

Prevalence, Predictors and Negative Outcomes
Associated With Discordant Sexual Identity,
Sexual Attraction and Sexual Behavior

by

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Abstract

PREVALENCE, PREDICTORS AND NEGATIVE OUTCOMES ASSOCIATED WITH DISCORDANT SEXUAL IDENTITY, SEXUAL ATTRACTION AND SEXUAL BEHAVIOR

by

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This study assessed the prevalence, predictors and negative outcomes associated with discordant sexual identity in a national US sample of men and women who identified as heterosexual. Results were based on data collected from the 2004–2005 (wave 2) of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). The NESARC is a national sample of 34,653 adults aged 20 years and older comprised of 52% female, 71% white, 12% Hispanic, 11% African American, 4% Asian and 2% Native American. The prevalence of same sex orientation ranged from 1.41% to 6% in men and 1.35% to 8% in women.

Of those who identified as heterosexual, women were statistically more likely to be discordant than men, yet discordance was common in both men and women (4.28% and 6.21% respectively). Discordant men had increased odds of being Black, over the age of 65, widowed, less educated, unemployed, and earning a lower individual and

family income. Discordant women had increased odds of being Asian, foreign born, over the age of 65, widowed, unemployed, and earning a lower family income.

Men with discordant attraction and behavior were 4 times *less likely* to meet criteria for alcohol use disorder but men with discordant attraction alone were 6 times *more likely* to have tested positive for HIV. Discordant men did not have increased risk of any other outcomes. Negative outcomes in discordant women far outweighed negative outcomes in men. Every group of discordant women demonstrated increased risk of alcohol related disorders. Risk of alcohol disorders in discordant women varied by subgroup with the greatest risk found in those with discordant sexual behavior and attraction and the least risk found in those with discordant sexual attraction alone. Some discordant women demonstrated significant risk of HIV infection and increased odds of infection ranged from 2.7 to 5.67. Overall, predictors and negative outcomes varied within each subgroup.

Results highlight gender and discordant subgroup differences indicating the need for specialized prevention and intervention efforts to each subgroup. Future research should investigate all dimensions of sexual orientation and discordance to identify subgroups in need of specialized prevention and intervention efforts.

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In memory of Elaine Schmidt (1939 - 1998)

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Chapter 1 – Introduction

Researchers first became interested in sexual identity development in the early 1970's and tended to focus on the etiology of homosexuality. With the onset of HIV/AIDS in the 1980's, a second focus developed and researchers began investigating the political and social nature of homosexual identity formation. Since that time a multitude of research has been conducted investigating sexuality. Such research has been mainly driven by two competing and often opposing viewpoints related to sexual identity, sexual behavior and sexual attraction. On the one hand, researchers with an essentialist perspective have asserted that sexuality is something that is in-born, innate, biological in nature and constant overtime. On the other hand, those with a social constructionist perspective view sexuality as something that is fluid and dynamic, shifting over time and in response to social and cultural changes.

Many research studies, mostly coming from an essentialist perspective, have found that there are a number of individual and public health consequences associated with sexual behavior and sexual attraction that is not congruent with sexual identity. Sexual behavior and sexual attraction that is not congruent with sexual identity has been termed “discordant sexual identity” in the literature (Kerker, Mostashari, & Thorpe, 2006; Pathela et al., 2006; Ross, Essien, Williams, & Fernandez-Esquer, 2003). The term “discordant” might be interpreted in a pejorative or negative fashion. However, use of the term “discordant” in this work is not meant to imply “pathology” but is only used to describe individuals who have reported sexual identity, behavior, and attraction that do not coincide. Men with discordant sexual identity have been found to participate in high risk sexual behavior (e.g. unprotected anal and/or oral intercourse) (Finlinson, Colon,

Robles, & Soto, 2006; Grov, Bimbi, Nanin, & Parsons, 2006; Pathela et al., 2006; Ross et al., 2003; Siegel, Schrimshaw, Lekas, & Parsons, 2008), leaving them at risk for contracting HIV/STDs, seeking less HIV testing (Pathela et al., 2006; Rietmeijer, Wolitski, Fishbein, Corby, & Cohn, 1998; Wolitski, Jones, Wasserman, & Smith, 2006), and having less disclosure of sexual behaviors to others and specifically to medical doctors (Bernstein et al., 2008; Millett, Flores, Peterson, & Bakeman, 2007). Women with discordant sexual identity have been shown to seek less health care than women whose sexual identity is concordant with their sexual behaviors (Kerker et al., 2006). Finally, some have theorized that concealment of sexual behaviors that accompany discordant sexual identity may be associated with impaired physical health while being open about sexuality may be linked to improved psychological well-being (Grov et al., 2006).

Many studies have found that discordance is highest among Black and Hispanic men (Finlinson et al., 2006; Grov et al., 2006; Jimenez, 2003; Ross et al., 2003). White men and Black women have also shown high rates of discordance (Ross et al., 2003). Research conducted on a population based survey of men in New York city has shown that discordance is highest among men of color, men of lower economic status and men who are foreign born (Pathela et al., 2006). Lower education levels have also been associated with sexual discordance (Smith, Rissel, Richters, Grulich, & de Visser, 2003). In summary, prior research has demonstrated racial, economic and educational disparities associated with discordant sexual identity and has indicated that discordant sexual identity is most common in people of color, those who are foreign born and of lower

economic and educational status (Finlinson et al., 2006; Grov et al., 2006; Jimenez, 2003; Millett et al., 2007; Ross et al., 2003; Smith et al., 2003).

Meanwhile there has been a wealth of research documenting the fluid nature of sexuality, particular in women. Much of this research stems from the social constructionist perspective and rather than asserting the congruency of sexual identity, sexual behavior and sexual attraction, these researchers find that sexual identity, behavior and attraction are dynamic and fluid, changing overtime and are far from stable and consistent. One 10 year longitudinal study of mostly lesbian and bisexual women found that nearly 67% of the sample had changed their sexual identity at least one time over the course of the study and 36% of the sample changed their sexual identity more than once (Diamond, 2008a, 2008b). Others have documented similar changes in sexuality, particularly for women (Bailey, Farquhar, Owen, & Whittaker, 2003; Baumeister, 2000; Baumeister, Catanese, & Vohs, 2001; Chivers, Rieger, Latty, & Bailey, 2004; Diamond, 2008a; M. Rosario, Schrimshaw, Hunter, & Levy-Warren, 2009; Rust, 1992, 1993).

While research from the essentialist perspective asserts that there is (or should be) a sense of congruency between sexual identity, sexual behavior and sexual attraction, research from the social constructionist perspective asserts that fluidity should be expected. It has not been determined if research on discordant sexual identity stands in contrast to the research on fluidity or if these two concepts are different sides of the same coin.

Research on fluidity could be pointing to discordance in women and the research on discordance in men could be indicating that men are also fluid in their sexuality. Studies of sexual discordance might be measuring fluidity at one point in time. It could also be

that these two perspectives are identifying gender differences in the way men and women experience and organize sexuality.

Gender Differences in Sexuality

A number of studies have been conducted documenting the fluid nature of women's sexuality (Bailey et al., 2003; Baumeister, 2000; Baumeister et al., 2001; Chivers et al., 2004; Diamond, 2008a; M. Rosario et al., 2009; Rust, 1992, 1993) and women have shown considerable variability in their sexual identity, attractions and behaviors (Diamond, 2000, 2003b, 2005, 2008a, 2008b). Men on the other hand have demonstrated a more consistent and enduring pattern of sexuality and show less variability in their sexual attractions, tending to be attracted to one sex or the other (Baumeister, 2000; Baumeister et al., 2001; Chivers et al., 2004; Laumann, Gagnon, Michael, & Michaels, 1994). While this preliminary evidence supports the notion of stable and consistent sexuality in men, long term longitudinal studies have not been conducted in male populations documenting such consistency.

Based on this preliminary research, there appears to be a gender divide in how sexual identity is experienced and organized, as the fluidity model appears to be better fitting for women and the model of stable and consistent sexual identity appears to be better fitting for men. However, while there is data to support the fluidity of women's sexuality and the more consistent nature of men's sexuality, no national study has examined rates of fluidity or discordance in comparable samples of men and women. Doing so would add to what is known about the gender differences of sexual identity and its consistency. Additionally, unlike the research on discordant sexual identity, none of

the studies documenting the fluid nature of women's sexuality have explored the possible connection between stability or fluidity and negative outcomes.

Sexuality and Alcohol Use and Misuse

Whether sexuality is stable and consistent overtime or fluid and dynamic, there is a long standing connection between sexuality and the use of alcohol. Viewed as a social disinhibitor because of its ability to induce euphoric feelings and decrease fear response to potentially negative consequences, the connection between alcohol and sexuality has been repeatedly demonstrated (Gilman, Ramchandani, Davis, Bjork, & Hommer, 2008; Hesse & Tutenges, 2008; Klassen & Wilsnack, 1986). In short people like to drink because it makes them feel good and induces feelings of euphoria (Gilman et al., 2008). In a national survey of 917 women, most reported that the experience of drinking lowered their sexual inhibitions and almost a quarter of the sample reported becoming more sexually assertive while drinking (Klassen & Wilsnack, 1986). A more recent study utilizing a convenience sample at a vacation resort, found that men report even more sexual disinhibition while drinking compared to women (Hesse & Tutenges, 2008).

These results are particularly important when examining sexuality and alcohol use. Feeling good and less fearful has possible implications for engaging in behaviors that one would not ordinarily engage in absent alcohol usage (e.g. – high risk sexual behavior including unprotected intercourse). In fact, alcohol has been consistently identified as a risk factor in men for engaging in high risk sexual behavior (Calzavara et al., 1993; Dolezal, Meyer-Bahlburg, Remien, & Perkova, 1997; Stall, McKusick, Wiley, Coates, & Ostrow, 1986). Alcohol used in conjunction with other drugs has also been found to be a significant risk factor for high risk sexual behavior in men (Agronick et al.,

2004; Calzavara et al., 1993; Dolezal et al., 1997; Stueve, O'Donnell, Duran, San Doval, & Geier, 2002). Finally, alcohol has also been implicated as a risk factor for high risk sexual behavior in adolescent males and females (Bagnall, Plant, & Warwick, 1990).

