1% of the variance in same-sex sexual experience at Time 2, $R^2\Delta = .009$.

The final method of assessing likelihood was to measure prior volitional same-sex sexual experience. To do this, I assessed separately past same-sex sexual experiences and the degree of agency felt during those experiences. I expected that those who had both more past same-sex sexual experience and had experienced greater agency during those experiences would experience future same-sex sexual experience. Thus, I predicted same-sex sexual experience at Time 2 from the interaction of past same-sex sexual experience and agency. As expected, the interaction of past same-sex sexual experience and agency was significant, $b_{int} = .45$ (SE = .11), $t(51) = 3.97$, $p < .001$. It was those participants who reported both high past same-sex sexual experience and high agency who had the most same-sex sexual experience between Time 1 and Time 2. On the other hand, those who had no past same-sex sexual experience did not report same-sex sexual experience at Time 2.

The interaction of past same-sex sexual experience and agency predicted 69% of the variance in future same-sex sexual experience ($R^2 = .689$, $p < .001$). The interaction was still

significant even when controlling for self-perceived sexual orientation, $b_{\text{int}} = .45$ (SE = .12), $t(50) = 3.78$, $p < .001$, indicating that this effect was not accounted for by self-perceived sexual orientation. However, the effect of self-perceived sexual orientation was not significant when controlling for the interaction of past same-sex sexual experience and agency, $b = .01$ (SE = .048), $t(50) = .14$, $p = .892$, indicating that the variance explained by self-perceived sexual orientation was accounted for by the interaction of past same-sex sexual experience and agency. Over and above the interaction of willingness and opportunity, self-perceived sexual orientation predicted less than .1% of the variance in same-sex sexual experience at Time 2, $R^2\Delta < .0001$.

Comparison of Measures

I then tested which of the indicators of likelihood were most strongly and uniquely predictive of same-sex sexual experience at Time 2. First, I conducted an analysis in which I predicted same-sex sexual experience at Time 2 from the three measures of the likelihood of engaging in future same-sex sexual experience: likelihood, the interaction of willingness and opportunity, and the interaction of past same-sex sexual experience and agency. I found that only two predictors were significant, controlling for the other predictors. These were likelihood, $b = 5.92$ (SE = 1.55), $t(47) = 3.81$, $p < .001$, and the interaction of past same-sex sexual experience and agency, $b_{\text{int}} = .33$ (SE = .11), $t(47) = 3.01$, $p = .004$. The interaction of willingness and opportunity was not significant, $t < 1$. Jointly, likelihood and the interaction of past same-sex sexual experience and agency predicted 77% of the variance in future same-sex sexual experience, $R^2 = .765$.

I also tested the difference between the sizes of the b coefficients associated with likelihood and associated with the interaction of past same-sex sexual experience and agency. I found that the b coefficient associated with the interaction of past same-sex sexual experience

and agency ($b = .40$, $SE = .10$, $B = 1.16$) was significantly larger than the b coefficient associated with likelihood ($b = 8.95$, $SE = 2.19$, $B = .41$), $t(50) = 3.80$, $p < .001$, indicating that, of the two, the interaction of past same-sex sexual experience and agency was most strongly predictive of same-sex sexual experience between Time 1 and Time 2.

However, because I was concerned about the lack of power in the above analyses, I also examined the $R^2\Delta$ values and their associated F-test for every combination of the three predictors. In other words, I examined the predictive power of each indicator of likelihood over and above the predictive power of each other indicator of likelihood. These results are presented in detail in Table 2. I found that the interaction of willingness and opportunity explained the least amount of unique variance as compared to both likelihood (5% unique variance) and the interaction of past same-sex sexual experience and agency (1% unique variance). On the other hand, I found that the interaction of past same-sex sexual experience and agency predicted the most unique variance as compared to the interaction of willingness and opportunity (19% unique variance), followed by likelihood as compared to the interaction of willingness and opportunity (17% unique variance). These results indicate that both likelihood and the interaction of past same-sex sexual experience and agency predict unique variance in future same-sex sexual experience, whereas the interaction of willingness and opportunity does not appear to contribute much unique explanation of the variance in future same-sex sexual experience.

Exploratory Analyses

Finally, I ran exploratory analyses to assess whether the self-report measures were also predictive of partnered same-sex sexual experiences, specifically, between Time 1 and Time 2. To do this I created a new variable of same-sex experiences participants reported having between Time 1 and Time 2 that only included partnered experiences, excluding romantic/attraction

experiences (e.g., crush, finding celebrities attractive) and solo experiences (e.g., masturbation, imagining sex). This variable had a mean of .61 (SD = 1.38), and ranged from 0 – 7. Only 13 participants reported at least 1 instance of partnered same-sex sexual experience between Time 1 and Time 2.