While alcohol has been connected to high risk sexual behavior in men and adolescent males and females, lesbian and bisexual women and women who have sex with women (WSW) have been consistently shown to be at a disproportionate risk for increased alcohol consumption, alcohol disorders and their negative ramifications (Cochran, Keenan, Schober, & Mays, 2000; Cochran & Mays, 2000; Drabble, Midanik, & Trocki, 2005; McCabe, Hughes, Bostwick, West, & Boyd, 2009). Additionally, single measures of sexual identity, sexual behavior and sexual attraction investigated alone in the study of alcohol use and misuse were deemed insufficient (McCabe, Hughes, Bostwick, & Boyd, 2005; McCabe et al., 2009; Midanik, Drabble, Trocki, & Sell, 2007). One of these studies examined alcohol use and misuse in a national sample across three sexual orientation variables, including sexual identity, behavior and attraction (McCabe et al., 2009). This study found that female sexual minority members demonstrated the highest risk overall but the level of risk that was found varied significantly depending on the variable used to examine sexual orientation (McCabe et al., 2009). Additionally, many studies in adolescents and the general population have found elevated rates of substance use and misuse in individuals with same sex and both sex attractions (Corliss, Rosario, Wypij, Fisher, & Austin, 2008; McCabe et al., 2005; McCabe et al., 2009; Russell, Driscoll, & Truong, 2002).

While women have consistently been shown to be at an elevated risk of alcohol use and misuse, the risk varies greatly by the method utilized to measure sexual identity,

behavior and/or attraction. These studies highlight important differences that are found between sexual identity, sexual behavior, sexual attraction and their combination, pointing to the necessity of investigating multiple dimensions of sexual orientation. None of these studies investigated the role of discordant sexuality in alcohol use and misuse but since the results have been shown to vary by identity, behavior and attraction measures, this could be an indication calling for the study of discordance and risk of alcohol use and misuse.

HIV

Rates of HIV infection in the US continue to increase at alarming rates, particularly in Black and Hispanic men who have sex with men (MSM) (Catania et al., 2001; CDC, 2005a; Chan, 2007; Hall, Byers, Ling, & Espinoza, 2007; Lite, 2007; Millett et al., 2007; Valleroy et al., 2000; Wilson, Wright, & Isbell, 2008). A 2005 study by the Center for Disease Control (CDC), found that Black men were twice as likely to be diagnosed with HIV than White men and Hispanic men had 55% more new infections than White men (CDC, 2005a). While men who have sex with men are still contracting HIV at the highest rates, Blacks in general (not just MSM) have also been shown to be particularly vulnerable (Wilson et al., 2008). According to a report by the Black AIDS Institute, US Blacks analyzed as a separate country would rank 16th in the world in the number of people living with HIV (Wilson et al., 2008).

While this is not direct support of the need for a study of discordant sexuality, this does offer some secondary supportive evidence, since discordance has been shown to be connected to high risk sexual behavior, and discordance has been found to be highest in people of color, meanwhile people of color have been contracting HIV at a

disproportionate rate. This calls for research investigating discordance and HIV infection. Since both discordance and alcohol use have been found to be risk factors for high risk sexual behavior especially in men, rates of alcohol use and HIV infection among discordant populations need to be examined.

Gaps in Research

While there is growing literature on the negative ramifications associated with discordant sexual identity, there remain several gaps and inconsistencies in the research. Most studies of discordance have examined the congruency between sexual orientation measures at one point in time, yet much of the research on sexual fluidity in women has utilized a longitudinal approach. While this has never been directly tested, studies of discordant sexual identity might be capturing sexual fluidity at one point in time and sexual fluidity could be measuring discordance as it shifts over time. In both cases, each approach reports incongruence between sexual identity, behavior and/or attraction.

If women's sexuality is really more fluid than men's, rates of discordance should be higher in representative samples of women versus men. Yet, no large scale study conducted in the US has compared rates of discordance as they vary by gender. This study hopes to fill that gap. Understanding the incongruence of sexual orientation in men and women can help guide outreach, prevention, and intervention efforts to these groups. No studies have documented negative outcomes associated with fluidity in women yet a plethora of studies have documented negative ramifications associated with discordance in men. Discordance in women might not be associated with negative ramifications and discordance in men in a large scale study might not be associated with negative outcomes

in all populations. By looking at discordance and its association with eight negative outcomes, this study will fill these gaps.

Several studies have indicated racial and economic disparities associated with discordant sexual identity (Finlinson et al., 2006; Grov et al., 2006; Jimenez, 2003; Millett et al., 2007; Ross et al., 2003) but these studies have utilized small samples, often from limited geographical areas, which limit their generalizability. Despite this, to date no large scale US study has investigated the prevalence or the predictors of discordant sexual identity. Meanwhile discordant sexual identity and misuse of alcohol have been associated with participation in high risk sexual behaviors, yet no study has investigated the connection between sexual discordance and misuse of alcohol. This is particularly important since women have demonstrated elevated risk of alcohol use and misuse and the risk of alcohol related disorders in discordant women is currently unknown. Finally, no study has yet examined rates of HIV/AIDS, or STDs in discordant individuals as compared to those with concordant sexual identity, yet Black discordant men have been identified as a vector of HIV transmission to women (CDC, 2006; Denizet-Lewis, 2003) .

This dissertation will address these knowledge gaps in several ways. Utilizing data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a three part secondary data analysis will be conducted. Part one will determine the US prevalence of same sex behavior, same sex attraction and sexual identification as heterosexual, gay/lesbian, bisexual or “unknown”. Using these variables, the US prevalence of discordant sexual identity will be calculated. Next, part two will determine which groups are most likely to be discordant by examining the demographic predictors that are associated with this phenomenon. This analysis will

determine demographic disparities in the prevalence of sexual discordance. Finally, part three will examine eight negative outcomes associated with discordant sexual identity, including use of alcohol prior to sexual activity, having met criteria for alcohol dependence or alcohol abuse according to the Diagnostic and Statistical Manual IV criteria, having met criteria for alcohol use disorder (the summation of alcohol dependence and/or alcohol abuse) and having had a positive HIV and/or STD test or having been diagnosed with AIDS.

In order to study discordant sexual identity, the concept of sexual identity and its similarities to and differences from sexual behavior and sexual attraction need to be reviewed. Opposing theoretical approaches to and understandings of sexual identity will be discussed from the essentialist and social constructionist viewpoints, and the fluid versus stable nature of sexuality will be reviewed. Next, will be an in depth examination of the empirical research on sexual identity, behavior and attraction. Studies related to sexuality, high risk sexual behavior, and alcohol use and misuse will be examined. Particular attention will be paid to studies that have focused on the prevalence, predictors or negative outcomes associated with discordant sexual identity, behavior and/or attraction. Although definitions of various terms utilized throughout this work are provided within the text of this proposal, a glossary of terminology has also been included in Appendix 1.

Connection to Social Work

The National Association of Social Workers (NASW) Code of Ethics indicates a connection between social work practice and issues of sexuality and alcohol misuse. The Code of Ethics states, “Social workers should act to prevent and eliminate domination of,

exploitation of, and discrimination against any person, group, or class on the basis of race, ethnicity, national origin, color, sex, *sexual orientation*, gender identity or expression, age, marital status, political belief, religion, immigration status, or mental or physical disability” (italics added) (NASW, 2008). NASW emphasizes the importance of sexual orientation issues and asserts that sexual orientation is a component worthy of attention from social workers. Whether sexual identity, sexual behavior or sexual attraction, individuals experiencing any same sex orientation are in need of support from social workers.

Additionally, social work has a long history demonstrating dedication to the treatment of alcohol and related disorders. Social workers have long worked with people who abuse substances, have helped develop 12 step programs and have conducted research into substance use, interventions and outreach (NASW, 2009b). According to the NASW, there is a specific social work specialty certification geared towards social work with alcohol, tobacco and other drug related issues (NASW, 2009a). NASW notes that the negative ramifications of alcohol use and misuse are far reaching and worthy of attention from social workers.

Finally, social workers are *obligated* to keep up to date with HIV information related to treatment and prevention (NASWNYC, 1993). The study of discordant sexuality and negative outcomes brings the issues of HIV prevention and treatment to the forefront since those who are discordant have been shown to participate in high risk behavior, leaving them at risk of HIV infection. The NASW has indicated that outreach, prevention and treatment to these groups are warranted and additional study of who is discordant can help guide these efforts.

Understanding the prevalence of discordance and its connection to negative health outcomes can help social workers develop and target specific interventions to the groups that most need them. Given the psycho-social, medical, legal and economic ramifications of sexual orientation, alcohol misuse and HIV, social workers are particularly well-suited to confront these issues. Almost all realms of social work are affected by sexual orientation, alcohol misuse and, HIV issues, including the clinical and medical realm, the policy realm, advocacy, and outreach. Social workers also have a call to advocate for and work with the underprivileged and stigmatized members of society. Highly stigmatized groups in the US include gays, lesbians and anyone who does not fit the heterosexual model, including people who engage in same sex behaviors, regardless of how they identify their sexuality. Social workers are particularly well-suited to work with this population and research investigating the prevalence, predictors and negative outcomes associated with discordant sexuality can help guide these efforts.

Chapter 2 – Literature Review

What is Identity?

The word identity has become widely used in both social science literature and in popular media, which has led to a diffusion of its meaning and concept. Despite this, the use of the concept of identity appears to have three applications: as a general umbrella term applied to social groups or collectivity and used to indicate a social movement; to refer to a culture of a people, used interchangeably with ethnicity; and to refer to the self-composed meanings that people attach to the multiple roles that they assume (Sheldon & Burke, 2000). There is an established literature indicating that individuals have multiple identities that describe different aspects of themselves that change and evolve over time (Dien, 2000; Markus & Nurius, 1986).

Sigmund Freud (1905) was one of the first contributors to the concept of sexual identity development and Erik Erikson (1968) built off of these ideas and developed a life long model of identity development. Freud developed his psychosexual stages of development and completion of the stages was seen as a requirement for “normal” identity development. Freud freely expressed a belief in the idea that all individuals are born “bisexual” but believed that “normal” sexual development was towards opposite sex partners (Freud, 1905). According to this model, sexual development towards same sex partners represents a fixation in an early stage and an incomplete sense of identity development (Freud, 1905).

Perhaps one of the most influential works on identity development was Erik Erikson’s (1968) eight stage model. Similar to Freud, Erickson also demonstrated identity development as a linear process and asserted that through progression and

completion of each stage, individuals struggle to define who they are. Progression through each stage demonstrates another step towards identity development. As each stage is completed one's identity is shaped, reshaped and formed.

Irving Goffman (1963) wrote of spoiled identities and notes that stigma from society, family and community mark an individual who is different. Goffman also notes that not all stigmatized identities are easily seen since some identities remain hidden (Goffman, 1963). This can be applied to lesbian, gay and bisexual individuals and anyone who desires or engages in same sex behavior. Taking on a non-heterosexual identity requires one to disclose this “spoiled” identity to others and is often marked by a conscious decision to let others know about one's stigmatized status.

Over the past 40 years, much has been written about social identity theory. Social identity theory posits that the process of self categorization in which an individual classifies, categorizes and names the self is how an identity is formed (Hogg & Abrams, 1988; Simon et al., 1998; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). A social identity is developed through the knowledge that an individual belongs to a social category or group (Hogg and Abrams, 1988). Two important processes in the development of social identity formation are self categorization and social comparison (Hogg and Abrams, 1988). One's sense of self is derived largely from the social groups that individuals belong to and identify with.