Consistent with results found with the full set of experiences, I found that self-perceived sexual orientation was weakly predictive of partnered same-sex experiences at Time 2 ($R^2 = .095$, $p = .021$) and was not a significant predictor over and above any of the indicators of likelihood, all t s < 1.5, all p s > .150. However, in single-predictor regression models, controlling for self-perceived sexual orientation, likelihood, the interaction of willingness and opportunity, and the interaction of past same-sex sexual experience and agency were all strongly predictive of partnered same-sex sexual experiences at Time 2 ($R^2 = .444$, $.449$, and $.682$, respectively), and they were all significant over and above self-perceived sexual orientation, all t s > 3.2, all p s < .005.

Discussion

I compared the power of several self-report measures to successfully predict same-sex sexual experience among a sample of heterosexually identified college-aged men and women. I found that while self-perceived sexual orientation was predictive of same-sex sexual experience, predicting 18% of the variance, three indicators of the likelihood of engaging in specific same-sex sexual experiences were more strongly predictive of same-sex sexual experience, predicting between 51% and 69% of the variance in same-sex sexual experience. These results demonstrate that these measures could be used with a high degree of confidence in research predicting future sexual behavior. Moreover, the relationship between each indicator of likelihood and same-sex sexual experience was statistically significant even controlling for self-perceived sexual

orientation; the effect of self-perceived sexual orientation, on the other hand, was fully accounted for by each indicator of likelihood. Critically, self-perceived sexual orientation predicted negligible unique variance (~1%) in future same-sex sexual experience as compared to the indicators of likelihood.

Though these results are provocative, it is important to take into consideration the size and generalizability of the sample. To help account for the possibility that my analyses were underpowered, I focused heavily on the effect sizes in the analyses. This allowed me to discuss the meaning of the results, regardless of the power of the tests to detect significant differences. Yet, even given the potential issue of statistical power, most statistical tests were significant. Regardless, studies with a larger sample could do more to explore, for instance, gender differences in these effects. Given the sample size, I may have been underpowered to detect statistical differences between male and female participants.

Apart from sample size, there is a question of generalizability. A small proportion of the original sample opted to continue with the second survey. In part, this can be explained by the fact that I had relatively little incentive to offer for completion of the second survey. However, there was also a conceptually relevant difference between those who continued and those who did not. Specifically, the final sample reported more same-sex sexual experience over the past two years than did those participants who chose not to complete the second survey. A sample more likely to have same-sex sexual experiences likely provided a good initial test of my hypotheses – with such a sample, I was better able to test whether the measures could predict same-sex sexual experience among those likely to actually have those experiences. However, it does beg the question of the generalizability of these results for a sample with little or no prior same-sex experience. It is worth noting that 25% of the final sample reported no same-sex sexual

experience over the past two years and 50% of the final sample reported no same-sex sexual experience between Time 1 and Time 2, indicating that those with no same-sex sexual experience were represented in the sample. However, future research should use these measures with larger, more diverse samples to test the predictive power of these measures across participants with varying levels of prior and future same-sex sexual experience.

Despite these limitations, these findings provide compelling initial evidence that self-report measures are useful for predicting an individual's future sexual experience. Critically, these results highlight that prediction is enhanced by utilizing precise measures of the likelihood of engaging in specific same-sex sexual experiences (cf., Kraus, 1995). While researchers must balance concerns about the accuracy of prediction with concerns regarding participant time and comfort, the measures tested here – in particular, the face-valid measure of likelihood – sufficiently address both. The face-valid measure of likelihood is composed of only 4 items, yet it offered a high amount of predictive power. While the measures of willingness, opportunity, past experience, and agency are longer, neither are so prohibitively lengthy such that they could not easily be incorporated into future internet or lab studies. Indeed, the entirety of the Time 2 survey, including all of these measures among other items, took most participants around 20 minutes to complete. Moreover, while some participants expressed some degree of discomfort in answering questions about their sexual experiences, the majority of participants offered no comment or stated that the survey was engaging and thought-provoking.

I found that two indicators of the likelihood of engaging in specific same-sex sexual experiences were most strongly and uniquely predictive of same-sex sexual experience: face-valid measures of the perceived likelihood of engaging in specific same-sex sexual experiences in the future (predicting 62% of the variance) and measures of past volitional same-sex sexual

experience (predicting 69% of the variance). This suggests that there are two separate yet simultaneously functioning predictive pathways of same-sex sexual experience. The first is an explicitly accessible awareness of whether it is likely that one will engage in same-sex sexual experiences in the future. The second is indicated not by one's *perception* of the likelihood of engaging in same-sex sexual experiences but by one's history of volitional same-sex sexual experiences.

It is important to note that most of the same-sex sexual experiences reported by participants were of romantic/attraction experiences and solo experiences such as sexual fantasizing. The prediction of sexual fantasizing and other similar experiences can be useful for research on changes in sexual identity and self-perceived sexual orientation and for research on mental health outcomes associated with discrepancies among sexual identity and sexual experiences. However, sexual experiences occurring with partners are of greatest interest for those interested in sexual health.

There are likely differences in the prediction of un-partnered and partnered sexual experiences. For partnered experiences, perceivers may be particularly poor at accounting for other factors, such as situational constraints, that may affect the likelihood of engaging in such same-sex sexual experiences (e.g., Koehler & Poon, 2006). Indeed, in exploratory analyses of the data, I found that perceived likelihood was not significantly predictive of partnered same-sex sexual experiences between Time 1 and Time 2, over and above the interaction of past same-sex sexual experiences and agency. On the other hand, the interaction of past same-sex sexual experiences and agency was significantly predictive of partnered same-sex sexual experiences between Time 1 and Time 2.

However, given that only a minority of the sample reported partnered same-sex sexual experiences, the analyses including those experiences alone should be interpreted conservatively. While they are suggestive, future research can profitably utilize more diverse samples that are likely to experience partnered identity-inconsistent sexual experiences, including individuals who identify as gay, lesbian and bisexual. Given that partnered other-sex sexual experience can occur before same-sex sexual experience among gay men and lesbian women (e.g., Maguen, Floyd, Bakeman, & Armistead, 2002), the indicators of the likelihood of other-sex sexual experiences may vary even more among this population than among heterosexually identified individuals. The use of more diverse samples will help tease apart the differential predictive power of explicitly perceived likelihood of engaging in sexual experiences and one's history of volitional sexual experiences.

Additionally, research extending the time interval between measurement of indicators of likelihood and same-sex sexual experience would be one way of capturing a greater diversity in the intimacy of sexual experiences. This would allow researchers to compare the predictive ability of different indicators of likelihood for different types of same-sex sexual experiences, and may also reveal to what degree longer intervals between measurements degrade the predictive value of the self-report measures. Such research could shed light on the reach of self-report indicators of likelihood for predicting future same-sex sexual experience.

I contend that the self-report measures indicating the likelihood of engaging in same-sex sexual experiences were more strongly predictive than was self-perceived sexual orientation because the latter is more susceptible to the influence of personality and social context than are the measures addressing the likelihood of specific same-sex sexual experiences. To my knowledge, however, no existing evidence speaks to this possibility. The present research offers

a foundation for future studies of the susceptibility of self-perceived likelihood of engaging in sexual experiences to personality and contextual factors that have been shown to influence self-perceived sexual orientation, such as the perception of stigma against or support for same-sex sexuality (see Preciado et al., 2013 for an example of such a study).

Conclusion

The ability to make confident predictions about future same-sex sexual experience is an important goal for research on human sexuality. It would allow researchers to more precisely estimate changes in the incidence of same-sex sexuality in a population; to identify individuals likely to experience negative consequences for their mental and sexual health; and to help predict changes in sexual identity across time and context. The present research demonstrates that self-report measures can be used to predict future same-sex sexual experience among heterosexually identified men and women – such measures need simply address the likelihood of engaging in specific same-sex sexual experiences.

Table 1

Same-Sex Experiences Reported Between Time 1 and Time 2

	Female				Male			
	N	M	SD	Max	N	M	SD	Max
Romantic/Attraction	9	1.31	2.95	13	4	0.22	0.58	2
Solo	18	2.69	4.24	20	5	0.30	0.82	4
Low Intimacy Partnered	10	0.90	1.47	5	1	0.04	0.19	1
Moderate Intimacy Partnered	2	0.14	0.52	2	2	0.07	0.27	1
Partnered Involving Genital Contact	0	0	0	0	1	0.04	0.19	1

Note: N refers to the number of Ps reporting at least 1 instance of each group of experiences. M (SD) refers to the mean score across participants for each experience group. Max refers to the maximum score across participants for each experience group type.

Table 2

Unique Variance Explained by Each Indicator of Likelihood

Predictor	Comparison	R ² Δ	F	p
Likelihood	Willingness x Opportunity	.167	26.34	<.001
Likelihood	Past Experience x Agency	.076	16.11	<.001
Past Experience x Agency	Likelihood	.141	10.02	<.001
Past Experience x Agency	Willingness x Opportunity	.192	10.27	<.001
Willingness x Opportunity	Likelihood	.053	2.77	0.051
Willingness x Opportunity	Past Experience x Agency	.012	<1	>.500

Note: R²Δ indicates the proportion of variance in future same-sex sexual experience uniquely explained by the predictor in the “Predictor” column as compared to the predictor in the “Comparison” column.