Each individual belongs to multiple groups and each group is considered to be relative and contextual but is formed in a hierarchy, from high to low levels, in which high levels are the largest and most general (i.e. – the human level) to the most specific (i.e. – a member of a certain club) and include a number of intermediate levels, such as

belonging to a specific family or working at a particular organization (Turner et al., 1987). This type of social identification is thought to be the prime basis for participation in social movements (Simon et al., 1998).

Sexual Identity, Sexual Behavior and Sexual Attraction: Dimensions of Sexual

Orientation

Sexual identity is a part of one's overall identity and is a concept of how one identifies his/her sexuality to themselves and to the world (Garnets, 2002). Terms such as "gay", "lesbian", "bisexual", "heterosexual", and "unlabelled" indicate one's sexual identity. These self chosen labels can be used to categorize sexuality. Individuals have multiple social identities and sexual identity is one component of their overall identity. These terms are also attached to social movements related to gay rights and can be an indication of belonging to a social group, one that is stigmatized in society (Savin-Williams, 1996). Distinct from sexual identity, sexual behavior is sexual activity or sexual practices that individuals engage in. While sexual attraction is who one is drawn to sexually, marked by a physiological and cognitive response that push individuals away from or towards desire for others (Friedman et al., 2004; Levine, 2003), and is considered a key component in overall sexuality (Laumann et al., 1994; McCabe et al., 2009; Michaels, 1996; Savin-Williams, 2001). These three dimensions (identity, behavior and attraction) encompass different aspects of sexual orientation.

Sexual orientation has been defined by some purely in terms of sexual attraction, independent of sexual behavior or identity (American Psychological Association, 2004; Golden, 1996). However, two large reviews of the literature found that the term sexual orientation generally encompasses any combination of sexual identity, sexual attraction,

and/or sexual behavior (Chung & Katayama, 1996; Sell, 1997). Since these earlier reviews were completed, a multidimensional approach to sexual orientation has been suggested in which the dimensions of sexual attraction, sexual behavior and sexual identity are examined independently (Horowitz & Newcomb, 2001; Laumann et al., 1994; McCabe et al., 2005; McCabe et al., 2009; Midanik et al., 2007; Smith et al., 2003). These studies have concluded that it would be quite reductionistic to boil down sexual orientation into one simple category and a multidimensional approach allows for examination of differences within each dimension.

Including Sexual Attraction

While significantly less research has been conducted on the risk factors of same sex attraction compared to those of same sex identity and behavior, several important studies have documented negative outcomes associated with same sex attraction. A small nonrandomized study based on a convenience sample found that married men with same sex attractions demonstrated significant clinical distress (Coleman, 1985). Two large studies examined the role of identity, behavior and attraction in substance and alcohol use and misuse in a national sample (McCabe et al., 2009) and in a college age population (McCabe et al., 2005). Results of both studies determined that the risk varied greatly by the measure that was examined and indicated the need to include all three dimensions (McCabe et al., 2005; McCabe et al., 2009). Additionally, it has been argued that focusing on identity or behavior to the exclusion of attraction overlooks many sexual minority members who all have differing needs (Savin-Williams, 2001).

Discordant Sexual Identity, Behavior and Attraction

Traditionally it has been thought that sexual behavior and sexual attraction define sexual identity, but more recent research has shown that this is not always the case. For instance, a woman may identify herself as a “lesbian” but not engage in same sex behavior. Similarly, a man may identify himself as “heterosexual” but still desire or engage in sexual activity with other men. In fact, research has shown that many people who engage in or who desire same sex activity do not identify themselves as “gay”, “lesbian” or “bisexual” and the number of people who report engaging in same sex behaviors has been consistently found to be larger than the number of people who identify as such (Finlinson et al., 2006; Garnets, 2002; Jimenez, 2003; Laumann et al., 1994; McCabe et al., 2009; Michaels, 1996; Pathela et al., 2006; Ross et al., 2003). Other work has pointed to the fluid nature of women’s sexuality in particular (Baumeister, 2000; Baumeister et al., 2001; Diamond, 2000, 2003a, 2003b, 2005, 2008a, 2008b). These studies demonstrate a complex relationship among women’s sexual identity, sexual attraction and sexual behavior. These studies further demonstrate that these three independent dimensions can be discordant from one another. How one chooses to identify their sexuality does not dictate what one does and the behaviors one engages in do not necessarily define how one identifies him/herself.

Terminology

Heterosexism and Heteronormativity

Heterosexist and heteronormative views of sexuality influence discussion of sexual attraction, identity and behavior. Gregory Herek, a psychologist and gay rights activist defines heterosexism as “an ideological system that denies, denigrates and

stigmatizes any non-heterosexual form of behavior, identity, relationship or community” (Herek, 1992, p. 89), which can be manifested at both an institutional and individual level (Herek, 1992). In at least one study, perceived effects of subtle heterosexism were experienced as offensive, indicative of prejudice and were associated with decreased disclosure of sexual orientation (Burn, Kadlec, & Rexer, 2005). Heteronormativity has been defined as “the practices and institutions that legitimize and privilege heterosexuality and heterosexual relationships as fundamental and “natural” within society” (Cohen, 2005, p. 24). Heteronormativity is grounded in gender roles and the maintenance of those roles (Cohen, 2005). Under this belief, heterosexuality is prized and privilege and all others are ignored, unacknowledged or face discrimination (Kitzinger, 2005). Heterosexism and heteronormativity dominate the societal context in which sexual discordance occurs.

Terms Associated With Discordant Sexuality

A variety of terms have been proposed to refer to the phenomenon of discordant sexual identity. This has contributed to a fair amount of confusion on the topic since it is not known if each term refers to the same or disparate groups of individuals. Some terms such as “MSM” and “WSW” only partially overlap with sexual discordance (Young & Meyer, 2005). Yet other terms such as “non-gay identified” MSM and WSW (Finlinson et al., 2006; Harawa et al., 2008; Siegel et al., 2008) and the “down low” phenomenon are much more closely related (CDC, 2006; Ford, Whetten, Hall, Kaufman, & Thrasher, 2007; Miller, Serner, & Wagner, 2005; Wolitski et al., 2006). “Sexual fluidity” suggests that sexual identity does not always overlap with sexual attraction or sexual behavior, especially in women (Bailey et al., 2003; Baumeister, 2000; Baumeister et al., 2001;

Chivers et al., 2004; Diamond, 2003b, 2005, 2008a; M. Rosario et al., 2009; Rust, 1992, 1993). There is an overlap between the groups referred to by each term since each in some context refers to incongruence in sexual orientation. However, it is not yet known if these terms are completely synonymous. All of these terms will be briefly reviewed but for simplicity the term “discordant sexual identity” will be used throughout the remainder of this work to refer to the phenomenon of incongruent sexual identity, sexual behavior and/or attraction. Similarly for simplicity, occasionally the terms “homosexual” and “gay” are used to refer to both men and women. When referring to only one gender, “lesbian” will be used to refer to homosexual women while the term “gay men” will be used to refer to homosexual men. Use of terminology in this way is to simplify and clarify the reading of this work and is not meant as an indication that these terms are completely synonymous or that this usage should be embraced by the communities of researchers and people who use them as referents.

MSM and WSW

The terms “MSM” and “WSW” were largely created in an effort to be less stigmatizing towards gays and lesbians (Young & Meyer, 2005). These descriptively neutral terms define sexuality in relation to only behavior and allow researchers and epidemiologists to avoid controversy over sexual identity terminology. This was particularly important for MSM since HIV was first named “Gay Related Immune Deficiency” and was thought to only affect gay men (Cadwell, 1994; Shilts, 2000). Focusing on behavior rather than identity allowed for investigation of HIV without stigmatization of those who identify as gay (Young & Meyer, 2005). These terms include both heterosexual and gay identified

individuals who engage in same sex behavior. Thus discordant individuals are only a subset of MSM and WSW. Out of this partial overlap, the terms “non-gay identified” MSM and WSW were developed in order to specifically focus on those who identify as heterosexual but participate in same sex behavior (Finlinson et al., 2006; Harawa et al., 2008; Siegel et al., 2008).

The “Down Low”

The “down low” phenomenon has been receiving increased attention both in the realm of research (CDC, 2006; Ford, Whetten, Hall, Kaufman, & Thrasher, 2007; Miller, Serner, & Wagner, 2005; Wolitski et al., 2006) and in the popular media (Boykin, 2005; Denizet-Lewis, 2003; King, 2005, 2006; Villarosa, 2001), including an episode of the Oprah Winfrey show dedicated to this phenomenon. This term has been used to describe men who have sex with both men and women, who do not disclose their sexual activities, and do not identify as gay or bisexual (CDC, 2006). A review of existing definitions of the down low found that men characterized by this term are; 1) Black, 2) do not identify as gay, 3) have sex with men and some also have sex with women, 4) do not disclose their sexual behaviors and 5) some never or inconsistently use condoms with male and female partners (Wolitski et al., 2006).

Black men on the down low have been accused of being a “vector” or a “bridge” of HIV transmission from men who have sex with men to heterosexual women (CDC, 2006; Denizet-Lewis, 2003). Recent book titles pertaining to this topic in the popular media include (among others); “On the Down Low”(King, 2005), “Coming Up From the Down Low” (King, 2006), and “Beyond the Down Low” (Boykin, 2005). A closer look at these titles suggests the negative connotation associated with being on the down low,

since it is something that individuals are encouraged to “move beyond” or “come up” from. Much of this work focuses on a subset of people who have same sex experiences but who do not identify as gay.

Terminology Summary

Many terms overlap with and refer to sexual discordance. Yet, one thing remains consistent regardless of the label that is used to discuss this issue (e.g. “discordant”, “down low”, “MSM”, etc.), in almost all instances there is some association with negative personal and/or public health consequences and health disparities between these groups of individuals and the general population. Behaviorally, these phenomena are very similar, in that individuals who are on the down low, non gay identified MSM or WSW and those who are discordant all refer to individuals who engage in same sex behaviors but do not identify as gay and most do not identify as bisexual.

Sexual Fluidity

Similar to the research on discordant sexuality, most of which has pertained to men, there is a rather large body of research demonstrating the fluid nature of women’s sexuality (Bailey et al., 2003; Baumeister, 2000; Baumeister et al., 2001; Chivers et al., 2004; Diamond, 2003b, 2005, 2008a; M. Rosario et al., 2009; Rust, 1992, 1993). This work has documented that sexual identity does not always overlap with sexual behavior or attraction. Unlike the work on discordance, this research does not indicate any negative individual or public health outcomes associated with this inconsistency. The notion of sexual fluidity asserts that sexual identity labels shift as sexual behaviors and attractions shift (Diamond, 2003b, 2005, 2008a, 2008b; Rust, 1992, 1993). Age seems to play a factor in sexual fluidity as data from a UK based survey of sexual behavior

between women who self identified as lesbian or bisexual (N=1218) found that compared to women over 30, women under the age of 30 were significantly more likely to identify as bisexual (Bailey et al., 2003).