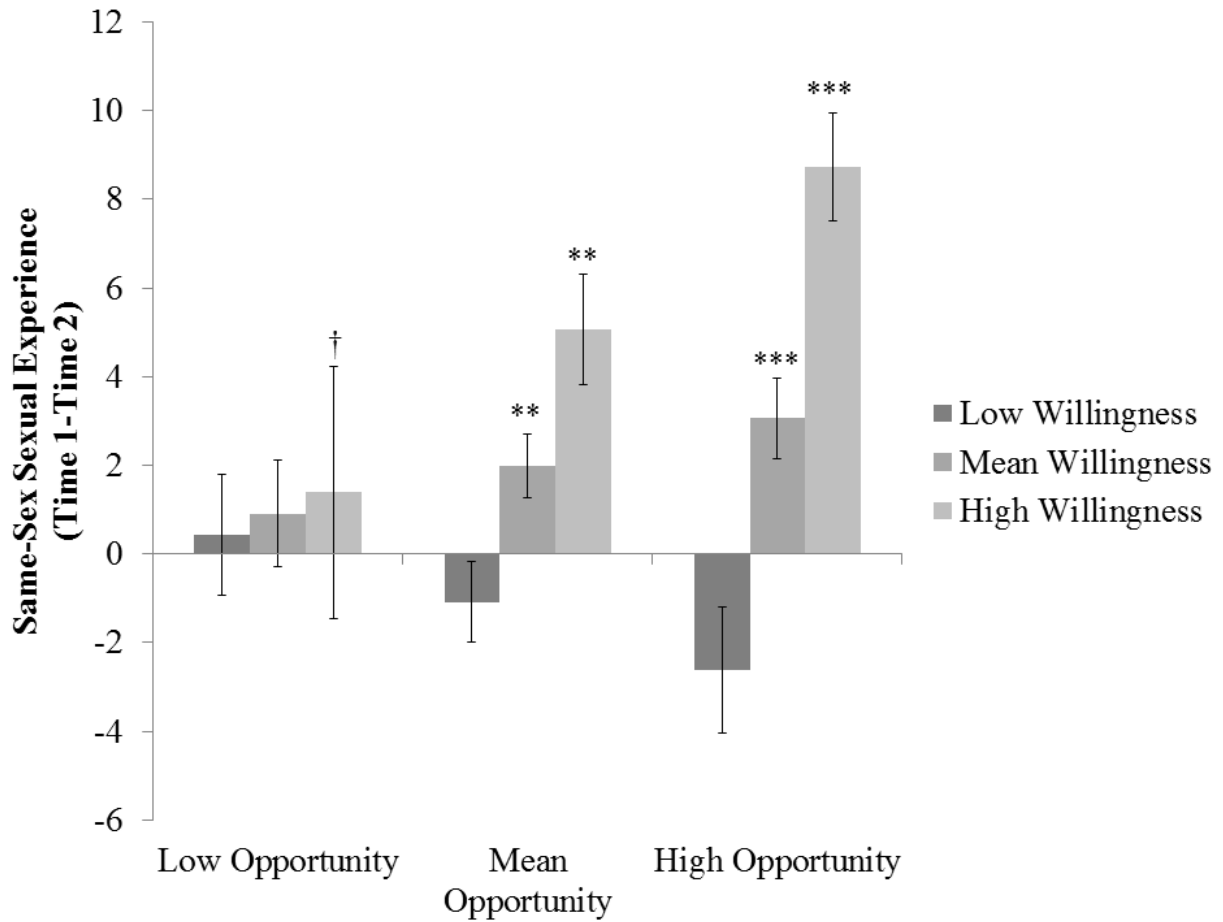


Figure 1. The expected means of same-sex sexual experience between Time 1 and Time 2 stratified by willingness and opportunity. Low willingness and opportunity were defined at 1 *SD* below the mean; high willingness and opportunity were defined at 1 *SD* above the mean. † $p < .10$; ** $p < .01$; *** $p < .001$