Most of the work on sexual fluidity has been conducted on lesbian and/or bisexual women to the exclusion of women who identify as heterosexual. It is possible that sexual fluidity applies to all women, but this has not yet been empirically demonstrated. There is also some evidence to support the notion that sexual fluidity does not apply equally to men and women and that most men might be more specific in their sexual behaviors and attractions (Baumeister, 2000; Baumeister et al., 2001; Chivers et al., 2004; Diamond, 2008b; Laumann et al., 1994). Samples attesting to female sexual fluidity have consisted of only females and thus do not allow a comparison to males (Diamond, 2000, 2003b, 2008a, 2008b). While these studies demonstrate sexual fluidity among lesbian or bisexual identified women, little can be drawn from these results about women who identify as heterosexual or about any men.

The Gender Divide

There does appear to be a gender divide in the way that individuals report sexual identity development and fluidity of sexuality (Baumeister, 2000; Baumeister et al., 2001; Chivers et al., 2004; Laumann et al., 1994). Men have shown more static and consistent sexual attractions and behaviors, yet women have shown more plasticity and flexibility in their attractions and behaviors (Baumeister, 2000; Baumeister et al., 2001).

Using vaginal pulse amplitude (VPA) for women and penile plethysmography for men to measure sexual arousal, in addition to subjective measures of arousal, it was determined that heterosexual and homosexual men and women demonstrate very

different patterns of arousal. Heterosexual men showed more arousal to female stimuli than to male stimuli and homosexual men showed the exact opposite pattern. Women on the other hand tend to be nonspecific in their arousal and showed equal arousal to both male and female stimuli, regardless of their sexual identity (Chivers et al., 2004). The authors of this study concluded that female sexuality may be organized differently than male sexuality and that sexual arousal may play fundamentally different roles in overall sexuality in males and females (Chivers et al., 2004).

Two other national studies, based on self report have demonstrated that women were much more likely to be attracted to both sexes than were men (Laumann et al., 1994; McCabe et al., 2009). This work, in conjunction with the research on sexual fluidity of women's sexuality demonstrates that there may be a gender divide in the way that sexuality is experienced and organized in both men and women which may have either or both biological and cultural roots.

The Closet and Coming out

Discussion of sexual discordance revolves around the concepts of the “closet” and of “coming out”. Both terms were created out of heterosexism and from within a heteronormative society (Seidman, 1999). The “closet” (or being “in the closet”) is a phrase attributed to those who desire or engage in same sex behavior but who do not outwardly identify as such (Seidman, 1999). “Coming out” (as in “coming out of the closet”) is a term that refers to the process of identifying oneself as gay, lesbian or bisexual (Evans, 1999). The concept of “coming out” is about publicly or privately giving expression to a non-heterosexual identity but this must be done within a heterosexist and heteronormative society. The concepts of the “closet” and of “coming

out” are inseparably linked and both stem from a heterosexist society that prizes heterosexuality and were created in relation to the perceived normality of heterosexuality (Seidman, 1999).

Individuals who are not heterosexual face particular challenges involved with coming out as familial, cultural and ethnic identities might be at odds with their sexuality. This is particularly true for racial minorities, including Blacks, Latinos/Latinas, Asians and Native Americans (Bhugra, 1997; Greene, 1994; Icard, 1986; Morales, 1990; Savin-Williams, 1996; Wheeler, 2006). For these individuals developing a sexual identity that is not heterosexual may be incompatible with their cultural and family values.

However, the majority of people who develop a non-heterosexual identity are most often born into and raised in families, cultures and environments that are heterosexual. Non-heterosexual youth are often raised in environments in which they are “different” from others and that is the crux of the oppression that non-heterosexual people must face. Unlike, racial minorities who are most often born into families that are similar to them, sexual minorities are most often raised in environments where they are not like their family members and are also different from the society at large. Existing in such an environment can create a psychological and social conflict in which one’s sexuality at least initially seems intolerable. Racial and ethnic minority group members are at particular risk of psychological conflict related to their sexuality but this also applies to all people who engage in or desire same sex behaviors (Savin-Williams, 1996, 2001).

Cognitive Dissonance Theory – A Theoretical Explanation of Discordant Sexuality

Psychologists have asserted that people seek congruence between their own sense of identity and their social identity. “Coming out” can assist in maintaining a sense of congruence between one’s sexual attractions, behaviors and sense of self. For those who don’t “come out” the theory of cognitive dissonance can be applied.

Cognitive Dissonance theory asserts that individuals strive to maintain concordance between affect, cognitions and behaviors because discordance generates emotional stress and strain (Anderson et al., 2009; Brehm & Cohen, 1962; Devos & Banaji, 2003; Festinger, 1957). According to this theory, when one cognition (or thought) follows from another, those cognitions are consonant. If cognition follows from the converse of another thought, the cognition is dissonant and produces psychological stress. In order to reduce psychological tension or unease, the dissonant cognitions are actively denied, minimized or rationalized. The stronger the dissonance, the more motivated the individual will be to change it. Essentially, under this theory people will change their thoughts and beliefs to fit their behavior, rather than change their behavior to fit their beliefs (Brehm & Cohen, 1962; Festinger, 1957).

A common example of cognitive dissonance is having the knowledge that smoking is bad for your health but continuing to smoke. Rather than reducing smoking behaviors, individuals will rationalize, minimize, or deny the effects of smoking. Applied to discordant sexual identity and behavior the theory of cognitive dissonance asserts that these men and women will change their beliefs about engaging in same sex behaviors rather than change their behaviors. If identifying as gay, lesbian or bisexual is inconsistent with how some people see themselves, cognitive dissonance theory asserts

that engaging in same sex behaviors would create psychological tension or unease. Rather than change the behaviors to avoid psychological unease, thoughts, cognitions and beliefs about engaging in same sex behaviors are altered to reduce any tension that is created. The same sex behaviors might be minimized (e.g. I don't engage in these behaviors very often), rationalized (e.g. having sex with people of the same gender means nothing to me and I could stop at anytime), or simply denied (e.g. – that's not who I really am).

This same theory can also be applied to having same sex attractions while identifying as heterosexual. If same sex attractions even without same sex behaviors are incompatible with how people see themselves and how they identify, the thoughts and cognitions related to same sex attractions can also be actively pushed out of consciousness in order to maintain one's self view. The same sex attractions might be minimized (e.g. – I don't think about it *that* often), rationalized (e.g. just having same sex attractions doesn't mean I will act on them), or simply denied.

Social, Racial and Situational Factors Associated With Discordance

The psychological and social reasons for adopting one sexual identity label or no label likely vary by group, culture and race. As discussed earlier, ethnic and cultural factors influence concordance and discordance. Many authors and researchers have written about the difficulty of developing dual stigmatized identities that is required of racial and sexual minority members (Bhugra, 1997; Greene, 1994; Icard, 1986; Morales, 1990; Savin-Williams, 1996; Wheeler, 2006). In a qualitative study of 25 non-gay identified Black MSM, the labels “gay”, “queer” and “homosexual” were found to be inconsistent with the way that the men in this study saw themselves and wanted the world

to see them (Wheeler, 2006). For the men in this study, these labels were associated with being feminine. In fact, it has been shown that in many cultures homosexuality and the idea of same sex identity is incompatible with the views and values of ethnic cultures, yet same sex behavior is more acceptable (Bhugra, 1997; Greene, 1994; Icard, 1986; Morales, 1990; Savin-Williams, 1996; Wheeler, 2006).

Immigration and acculturation issues have also been noted as the meanings of the words “gay”, “lesbian” and “bisexual” differ in other cultures and in other value systems that emphasize the heterosexual family and “appropriate” sex role behavior (for reviews see - Manalansan, 1996; Savin-Williams, 1996). Within African-American and Latino communities the word “gay” is often associated with being “effeminate” and is only associated with the passive or receptive sexual partner (Ross et al., 2003). The insertive partner is considered “masculine” and thus not “gay”. In a multiethnic study of 205 HIV positive MSM, it was found that individuals who self labeled themselves as “tops” (i.e. – the “insertive partner”) were less likely to identify as gay and more likely to have had sex with a woman in the previous 3 months (Hart, Wolitski, Purcell, Gomez, & Halkitis, 2003). The authors of this study note that it is possible that people might prefer to take the insertive role during intercourse in order to avoid having to identify themselves as gay. In this sense forgoing the use of the term gay is not related to sexual behavior itself but, is related to what the term means, how it is used characteristically, and how it is interpreted by others.

It is possible that if people see themselves as straight or gay or even as mostly straight or mostly gay, occasional sexual behaviors with one sex or the other may not be seen as indicative of whom the person “really is”. Identification with the gay community

and taking on of a non-heterosexual identity revolves around identification with a marginalized sexual identity (Goffman, 1963; Grov et al., 2006) which many people choose to avoid. Additionally, some note that racism in the predominately white gay community (Grov et al., 2006; Savin-Williams, 1996), excludes many people of color which would inhibit still others from taking on a non-heterosexual identity.

Finally, other studies have found “situational homosexuality” in which individuals identify as heterosexual but engage in same behaviors out of necessity. One study found that engaging in same sex behavior for exchange of drugs and/or money was more common among Black MSM (Wheeler, Lauby, Liu, Van Sluytman, & Murrill, 2008). When basic survival is at stake it is quite conceivable that individuals might engage in same sex behaviors in exchange for money in order to buy food or to pay for housing. In these circumstances, engaging in sexual behaviors might be completely irrelevant to sexual attraction or sexual identity. Other studies in criminology have found individuals in prison who identify as heterosexual but engage in same sex behaviors out of a lack of available opposite sex partners. In one study of 200 MSM in prison, only 20% of the sample identified as gay or bisexual while the rest identified as heterosexual even though they participated in same sex behaviors (Wooden & Parker, 1982). These factors also produce “situational discordance” but only point to the need for further study of the connection between sexual identity, sexual behavior and sexual attraction.

Regardless of the factors that might contribute to discordance, some discordant men and women could be seen as not having “come-out” yet. Goals with these populations could include services to assist them in their identity formation process. However, much of the research on “coming out” and many linear stage models of

homosexuality have been based on white middle class gays and lesbians (Brady & Busse, 1994; Cass, 1984; Coleman, 1981/82; Lipkin, 1999; Troiden, 1979). Assuming that failure to come out is pathological for everyone could be ignoring the views, experiences and values of many people with discordant sexual identity. It is possible that “coming-out” may not be the answer for them and that identifying as heterosexual while maintaining same sex attractions and/or engaging in same sex behaviors might be what work best for some. In fact, application of the Dynamical Systems Model to sexuality has been suggested. This model explains how complex phenomena (such as language, identity, sexuality) emerge, stabilize, change and re-stabilize over time and notes that “coming out” may or may not be a part of this process (Diamond, 2008b). This model has been proposed as an alternative to linear stage models and has been applied to fluid sexuality (Diamond, 2008b). Future longitudinal studies examining the “fit” of the Dynamical Systems Model in discordant individuals could examine the stability or instability of discordance over time.

Whether those who are discordant have not “come out” yet or not is nearly irrelevant since the focus of this research is not on changing how people identify. Rather the focus of this work is on ameliorating the public and personal health consequences associated with discordance through prevention and intervention efforts specifically designed for these groups. Investigation into what leads people to avoid a non-heterosexual identity could uncover racial, cultural, and societal marginalization. Rather than being grounded in the goal of “changing” discordant individuals, this research can help determine which, if any negative outcomes are associated with being discordant. Finally, if discordance is shown to be high in the general population this will provide an

empirical rationale to initiate or establish new identity models and labels that focus on fluidity or to develop new outreach efforts that focus on discordant identity.

From Cognitive Dissonance to Alcohol Use and Misuse

In considering the theory of cognitive dissonance and racial, cultural and situational factors that might influence sexual discordance, the use and/or misuse of alcohol should be discussed since alcohol has a long history of being connected to sexuality. Known to lower sexual inhibitions and decrease fear of negative stimuli (Gilman et al., 2008), use of alcohol could be associated with discordant sexuality, particularly if cognitive dissonance is operating. Use and misuse of alcohol might play a role in discordance as individuals might use alcohol to mediate the painful psychological effects of unwanted and stigmatized sexual attractions and/or behaviors.

Use of alcohol has been shown to lower sexual inhibitions (Hesse & Tutenges, 2008; Klassen & Wilsnack, 1986). Functional Magnetic Resonance Imaging (fMRI) has also determined that alcohol consumption activates striatal reward circuits while mediating response to fearful stimuli (Gilman et al., 2008). Essentially, alcohol consumption makes people feel good (Gilman et al., 2008). Alcohol has been shown to lower sexual inhibitions, and assists individuals in feeling less fearful of stimuli. Meanwhile cognitive dissonance asserts that sexual impulses that are not congruent with one's sense of self cause psychic pain and psychological discomfort. While it has not yet been studied discordant individuals might be at an increased risk of alcohol use and/or misuse in an effort to alleviate psychological pain generated from cognitive dissonance. Together, this generates an empirical rationale for investigating the use and misuse of alcohol in discordant individuals.

In fact, a number of studies have found that women who have sex with women and lesbian and bisexual identified women are at an elevated risk of alcohol use and misuse (Cochran et al., 2000; Cochran & Mays, 2000; Drabble et al., 2005; Midanik et al., 2007; Wilsnack et al., 2008) and those showing same sex attractions also demonstrate elevated risk of alcohol use and misuse (McCabe et al., 2005; McCabe et al., 2009; Russell et al., 2002). However, which women are found to be at risk varies depending on the method utilized to determine sexual orientation and rates of risk differed significantly among those reporting same sex identity, behavior and/or attraction (Drabble et al., 2005; McCabe et al., 2005; McCabe et al., 2009). For example, in one study lesbian identified women demonstrated increased risk of alcohol dependence, yet women only attracted to other women were not at risk. However, when behavior was considered, women who have had sex with both men and women demonstrated the highest risk of alcohol dependence (McCabe et al., 2009). Overall, many studies have found that women who have sex with women (regardless of identity) were found to be at the highest risk of alcohol use and misuse (Cochran et al., 2000; Cochran & Mays, 2000; Corliss et al., 2008; Drabble et al., 2005; McCabe et al., 2005; McCabe et al., 2009; Midanik et al., 2007; Wilsnack et al., 2008). Examining these studies together highlights the necessity of not relying on any one dimension of sexual orientation since the results vary by the dimension that was investigated. Alcohol use and misuse in discordant populations has not yet been examined and it has not been determined if discordant individuals are at an increased risk of alcohol use, misuse and related disorders. However, the fact that risk varies depending on the dimension of sexual orientation that is examined could be indicating that discordance plays a role in elevation of risk.

Alcohol Use and High Risk Sexual Behavior

A review of research on alcohol use found that men and women who drink heavily are more likely to engage in unprotected sexual intercourse (Cooper, 1992). A study of young men and women found that those who used alcohol prior to sexual activity were 7 times less likely to use a condom while having sex (Bagnall et al., 1990). Yet a review found that women compared to men demonstrate a lower incidence of high risk sexual behavior related to their alcohol consumption (Nolen-Hoeksema, 2004). MSM in particular have demonstrated the highest risk. Several studies found an association between drug and alcohol use and participation in high risk sexual behavior in MSM (Agronick et al., 2004; Calzavara et al., 1993; Dolezal et al., 1997; Stall et al., 1986; Stueve et al., 2002). Two of these studies examined alcohol use alone (independent from drug use) prior to sexual activity and found an association with participation in high risk sexual behavior (Calzavara et al., 1993; Dolezal et al., 1997). All of these studies support a connection between high risk sexual behavior and alcohol use.

However, one review paper asserted that a connection between alcohol and high risk behavior has not been established (Halpern-Felsher, Millstein, & Ellen, 1996). Citing issues of measurement around alcohol usage, its connection to sexual behavior, partner connections and relationship context, these authors concluded that a connection has not yet been found (Halpern-Felsher et al., 1996). Similarly, it is not known if men compared to women are more likely to engage in high risk sexual behavior (e.g. – unprotected sexual intercourse) related to their alcohol consumption since samples of only men or only women do not allow a comparison by gender. Additionally, results of

all of these studies vary by issues of measurement and the methods utilized to determine alcohol usage and sexual orientation. While some evidence exists to the contrary, overall it seems that alcohol is connected to high risk behavior and men appear to be at a greater risk for engaging in this behavior but risk varies by the methods utilized to determine alcohol usage, sexual orientation, and the samples that are investigated.

Theoretical approaches to understanding sexual discordance have become dominated by two competing approaches to understanding same sex identity, behavior and attraction; Essentialism and Social Constructionism. Each theoretical framework offers a unique view on the development of sexual identity and in the shaping of and expression of same sex behavior and attraction. The following review will first discuss the essentialist perspective on sexual orientation and will be followed by the social constructionist perspective.

Theoretical Approaches to Sexuality: Essentialism and Social Constructionism

The essentialist perspective understands sexual orientation as an innate quality or characteristic, an “essence” that is located in the body. This framework relies on the ideas of biological determinism, which views sexuality as biologically driven, constant and consistent over time (Brady & Busse, 1994; Reynolds & Hanjorgiris, 2000; Ross & Brooks, 2003; Rowen & Malcolm, 2002). According to this framework, whether one has “come out” or not is nearly irrelevant since one’s “true fundamental nature” is unchanging. The “gay gene” theory and the idea that there are biological markers of sexual orientation have been created from essentialist viewpoints (Hamer, Hu, Magnuson, Hu, & Pattatucci, 1993; Hu et al., 1995; Mustanski et al., 2005). The

biological understanding of sexual orientation will be reviewed to exemplify the essentialist perspective.

Biology/Genetics of Homosexuality

The “gay gene” theory attributes a genetic component to same sex behavior and attraction and supports the notion that sexual orientation is innate, consistent and enduring. In simplistic terms, if sexual orientation is genetic then it is something that “one is born with”, it is enduring and unchangeable. To date however, the research supporting the gay gene theory is at best debatable.

The assertions that sexual orientation has a genetic or biological foundation have been based on a small number of studies ranging from a discovery of a possible genetic linkage on the X chromosome at quadrant Xq28 (Hamer et al., 1993; Hu et al., 1995; Mustanski et al., 2005), to a difference in finger length in lesbian women as compared to heterosexual women (Williams et al., 2000) and a higher frequency of a counterclockwise hair pattern in gay men (Klar, 2004; Lippa, 2008). These studies have attempted to identify biological markers indicating that individuals are “hard wired” towards a particular sexual orientation.

Perhaps the most well known “gay gene” study was published in 1993 and reported a genetic linkage of homosexuality (Hamer et al., 1993). The study was later replicated and similar results were reported (Hu et al., 1995). Despite these studies results in larger samples have not always been replicated by others (Rice, Anderson, Risch, & Ebers, 1999). Studies related to the genetics of same sex orientation have mostly utilized small non-randomized samples, and contradictory results have been found. Additionally, studies supporting a genetic component of homosexuality have been

challenged on the basis of sampling methods, size of the populations being studied and the interpretations of the results (Garnets, 2002).

Although many of the gay gene studies have been disputed, the quest to locate a genetic marker of same sex orientation continues. For every study or article that disputes the genetics of homosexuality there appears to be another study or article claiming that there is a connection between genetics and sexual orientation. In a study published in June 2009, it was again found that male homosexuality is linked to the x chromosome (Iemmola & Camperio Ciani, 2009). Prior to that, another study using Positron Emission Tomography (PET) and Magnetic Resonance Imaging (MRI) found that the brains of heterosexual men and homosexual women were similar, as were the brains of heterosexual women and homosexual men (Savic & Lindstrom, 2008). The authors concluded that these findings suggest a neurobiological entity to homosexuality (Savic & Lindstrom, 2008). And thus, the quest for the gay gene continues. This line of scientific inquiry rests on essentialists' ideas that sexuality is innate, biologically driven and enduring. From this perspective, discordance is viewed as a "covering up" of one's "true" self.

Social Constructionism

On the other hand, social constructionists offer an alternative (and often opposing) view of sexual orientation. Social constructionists view sexuality as something that is fluid and dynamic that can vary over time and in different cultures (Diamond, 2003b, 2005, 2008a, 2008b; Rust, 1992, 1993; Vance, 1989). This perspective attributes sexuality to a social, cultural and racial construction or understanding of what sexuality is rather than seeing sexuality as something biologically determined that resides fully

formed in the body (Diamond, 2003b, 2005, 2008a, 2008b; Rust, 1992, 1993; Vance, 1989). This perspective is part of a larger paradigm shift from a biologically determined sexuality (essentialist) to one that develops from social, cultural and racial understandings of sexuality.

Some social constructionists have proposed that a particular type of “homosexual person” developed out of the rise of capitalism and urbanization (D'Emilio, 1983; Lofstrom, 1997). Large numbers of men and women, earning their own salaries through wage labor, aggregated in urban areas, created the necessary societal structures that allowed them to call themselves gay and lesbian and to organize politically on the basis of that identity (D'Emilio, 1983; Lofstrom, 1997). On the other hand, Foucault (1978) has attributed the production of a “person” labeled homosexual as a move (i.e. “reverse discourse”) against oppression, stigma and medicalization of specific enactments of sexuality deemed “perverse” and “pathological” by those in authority. The concept of sexual identity is shaped through the medicalizing, stigmatizing and regulation of same sex behaviors and attractions (Foucault, 1978).