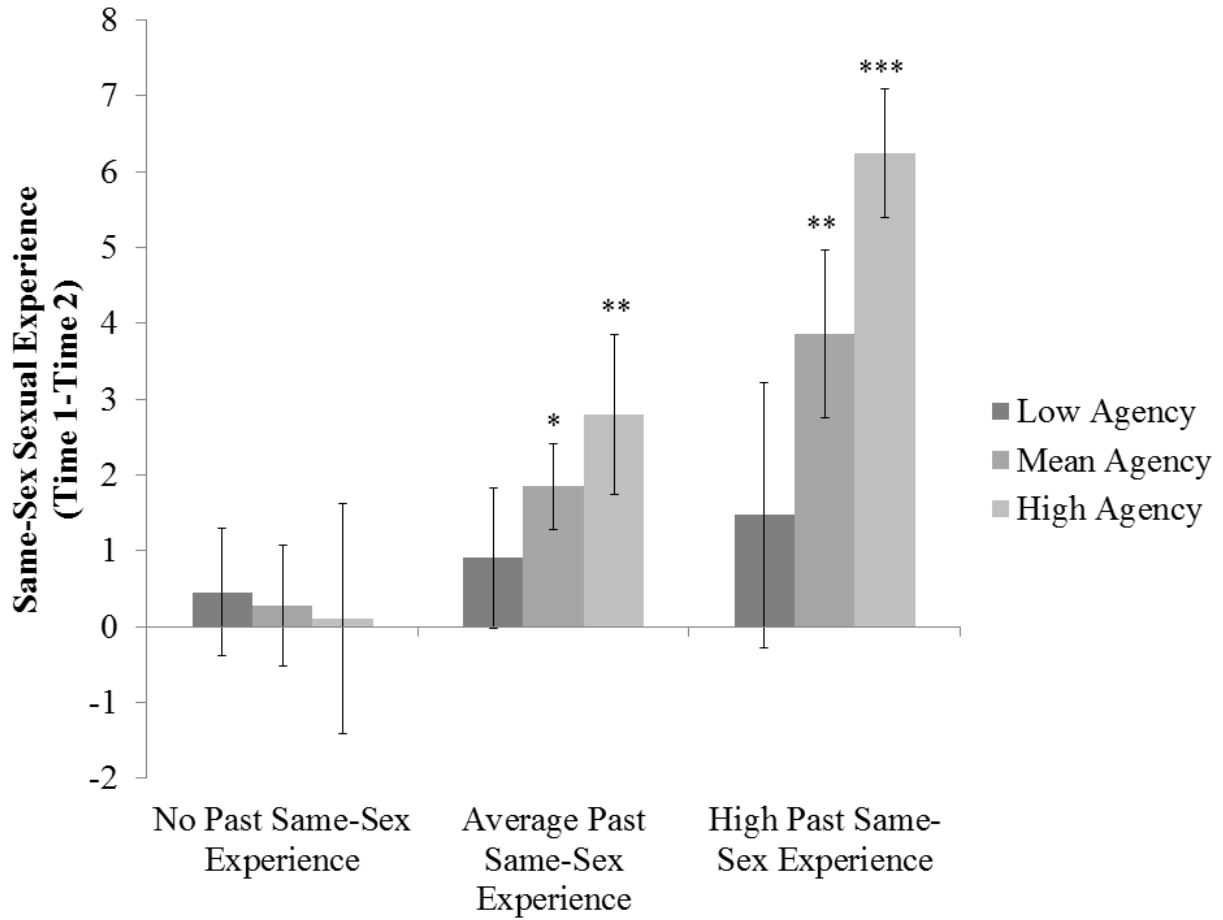


Figure 2. The expected means of same-sex sexual experience between Time 1 and Time 2 stratified by agency and past same-sex sexual experience. Low agency was defined at 1 *SD* below the mean; no past same-sex experience was used because 1 *SD* below the mean was outside of the possible range of the variable. High agency and past same-sex experience were defined at 1 *SD* above the mean. * $p < .05$; ** $p < .01$; *** $p < .001$

Appendix

This appendix includes the full text of the measures used to predict future same-sex sexual experience.

List of Experiences*

1. Find female/male celebrities in a magazine sexually attractive.
2. Are sexually aroused by a female/male friend.
3. Have a crush on a woman/man.
4. Fall in love with a woman/man.
5. Feel your heart beat faster when you are close to a female/male friend.
6. Become excited every time you see a particular woman/man.
7. Imagine what it would be like to kiss a woman/man.
8. Imagine what it would be like to have sex with a woman/man.
9. Have a sexual dream about a woman/man.
10. Daydream about sexual encounters with a woman/man.
11. Look at/read erotic material featuring women/men.
12. Spend time looking online for photos of a female/male celebrity you find attractive.
13. Masturbate while thinking of a woman/man.
14. Hold hands with a woman/man (holding hands or locking arms).
15. Engage in light kissing with a woman/man (casual goodnight kiss on the lips, extended kiss without body contact).
16. Make out with a woman/man (close body contact, with hugging and prolonged kissing).
17. Caressed a woman's/man's breast/chest (over clothing).
18. Had your breast/chest caressed by a woman/man (over clothing).
19. Fondled or kissed a woman's/man's breast/chest (under clothing).
20. Had your breast/chest fondled or kissed by a woman/man (under clothing).
21. Touched the genital area of a woman/man.
22. Had your genitals touched by a woman/man.
23. Performed oral sex on a woman/man.
24. Received oral sex from a woman/man.
25. Performed vaginal penetration on a woman.**
26. Received vaginal penetration from a woman.**
27. Performed anal penetration on a woman/man.
28. Received anal penetration from a woman/man.

Romantic/Attraction Experiences: 1 – 6

Solo Experiences: 7 – 13

Low Intimacy Partnered Experiences: 14-15

Moderate Intimacy Partnered Experiences: 15-20

Partnered Experiences Involving Genital Contact: 21-27

*List adapted from Preciado & Thompson, 2012; Morgan & Thompson, 2011; Morgan, Steiner, & Thompson, 2010

**For use with heterosexually identified women only

Likelihood

For each group of experiences (e.g., romantic/attraction, solo):

How likely is that you will have any of these experiences...

in the Next Month?

Extremely Unlikely, Unlikely, Likely, Extremely Likely

in the Next 6 Months?

Extremely Unlikely, Unlikely, Likely, Extremely Likely

in the Next Year?

Extremely Unlikely, Unlikely, Likely, Extremely Likely

Willingness

For each group of experiences:

How willing would you be to act if you had the opportunity to have any of these experiences?

Not at All Willing, A Little Willing, Somewhat Willing, Extremely Willing

Opportunity

For each group of experiences:

If you wanted to have any of the following experiences, how much opportunity do you have to do so?