In some circles the social constructionist view of homosexuality is unpopular and is equated with conservative arguments that attribute sexual orientation to a “choice”. Social constructionists however, are not so much saying that sexual identity is a choice but only point to the idea that the current prevailing notions of sexual identity in the US are a product of culture, place and time, a product that could not have been possible 200 years ago and a product that theoretically might not be possible again in the future. From this perspective, sexual discordance at different points in time is expected.

At least one author has asserted that the differences in these two theoretical frameworks might be related to gender differences in the way that some men and women experience sexuality (Hammack, 2005). This author has asserted that Essentialism might be better fitting for men and Social Constructionism might apply better to women (Hammack, 2005). It is also possible that elements of both theoretical frameworks might work in tandem. The interactionist approach contains elements of both of these theoretical frameworks and attempts to unite these opposing points of view.

Interactionism – Uniting Essentialist and Social Constructionist Views

Is sexual identity an innate and enduring quality that does not change over time (Essentialism) or is sexuality fluid and flowing that adjusts based on time and environment (Social Constructionism)? Does sexuality adjust and adapt because of societal forces and pressures that privilege heterosexuality in which individuals simply cover up their “true” selves to avoid stigmatization? Or is sexuality truly fluid and dynamic? Absent an environment completely removed from these societal influences determining the answer to this may be quite difficult if not impossible.

The question of which approach to use in the study of same sex orientation and the choice between the Essentialist or the Social Constructionist approach might be missing the point. Perhaps, the answer is a combination of Essentialism *and* Social Constructionism (Eldredge & Grene, 1992; Hammack, 2005; Tolman & Diamond, 2001; Tuzin, 1995). The interactionist approach views sexuality as *both* innate and biologically driven but also socially and culturally constructed (Eldredge & Grene, 1992; Hammack, 2005; Tolman & Diamond, 2001; Tuzin, 1995). Within this framework sexuality is a

product of biological, cultural and social forces. This framework helps explain some of the variation that is seen across the different dimensions of sexual orientation.

Each perspective offers a unique understanding of sexual discordance, with essentialists viewing discordance as a covering up of one's "true" self while social constructionists view discordance as a natural progression of sexuality throughout one's lifespan. Meanwhile, interactionists might view discordance as a covering up of one's "true" self that is expected at different points of time since sexuality is shaped by social and cultural forces. However, determining if sexuality is biological, socially constructed or both are empirical questions, questions that require further research before they can be answered. Although these theoretical perspectives are quite important, this particular study seeks to explore the prevalence, predictors and outcomes associated with sexual discordance in a national dataset. Such a study will determine rates of discordance as they vary by gender, race, ethnicity and other demographic variables, and possible negative outcomes, if any, that are associated with discordance that may differ across these populations.

A study of sexual orientation that quantifies sexual identity into one sexual label has limitations but also has much to offer. This type of quantification eases the task of investigating sexual orientation, especially in very large national samples. However, it must also be acknowledged that such a study offers only one viewpoint and is a "snapshot" of one point in time. Some classified as discordant in this approach might not be considered discordant at a different point in their lifetime just as some who are classified as concordant might at a later time become discordant. If and/or why these changes occur are empirical questions for future study. Therefore, this study will not

capture developmental processes that are involved in shaping sexual discordance because this study has not been designed to do so. A study such as this one, that quantifies sexual identity, behavior and attraction will provide a “snapshot” of the prevalence of discordance that can be compared by gender, race, ethnicity and other demographic variables. This study can also be used to inform HIV prevention efforts and to guide clinical interventions with these groups in terms of medical and mental health care, particularly in the realm of alcohol use and misuse.

Next, empirical studies related to the prevalence of sexual orientation and studies of discordant sexuality including its association with negative outcomes will be reviewed. Studies related to the prevalence of alcohol use and misuse and the connection between alcohol and high risk sexual behavior will also be examined. In order to discuss the empirical work on this topic, methods of measurement and issues associated with measuring sexual orientation will be reviewed first.

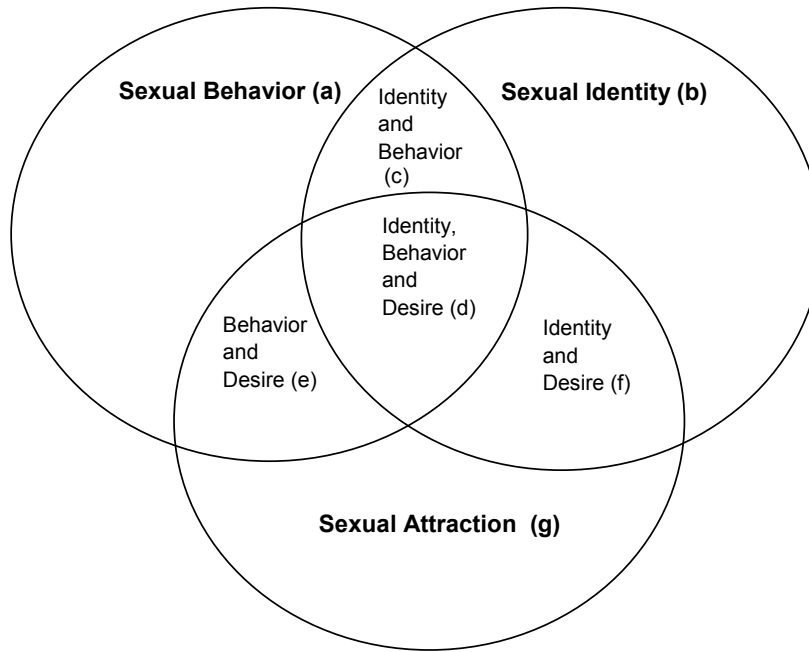
Chapter 3 – Empirical Review

Measuring Sexual Orientation

Measuring sexual orientation may seem simple but has proven to be exceedingly difficult. As discussed earlier there are three independent dimensions of sexual orientation including sexual identity, sexual attraction and sexual behavior. Grasping the concept of different dimensions of sexual orientation can prove to be quite challenging, since sometimes the dimensions overlap and sometimes they do not. As was stated earlier, some individuals may desire same sex activity but may not engage in these behaviors and continue to identify as heterosexual. Others may desire same sex activity and may engage in these behaviors but also still identify as heterosexual. Of people who have ever been sexually active, there are a total of 7 possible combinations of sexual identity, sexual attraction and sexual behavior (Laumann et al., 1994, See Figure 1 below). There is an additional category not depicted below which includes individuals who have never had a sexual experience. Sexual identity, sexual behavior and sexual attraction are operationalized as separate and independent constructs. The very center of Figure 1 (c), which demonstrates the overlap of all three constructs, is where concordant individuals would fall. The center of the figure represents concordance because all three components are congruent and overlap with each other. For example, men and women who identify as gay or lesbian, *and* who desire *and* engage in same sex behavior would be depicted here. Similarly, men and women who identify as heterosexual and desire and engage in *opposite* sex behavior would also be considered concordant and depicted in the center of Figure 1. Based on earlier large scale research most of the general population (i.e. greater than 90%) would fall within the center of Figure 1 (Laumann et al., 1994;

McCabe et al., 2009; Michaels, 1996). All other areas of Figure 1 note some form of discordance.

Figure 1. Overlapping Concepts of Sexual Orientation (Laumann et al., 1994)



Key	
A	Sexual behavior with discordant identity and attraction
B	Sexual identity with discordant behavior and attraction
C	Sexual identity and behavior with discordant attraction
D	Concordant sexual identity, behavior and attraction
E	Behavior and attraction with discordant identity
F	Identity and attraction with discordant behavior
G	Sexual attraction with discordant behavior and identity

Many studies of sexual orientation combine these three dimensions, usually because of small sample size. For example, in one large scale study of sexuality 10.1% (N=1,410) of the men and 8.6% (N=1,749) of the women in the study reported *any* same sex orientation on *any* of the three dimensions. However of the 143 men in the study reporting any same sex orientation, only 24% of them reported all three dimensions

concordantly (Michaels, 1996). Similarly, of the 150 women in the study who reported any same sex orientation only 15% of them reported all three dimensions concordantly (Michaels, 1996). Fifty nine percent of the 150 women and 44% of the 143 men who showed any same sex orientation reported same sex attraction *alone* without also reporting same sex behavior or identity. Thirteen percent of these women reported same sex behavior *alone* and an additional 13% of these women reported same sex behavior and attraction *without* same sex identity. The men showing any same sex orientation were similar in that 22% of them reported same sex behavior *alone*, and an additional 6% reported same sex attraction and behavior *without* same sex identity. In other words, most individuals in this study who reported any same sex orientation were in fact discordant on these three dimensions of sexual orientation (Michaels, 1996).

Issues in Measurement: Timeframe, Sampling and Defining High Risk Behavior

Also important in measuring sexual orientation is the issue of timeframe. For instance does same sex partners during adolescence “count” as same sex orientation? Similarly if a person had a same sex partner 10 years ago but not currently does this also “count” as same sex orientation? For example in the same large scale study discussed above, 4.9% of men in the study reported same sex behavior before the age of 18 but not after (Michaels, 1996). These are just some of the questions that researchers must grapple with when undertaking the study of sexual identity, behavior and attraction.

Sampling also plays a big role in studies of sexuality (and in all studies). Samples consisting completely of individuals who engage in same sex behaviors or who identify as gay or lesbian will be inherently different from large scale studies where only a small fraction of the sample consists of individuals who can be classified as homosexual.

Likewise samples using respondent driven sampling methods will produce investigation of populations different from those gathered by randomized sampling methods.

Small sample size may also lead researchers to group together individuals who demonstrate same sex identity, or behavior or attraction and analyze individuals who demonstrate same sex orientation on any dimension as if they were one coherent and consistent group. This is likely not the case, as individuals who adopt a sexual label other than heterosexual are likely quite different from individuals who engage in same sex behavior but do not identify as such. Yet because of small sample size these groups are sometimes analyzed as if they are similar, particularly individuals who identify as bisexual, who are most often included under the terminology “MSM” and “WSW”. Even in the large scale US study of sexuality, a variable was constructed that grouped any same sex identity, behavior and attraction together (Laumann et al., 1994; Michaels, 1996).

Small sample size leads to other practical decisions that are called into question when anchoring the study of sexual orientation within a theoretical framework that disarticulates these dimensions of it. This practical decision is especially evident around race. Individuals showing same sex orientation from multiple races are also often grouped together and considered similar. The very term “people of color” indicates such a grouping. Similarly, also because of sample size individuals might be classified as “white” or “non-white” and everyone in the “non-white” category are treated as equal or similar. Since only a small portion of the population has been shown to demonstrate same sex orientation, including large enough samples that demonstrate any same sex dimension and are of only one particular ethnic minority is quite difficult. In fact, just about any demographic category could be viewed as problematic in terms of how

individuals showing any same sex orientation are grouped. Finding large enough samples to fill each of these categories is challenging. A large scale national study that includes all three dimensions of sexual orientation such as this one can investigate these group differences.