No Opportunity, A Little Opportunity, Some Opportunity, A Lot of Opportunity

Agency

For each experience individually:

For any of the following experiences, use the scale to indicate the degree to which you felt personally involved in the fact that you had the experience.

For example, if you thought about and planned having the experience, that would indicate a high degree of your involvement. If you had the experience as part of a dare, that would be a low degree of your involvement.

I was not at all involved, I was a little involved, I was somewhat involved, I was highly involved

CHAPTER VI:

Summary and Conclusions

The theoretical paper and empirical studies presented here represent a novel social psychological approach to the study of between- and within-person variability in sexual orientation. In the current approach, self-perceived sexual orientation is imperfectly related to actual sexual experiences. Instead, motivational processes, known to affect beliefs about the self in other domains, underlie the relationships among self-perceived sexual orientation, actual sexual experience, and other social contextual, cultural, and individual factors outside of actual sexual experience (e.g., perceived stigma and support). In this final section, I will briefly summarize each component of this dissertation and then discuss their joint contributions to and implications for the study of human sexual orientation.

Chapter II: A Motivated Cognition Approach

While sexual orientation is composed of both actual sexual experiences and beliefs about those experiences, the latter are often used as proxies for the former. However, a review of the literature on sexual orientation and basic social psychological theory suggests that the relationship between these two components of sexual orientation is likely to be tenuous. In this theoretical paper, I reviewed literature indicating that self-perceived sexual orientation can be derived from a wide range of different experiences (e.g., Klein, Sepekoff, & Wolf, 1985), often occurring across different times and contexts (e.g., Diamond, 2008a; Savin-Williams & Ream, 2007). Moreover, research indicates that the meaning of sexual experiences can vary depending on situational contingencies (e.g., Padilla, 2008) and ambiguity in the social definitions of those experiences (e.g., Sanders & Reinisch, 1999). Drawing from theory and research on motivated cognition (e.g., Gilovich, 1991; Kunda, 1990), I proposed that motivational cues (e.g., the perception that same-sex sexuality is stigmatized) influence how individuals interpret their

sexual experiences. Specifically, people are likely to interpret their sexual experiences in a way that supports a motivated perception of their sexual orientation.

I also outlined many different social contextual factors (e.g., stigma and support for same-sex sexuality), cultural factors (e.g., norms of masculinity), and individual factors (e.g., individual differences in the cognitive organization of information) likely to motivate individuals to perceive their sexual orientation in a particular way. This provided the basis for predictions about the influence of motivational factors on self-perceived sexual orientation. I also discussed different factors likely to constrain or promote the influence of motivational factors on self-perceived sexual orientation. For instance, an individual with highly consistent and categorical sexual experiences (i.e., either exclusively same-sex or other-sex) would be unlikely to be affected by motivational factors because their sexual experiences cannot be easily interpreted in a motivated fashion. Any of the motivational and constraining/promoting factors identified in the theoretical paper could be combined with the broader theoretical approach to derive empirically testable predictions of the variability in self-perceived sexual orientation both between- and within-persons.

Chapter III: Impact of Motivational Cues on Self-Perceived Sexual Orientation

In Studies 1- 3, I provided the first experimental evidence that factors outside of actual sexual experience causally shape self-perceived sexual orientation. In Studies 1 and 2, adult and college-aged heterosexually identified men and women were randomly assigned to read text and were exposed to images indicating that same-sex sexuality was either stigmatized or supported in their social context. As expected, in Study 1, participants reported significantly less same-sex sexual attraction, fantasy, and behavior in response to the stigma condition than to the support

condition. Likewise, in Study 2, participants' reports of the physical attractiveness of sexualized same-sex targets were significantly lower in the stigma condition than in the support condition.

Both of these studies provided support for the notion that continuous self-report measures of sexual orientation are causally influenced by motivational cues in the measurement context. However, I hypothesized that cues of stigma and support altered self-perceptions of sexual orientation – not just measurement of those perceptions. Thus, in Study 3, I utilized an implicit manipulation of stigma and support, unlikely to create demand characteristics that would alter merely participants' self-reports and not their self-perceptions. Again, in Study 3, I found that the implicit manipulation of stigma led to significantly less reported same-sex sexual attraction, fantasy, and behavior than did the implicit manipulation of support. Taken jointly, these three studies provide compelling evidence that motivational cues directly impact self-perceived sexual orientation.

Study 3 also provided preliminary evidence that individuals capitalize on ambiguity in the meaning of their sexual experiences to interpret their sexual experiences in a way that supports a motivated self-perception. Specifically, those participants who were uncertain about their sexual identity were more susceptible to the manipulation of contextual cues than were those participants who were less uncertain about their sexual identity. This result suggests that individuals with a weak sense of the relevance of their sexual experiences to their sexual orientation may be particularly vulnerable to the effect of contextual cues to a motivated interpretation of their sexual experiences.

Chapter IV: Supportive Role of Actual Sexual Experience

Study 4 provided a further test of the relationship between motivational cues and self-perceived sexual orientation. Importantly, it also provided a test of whether individuals' ability to

interpret their sexual experiences in a way that supports a motivated view of their sexual orientation is critical to the relationship between motivational cues and self-perceived sexual orientation. As expected, in a sample of male and female heterosexually identified college students, the degree to which participants perceived that significant others in their life (i.e., mothers, siblings, friends, and representatives of broader social groups) experienced same-sex sexuality was positively related to self-perceived sexual orientation. I found that the perceived prevalence of same-sex sexuality among significant others most important during adolescent sexual development – high school best friend, sibling, and average hometown citizen – were most strongly related to self-perceived sexual orientation, over and above what was explained by actual sexual experience.

However, as further expected, these effects were present only among those participants who reported at least some actual same-sex experience in the prior two years. Those participants who had no same-sex experiences that could be interpreted in motivated ways showed no relationship between the perceived prevalence of same-sex sexuality among significant others (motivational cue) and their self-perceived sexual orientation. I interpreted these findings as providing further evidence that motivational cues shape self-perceived sexual orientation, but that the impact of motivational cues is constrained by the availability of evidence to support motivated beliefs about the self.

Chapter V: Longitudinal Prediction of Future Sexual Experiences

Finally, in a longitudinal study of male and female heterosexually identified college students, I tested two important implications of the proposed motivated cognition approach to self-perceived sexual orientation. First, I tested the strength of the relationship between continuous measures of self-perceived sexual orientation and future same-sex sexual experience.

I expected that participants' self-perceived sexual orientation would be weakly related to their future same-sex sexual experience because, as demonstrated in Studies 1 – 4, their self-perceived sexual orientation was likely to be influenced by factors other than actual sexual experience. As anticipated, there was an association between the two constructs, but it was relatively weak, with self-perceived sexual orientation only predicting 18% of the variance in future same-sex sexual experience.

Relatedly, I expected that self-report measures asking more specifically about the likelihood of sexual experiences would be better predictors of future sexual experience than would self-perceived sexual orientation. I tested the relationship between measures of the likelihood of engaging in specific same-sex sexual experiences and future same-sex sexual experience. As expected, I found that self-report measures of the likelihood of engaging in specific same-sex experiences were strongly predictive of future same-sex experience, explaining between 51% and 69% of the variance of the variance in future same-sex experience. Two of these measures – a face-valid measure of the perceived likelihood of future same-sex experiences and a measure of prior volitional same-sex experience – were most strongly predictive of future same-sex experience.

Broader Implications

This theoretical paper and supporting empirical studies offer several important implications for the study of sexual orientation. First, this social psychological approach to sexual orientation problematizes the reliance on self-report measures of sexual orientation. As self-perceived sexual orientation is sensitive to motivational cues, researchers should account for those factors that may influence participants when they are responding to self-report measures of sexual orientation (cf., Hayes et al., 2012; McCabe, Hughes, Bostwick, Morales, & Boyd, 2012).

Moreover, to capture actual sexual experience, researchers should use measures that ask about specific sexual experiences instead of more abstract beliefs about sexual experiences. For example, instead of measuring the percentage of sexual behaviors that are same-sex oriented, researchers should measure the number of instances of specific sexual experiences (e.g., oral sex) over the last two years. These measures are less likely to be susceptible to motivational influence than abstract measures of self-perceived sexual orientation (cf., Malacad & Hess, 2011; Pathela et al., 2005; Savin-Williams, 2006).

This approach also challenges prior perspectives on gender differences observed in studies of sexual orientation. Specifically, some researchers have proposed that men and women's sexual orientation is inherently different due, in large part, to the observation that women's sexual orientation appears to be more susceptible to contextual influence than is men's sexual orientation (e.g., Diamond, 2003b, 2007; Peplau & Garnets, 2000). However, the present model offers a different perspective on such gender differences. Specifically, men and women may both be susceptible to the same processes of motivated cognition. What differs between them, then, are the inputs to the process. Men's more categorically specific arousal patterns leave little room for the motivated interpretation of sexual experiences (e.g., Chivers, Riger, Latty, & Bailey, 2004). Further, the fact that it is relatively acceptable for heterosexually identified women to engage in same-sex sexual experiences may offer motivation for women to perceive their sexual orientation as more bisexual than do men (e.g., Hammack, 2005). Indeed, across all five studies, few gender differences were found in the tests of the substantive hypotheses. Thus, when motivational cues and the constraints of actual sexual experience are taken into account, the present approach can account for variability across persons who differ on various characteristics and not just variability between men and women.

Finally, this approach offers implications for sexual health. One implication is for the way in which health messages may or may not reach their intended audiences. Health messages targeted at particular groups (e.g., men who have sex with men – MSM) may not be perceived as self-relevant by those who are motivated to avoid the belief that they are attracted to members of the same sex. For instance, MSM who identify as heterosexual may be highly motivated to avoid listening to health messages that force them to attend to their same-sex experiences. Attending to those experiences may interfere with their ability to discount them as irrelevant to their sexual orientation.