A final issue with measuring sexual orientation, discordance and its association with negative public and personal health risk factors is in determining how risk factors are measured. What exactly is meant by “high risk” behavior? Does that mean sex without a condom? And what does the word “sex” imply? Any form of sexual activity or only a specific form of intercourse? It is important to define these variables and the decisions that are made about their construction.

Sexual Orientation and Alcohol Use and Misuse

The study of alcohol use and misuse and its connection to sexuality consistently relies on two methods of measurement, including global alcohol usage and alcohol used directly in conjunction with sexual activity. Global measures assess overall use of alcohol and general consumption of alcohol. Questions investigating average number of drinks consumed on a daily or weekly basis are two methods of assessing global usage. A more reliable method of assessing global alcohol usage is determining if individuals meet criteria for DSM based diagnoses of alcohol abuse and/or alcohol dependence (Cochran et al., 2000; Cochran & Mays, 2000; McCabe et al., 2009). A second method of measuring alcohol use and misuse as it relates to sexuality relies on assessment of alcohol usage in conjunction with sexual activity. This method directly assesses alcohol usage as it relates to sexual activity rather than overall global alcohol usage. Assessing for global usage has been used in studies investigating the prevalence of alcohol

disorders. Other studies have chosen to determine the effects of alcohol on high risk sexual behavior by determining alcohol usage that occurs directly with sexual activity. Additional measurement issues that must be considered when studying alcohol use, misuse and sexual orientation are the dimensions of sexual orientation (i.e. sexual identity, behavior, and/or sexual attraction) that are investigated.

Sexual Orientation and Global Alcohol Measures

Studies investigating global alcohol usage based purely on measures of sexual behavior have determined in a national sample that homosexually active women are at an increased risk of alcohol use and related problems (Cochran et al., 2000; Cochran & Mays, 2000). Another smaller study consisting solely of women, measured sexual identity alone and found that only bisexual identified women showed elevated rates of alcohol usage over lesbian and heterosexual women (Wilsnack et al., 2008). A national sample of adolescents combined sexual identity and attraction into one variable and found that heterosexual and bisexual young women, as well as men were at the greatest risk of alcohol use (Corliss et al., 2008). Yet another study also utilizing a national sample supports that notion that bisexual identified women are at an elevated risk for alcohol use problems but also found that women who identify as lesbian are also at an elevated risk (Midanik et al., 2007). This same study also found that bisexual behavior in women resulted in elevated risk but when described purely in behavioral terms, women who only had sex with women (i.e. excludes women with bisexual behavior) did not show elevated risk of alcohol consumption (Midanik et al., 2007). Other studies of alcohol and substance risk associated with sexual orientation have begun to include multiple dimensions of sexual orientation and indicate that risk is substantially higher for

individuals demonstrating any same sex orientation (McCabe et al., 2005; McCabe et al., 2009). The role of same sex attraction has also been identified as a risk factor of increased alcohol use and misuse in adolescents (McCabe et al., 2005; Russell et al., 2002) and in the general population utilizing a national sample (McCabe et al., 2009).

Based on these inconsistent results and the ways that identity, attraction and behavior intersect with alcohol use and misuse, the study of alcohol in conjunction with sexual orientation should not rely on any one measure of sexuality and instead should investigate multiple dimensions of sexual orientation (McCabe et al., 2005; McCabe et al., 2009; Midanik et al., 2007). None of these studies investigating global alcohol usage have studied rates of alcohol use and misuse in discordant populations and the fact that established risk varies by the dimension being examined indicates that discordance might play a contributing role in elevation of risk.

Alcohol Use and High Risk Sexual Activity

Alcohol use in conjunction with sexual activity has been found to be a risk factor for engaging in high risk sexual activity that leaves one susceptible to contracting an STD and/or HIV. Using global measures of overall alcohol usage (not necessarily prior to sexual activity) it was also found that those who drink heavily are more likely to engage in unprotected sexual intercourse (Cooper, 1992). This study included both males and females and did not depend on measures of sexual orientation. However, global alcohol usage and its connection to high risk sexual behavior is limited since there is no telling if alcohol was used while engaging in sex or not.

Several studies have directly investigated use of alcohol in conjunction with sexual activity. Most of these studies have been conducted on MSM and some have

investigated alcohol use in conjunction with other drug use and sexual activity while some have specifically isolated alcohol usage alone in conjunction with sexual activity. When examining alcohol and drug use together, several studies found a connection between drug and alcohol use and participation in high risk sexual behavior in MSM (Agronick et al., 2004; Calzavara et al., 1993; Dolezal et al., 1997; Stueve et al., 2002). Two of these studies examined alcohol use alone independent from drug use prior to sexual activity and found an association with participation in high risk sexual behavior (Calzavara et al., 1993; Dolezal et al., 1997). All of these studies specifically examined alcohol use in conjunction with sexual activity, rather than global alcohol usage. No large scale quantitative study to date has examined alcohol use in conjunction with sexual activity in discordant individuals. Yet, it is logical to anticipate such a link since use of alcohol has been connected to high risk sexual behavior (Bagnall et al., 1990; Calzavara et al., 1993; Cooper, 1992; Dolezal et al., 1997) and individuals with any same sex orientation have demonstrated elevated rates of alcohol use and misuse (Cochran et al., 2000; Cochran & Mays, 2000; McCabe et al., 2005; McCabe et al., 2009; Midanik et al., 2007; Wilsnack et al., 2008).

Prevalence of Homosexuality

A number of large studies have been conducted investigating the prevalence of homosexuality and have been based on investigation of sexual behavior, sexual attraction and/or sexual identity. Determining how many people are “homosexual” might be related to the long history of oppression and stigma that many with same sex orientation must face. Large research studies, demonstrating that same sex orientation is “common”

can help to de-stigmatize homosexuality. One of the earliest and possibly most famous studies of sexuality took place in 1948 and was conducted by Alfred Kinsey.

Alfred Kinsey and the 10% Myth

The work of Alfred Kinsey had a profound effect on society and its view of sexuality. From this work came the common estimate that 10% of society is gay or lesbian. This commonly used estimate however is a misperception and in fact his study really only found that 4% of the male population in the sample identified themselves as being “exclusively homosexual” throughout their lives (Kinsey, Pomeroy, & Martin, 1948/1998). The common 10% figure stems from the finding that this percentage of the sample reported that they were more or less exclusively homosexual for at least three years between the ages of 16 to 55, but this must be taken in context and compared to the 4% that reported being exclusively homosexual throughout their lifetime. Of note here are the issues of timeframe and the vast difference that is produced by enlarging or shortening the timeframe that is examined. Comparison of these two figures also lends itself to the idea of “fluid” sexuality that changes over the course of a lifetime or it may be one of the earliest empirical indicators of discordant sexual identity.

Kinsey noted that homosexuality in the female population was lower than in the male population, as demonstrated by the finding that between “adolescence and old age” only 13% of the women reported having had at least one sexual experience to the point of orgasm with another female, compared to 37% of the male population that reported one sexual experience to the point of orgasm with another male during this same timeframe (Kinsey et al., 1948/1998; Kinsey, Pomeroy, & Martin, 1953/1998). However, the emphasis on orgasm could be greatly affecting the reliability of this estimate.

Although this study had profound implications and was revolutionary in its time, the methodology that was utilized is not without criticism. First and probably most importantly, Kinsey's sample was not a randomly selected population as participants in the study were volunteers. Second the population was exclusively white and the majority had at least some college education. Third, the focus on orgasm only presents one view of sexuality. Fourth, many of the experiences of homosexuality that Kinsey found occurred during adolescence. This culmination of factors likely inflated the findings of the prevalence of homosexuality. Paul Gebhard, a close collaborator on this study reanalyzed the data and made a more conservative estimate that 4% of the white college-educated males and between 1-2% of white college educated females were predominantly or exclusively homosexual (Gebhard, 1972). This estimate is more consistent with more recent studies of sexual orientation that have estimated between 1-2% of the US population are predominately or exclusively homosexual (Laumann et al., 1994; McCabe et al., 2009; Michaels, 1996; Simmons & O'Connell, 2003).

The Prevalence of Homosexuality in England and France

Two large probability studies took place in England, first in 1990 and then in 2000 (Johnson et al., 2001; Mercer et al., 2007). The most recent study found that 5.4% of the men and 4.9% of the women reported having a homosexual partner over the course of their lifetime (Johnson et al., 2001; Mercer et al., 2007). Yet the earlier study only found that 3.6% of the men and 1.8% of the women reported ever having a homosexual partner over the course of their lifetime (Johnson et al., 2001). When the timeframe was shortened to the previous 5 years (rather than lifetime prevalence) only 2.8% of the male participants in the 2000 sample reported having had sex with another man. These

findings indicate that the time frame utilized to investigate same sex behavior can greatly affect the prevalence rates that are found.

A large probability study was also conducted in France between 1991 and 1992. This study reported that 4% of the men and 3% of the women had sexual intercourse with a partner of the same sex at some point in their lifetime. While these studies from England and France are helpful in determining the prevalence of homosexuality, a limitation of this work is the strict focus on sexual behavior to the exclusion of sexual identity and sexual attraction.

Study of Sexual Identity, Sexual Behavior and Sexual attraction in the US

As discussed earlier, in one of the largest and most comprehensive surveys of sexuality in the US based on a randomized probability sample, it was found that 9% of the women and 10% of the men reported either same sex behavior, identity *or* attraction (Laumann et al., 1994; Michaels, 1996). An important distinction in this statement is the key word ‘or’ since only 1.4% of the women and 2.8% of the men said they identified as “gay”, “lesbian” or “bisexual” (Laumann et al., 1994; Michaels, 1996). Interestingly, of the 9% of women and 10% of men who indicated any of the three same sex dimensions (identity, behavior or attraction), only 15% of the women and 24% of the men reported all three dimensions (Laumann et al., 1994; Michaels, 1996). These findings together highlight discordance across the dimensions of sexual orientation. Unfortunately this study did not directly assess and analyze sexual discordance.

Sexual Discordance in Australia

In early 2000, one of the largest scale studies of sexuality was conducted in Australia (Smith et al., 2003). This study examined “sexual identity”, “sexual attraction”

and “sexual experience” (i.e. - behavior) and found that 1.6% of the men identified as gay or homosexual and 0.9% of the men identified as bisexual. These numbers were similar in size but reversed in direction for the women as 0.8% of them reported that they were lesbian or homosexual and 1.4% of them reported being bisexual. This might be indicating greater fluidity in Australian women than men. Yet when same sex attraction and behavior were analyzed together 8.6% of the men and 15.1% of the women demonstrated same sex attraction *or* experience, highlighting the discrepancy between sexual identity, attraction and behavior.