Another implication is that motivational factors affecting self-perceived sexual orientation may also impact the likelihood of engaging in sexual health behaviors. Certain sexual health behaviors (e.g., getting tested for HIV) are associated with identifying as gay (e.g., Parent, Torrey, & Michaels, 2012). Thus, an individual motivated to avoid perceiving themselves as same-sex oriented may also be motivated to avoid engaging in sexual health behaviors that would undermine their ability to perceive themselves as heterosexual.

Health messages intended to bring awareness to the risks associated with specific sexual experiences may be better served by introducing greater specificity about the types of behaviors that are risky. For example, instead of creating messages that target particular identity groups, messages should be framed such that they target *all* individuals who engage in, for instance, unprotected anal sex. This type of specificity may be particularly useful in more conservative cities or regions where behaviorally bisexual individuals may be particularly motivated to avoid seeing their experiences as relevant to their sexual orientation. Similarly, health care providers should be sensitive to the disconnect between sexual experience and self-perceived sexual orientation. Individuals motivated to avoid perceiving themselves in a particular way may feel

more comfortable addressing the risks associated with their particular behaviors if those behaviors are dissociated from their self-concept.

Limitations and Future Directions

This dissertation offers a novel theoretical perspective on the complex interrelationships between self-perceived sexual orientation, actual sexual experience, and social contextual, cultural, and individual factors. Critically, this perspective is couched in basic social psychological theory and research, thus providing a strong basis for empirically testable hypotheses, as demonstrated in the supporting empirical studies and the broader implications of this work. While the empirical studies offered compelling evidence for the theoretical approach, the studies are not without limitations.

The empirical studies all utilized samples of heterosexually identified individuals. While the theoretical approach proposes that the mechanisms underlying variability in self-perceived sexual orientation should function regardless of sexual identity label, the empirical studies presented here provide no test of that proposition. Studies that incorporate gay-, lesbian-, and bisexually identified individuals can provide tests of the differences between heterosexual and sexual minority groups in the susceptibility of the self-perceived sexual orientation to motivational influence.

Relatedly, the theoretical approach and empirical studies do not address the question of the relationship between self-perceived sexual orientation and sexual identity. The theoretical approach contends that sexual identity is derived in part from beliefs about the meaning of sexual experiences. However, sexual identity is also formed in reference to social group membership (e.g., Fassinger & Miller, 1996). For example, a woman might take on the identity label “bisexual” because she perceives her sexual experiences are both same-sex and other-sex

oriented. However, the adoption of that label also indicates that she perceives herself as part of the social identity group of other bisexually identified individuals.

The relationship between change in self-perceived sexual orientation and change in sexual identity label remains unclear. It seems likely that, over time, changes in self-perceived sexual orientation would precipitate a change in sexual identity label. In other words, as a person increasingly believes that their sexual orientation includes same-sex attraction, behavior, and fantasy, they are likely to adopt a same-sex sexual identity (e.g., gay/lesbian or bisexual). However, it is unclear how much of a change in self-perceived sexual orientation is necessary to prompt the adoption of a sexual identity label. Furthermore, other factors, including attachments to a social community and individual differences in beliefs about sexual identity, are likely to play a role, as well (e.g., Preciado & Thompson, 2012). Future research that explicitly examines longitudinal changes in self-perceived sexual orientation as they are related to changes in sexual identity can contribute to our broader understanding of the way in which sexual identity shifts are related to changes in self-perceived sexual orientation.

Finally, a way to extend the present findings would be to include physiological measures of arousal (e.g., cardiovascular measures, penile erection, vaginal blood flow). While the theoretical approach posits that individuals must give meaning to their sexual experiences in order to form beliefs about their sexual orientation, the self-report measures of sexual experiences used in Studies 4 and 5 are still subject to interpretation by the participant. For example, in Study 4, participants were asked whether they had experienced any instance of a range of same-sex sexual experiences. While the description of the experiences was specific (e.g., thought about having sex with another man), the labeling of such experiences is already an interpretational act. For instance, to report that one has thought about having sex with another

man means that one has to label particular thoughts as indicating that they are thoughts about sex. As I described in Chapter I, labeling a behavior as sex can be ambiguous (e.g., Sanders & Reinisch, 1999).

Physiological measures of arousal would allow researchers to obtain truly objective indicators of sexual experience (see Chivers, 2005 for a review). Studies using measures of the physiological arousal in response to same-sex and other-sex stimuli can assess the degree to which that physiological arousal moderates the relationship between motivational factors and self-perceived sexual orientation. Alternately, studies could include third-party assessments of sexual experiences or experience sampling as strategies of obtaining more objective measurement of actual sexual experiences.

Conclusion

The present social psychological approach to self-perceived sexual orientation offers a novel, elegant, theoretically situated approach to explaining variance in self-perceived sexual orientation. Furthermore, it offers a more precise account of the difference and relationship between different aspects of sexual orientation: self-perception and actual experience. This approach forms a foundation for future social psychological research on the social cognitive mechanisms underlying between- and within- person variability in self-perceived sexual orientation, actual sexual experience, and sexual health behaviors.

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