This study (unlike the US study) analyzed sexual discordance and found that 4.2% of the men and 8.2% of the women reported sexual attraction that was inconsistent with their behavior. This analysis did not account for sexual identity and thus the results include those who identified as heterosexual, bisexual, or gay/lesbian. Being from a non-English speaking background, education and socio-economic status were associated with sexual discordance (Smith et al., 2003). This study could have been improved by including sexual identity in the analysis of discordance. Demographic predictors associated with sexual discordance in a national US sample have not yet been determined.

Other Studies of Discordant Sexuality

While the Australia study is the largest study to date exploring discordant sexuality, several smaller studies have been conducted on this topic and have indicated a number of public and individual health consequences associated with discordance. It has been shown that those with discordant sexual behavior and sexual identity are particularly at risk for engaging in high risk sexual behaviors that can lead to transmission of HIV and

other sexually transmitted diseases (Grov et al., 2006; Pathela et al., 2006; Ross et al., 2003; Siegel et al., 2008). More specifically, in one study, only 22% of the heterosexual identified MSM reported using a condom during their last sexual encounter (with a same or opposite sex partner), compared to 55% of the gay identified MSM who reported using a condom at their last sexual encounter (Pathela et al., 2006). Essentially the heterosexually identified MSM were only half as likely to use a condom during their last sexual encounter compared to gay identified MSM.

It has been noted that disclosure of sexual behaviors to medical doctors was significantly lower among discordant individuals. A study conducted by the Center for Disease Control of 452 MSM from New York City found that only 61% of the total sample disclosed their sexual behaviors to their medical doctor, yet 78% of gay identified MSM disclosed their sexual behaviors (Bernstein et al., 2008). In fact, only 2.9% of the non-gay identified MSM (including men who identified as bisexual and all men who identified as something other than gay) disclosed their sexual behaviors to their doctor (Bernstein et al., 2008). Disclosure of sexual behaviors to medical doctors is significant since it provides an avenue for HIV/STD intervention and prevention. Additionally, those who did not disclose their same sex behaviors had a much lower rate of HIV testing as compared to those who did disclose their sexual behaviors (Bernstein et al., 2008).

In fact, discordant MSM have been shown to have lower rates of HIV testing overall (Pathela et al., 2006; Rietmeijer et al., 1998; Wolitski et al., 2006). More specifically in one study, heterosexually identified MSM were 40% less likely to have been tested for HIV in the previous year compared to gay identified MSM (Pathela et al., 2006). In another study of racially diverse MSM in 12 different US cities only 72% of

the sample identified as gay, 20% identified as “down low” and the rest identified as “something else”. Members of the study who identified as “Down low” (i.e. discordant) were less likely to have ever been tested for HIV compared to gay identified individuals (Wolitski et al., 2006). A large meta analysis of MSM and HIV risk behaviors found that compared to white MSM, Black MSM were less likely to identify as gay, less likely to disclose their same sex behaviors to others and they had a higher rate of STDs (Millet et al., 2007). This same analysis determined that for Black MSM, decreased disclosure of same sex behaviors and having a non-gay identity were associated with an increased risk of contracting an STD and/or HIV even though Black MSM reported less sexual partners than white MSM (Millet et al., 2007).

Discordant women have been shown to seek less health care than women with concordant identity (Kerker et al., 2006). Discordant men are less likely than concordant men to disclose their sexual behaviors to their medical doctors, missing an opportunity for intervention and/or HIV testing (Bernstein et al., 2008). Possible factors influencing these findings could be related to shame associated with participating in or desiring behavior that is stigmatized or issues of gender, class or race. Whatever factors are involved, there does appear to be an almost protective factor associated with identifying as gay or lesbian for those who engage in same sex behaviors regarding their HIV risk and gaining knowledge about their HIV status. Those who do not identify as gay or lesbian but engage in same sex behavior are at a substantial risk for individual and thus public health consequences. Consequently, identifying discordant individuals can guide outreach and prevention efforts to these groups and interventions can be designed specifically for those who are discordant.

Predictors of Discordance

A review of the literature shows that discordant sexual identity and behavior varies across gender, race and other demographic characteristics, yet the full extent of this discrepancy in the US is unknown. Most studies have found that discordance is highest among Blacks and Hispanics (Finlinson et al., 2006; Grov et al., 2006; Jimenez, 2003; Millett et al., 2007; Ross et al., 2003), while White men have also been found to have high rates of discordance (Ross et al., 2003). For example, a large meta-analysis of MSM and HIV risk behaviors, found that compared to white MSM, Black MSM were less likely to identify as gay (Millett et al., 2007). Black women have also been shown to have high rates of discordance (Ross et al., 2003). Research conducted on a population based survey of men in New York city has shown that discordance is highest among men of color, men of lower economic status and men who are foreign born (Pathela et al., 2006). In a study of MSM in 12 cities, 28% of the sample did not identify as gay, and Black and Hispanic men were significantly more likely to self identify as “down low” (Wolitski et al., 2006).

However, the largest population based study of sexual behavior in the US found that discordance is relatively common among individuals showing any same sex orientation but rates of same sex orientation (i.e. any of the three dimensions, identity, behavior or attraction) were inconsistent across race and none of the minor differences by race were statically significant (Laumann et al., 1994; Michaels, 1996). This study did not directly analyze discordance and it is impossible to determine from the published literature if discordance varied by race, age or any other demographic category.

The Australian study (Smith et al., 2003) found that being from a non-English speaking background, education, and socio-economic status were associated with discordant sexuality (Smith et al., 2003). In summary, research has indicated that being of color, being foreign born, Non-English speaking (in an English-speaking country), of lower economic status, and having less education have been associated with sexual discordance. Meanwhile people of color have been shown to have the highest rates of discordance and people of color have also been found to be at a disproportionate risk for contracting HIV and other STDs (CDC, 2005a, 2005b; Chan, 2007; Lite, 2007; Millett et al., 2007; Wilson et al., 2008).

The Current Study of Sexual Discordance

Thus far the prevalence and demographic predictors associated with discordance in the US have not yet been determined even though a number of individual and public health consequences have been associated with this phenomenon (Finlinson et al., 2006; Grov et al., 2006; Kerker et al., 2006; Pathela et al., 2006; Rietmeijer et al., 1998; Ross et al., 2003; Siegel et al., 2008; Wolitski et al., 2006). This research study examines the dimensions of sexual orientation, sexual discordance and rates of discordance across demographic categories. Results will help guide outreach, prevention and intervention efforts specifically to groups that are most discordant. Rates of alcohol use and misuse, rates of positive HIV and STD tests and positive AIDS diagnoses in discordant populations are also determined and results will help ensure funding to these groups through the demonstration of individual and public health consequences.

Secondary Analysis of Discordant Sexuality

This research study is a secondary analysis of The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). This three part secondary analysis sought to address the gaps in the knowledge related to the prevalence, predictors and negative outcomes associated with sexual discordance. In the first part, the variables sexual identity, sexual behavior and sexual attraction are examined and the frequency of same sex orientation is reported. With these three variables, discordance was coded and the prevalence of discordance was demonstrated and compared by gender. Specific hypotheses include:

Hypothesis 1A – The prevalence of same sex orientation will vary across the three variables sexual identity, sexual behavior and sexual attraction.

Hypothesis 1B – A significant number of participants will be found to be discordant in their reported sexual identity, sexual behavior and sexual attraction.

Hypothesis 1C – Women will have higher rates of discordance than men.

The second part of this study examines demographic predictors and their association with sexual discordance. Other studies exploring discordant sexuality have found that discordance is highest in people of color, people of lower economic status, those with lower levels of education and people who are foreign born (Finlinson et al., 2006; Grov et al., 2006; Jimenez, 2003; Pathela et al., 2006; Ross et al., 2003; Smith et al., 2003). This study hypothesizes that employment, age, and marital status will also influence the probability of discordant sexuality. Since economic status was inversely associated with sexual discordance (Pathela et al., 2006; Smith et al., 2003), it seems reasonable to hypothesize that lower levels of education and employment might be

associated with increased rates of discordance given the close association of these demographic characteristics. Older age might play a role in higher rates of discordance since increased social tolerance of same sex orientation is a rather recent development. Marital status also seems to be a likely predictor of discordance since many people who are married to opposite sex partners, likely identify as heterosexual, even if they desire or engage in sexual activity with same sex partners. In addition, many of the previous studies of discordance have been conducted on men to the exclusion of women and further investigation by gender is needed. Therefore, this study examines race, individual and family income, education, age, marital status, employment and nativity separately for discordant males and females. Specific hypotheses include:

Hypothesis 2A - Older individuals will have higher rates of discordance as compared to younger individuals.

Hypothesis 2B – Black individuals will show the highest rates of discordance, followed by Hispanics, and then all others.

Hypothesis 2C – Foreign Born individuals compared to US born individuals will have higher rates of discordance.

Hypothesis 2D – Individuals with the lowest rates of education will have the highest rates of discordance.

Hypothesis 2E – Unemployed individuals will have higher rates of discordance as compared to individuals who are employed.

Hypothesis 2F – Lower levels of individual income will indicate higher levels of discordance.

Hypothesis 2G – Lower levels of family income will indicate higher levels of discordance.

Hypothesis 2H – Married individuals as compared to non-married individuals will have higher rates of discordance.

In the third portion of this study, risk factors associated with discordance are examined. Other studies have found that discordant individuals are more likely participate in high risk sexual behavior leaving them at risk for contracting HIV and/or other STDs (Finlinson et al., 2006; Grov et al., 2006; Pathela et al., 2006; Ross et al., 2003; Siegel et al., 2008). Alcohol has been implicated as a risk factor in men for engaging in high risk sexual behavior (Calzavara et al., 1993; Dolezal et al., 1997; Stall et al., 1986) and women with any same sex orientation have shown increased rates of alcohol use and related disorders (Cochran et al., 2000; Cochran & Mays, 2000; Drabble et al., 2005; McCabe et al., 2005; McCabe et al., 2009; Midanik et al., 2007). Although how risk is assessed will significantly affect the results, this study examines if being discordant predicts increased odds of; use of alcohol before sexual activity, increased rates of alcohol dependence, alcohol abuse, alcohol use disorder, higher rates of positive HIV, and other STD tests, or having had an AIDS diagnosis. Specific hypotheses include:

Hypothesis 3A – Discordant individuals will have higher rates of alcohol use prior to sexual activity.

Hypothesis 3B – The partner(s) of discordant individuals will have higher rates of alcohol use prior to sexual activity.

Hypothesis 3C – Rates of alcohol abuse will be higher in discordant compared to concordant individuals.

Hypothesis 3D – Rates of alcohol dependence will be higher in discordant individuals compared to concordant individuals.

Hypothesis 3E – Rates of alcohol use disorder will be higher in discordant compared to concordant individuals.

Hypothesis 3F – Compared to concordant individuals, discordant individuals will have higher rates of positive HIV tests.

Hypothesis 3G – Compared to concordant individuals, discordant individuals will have higher rates of positive STD tests.

Hypothesis 3H – Rates of AIDS diagnoses will be elevated in discordant compared to concordant individuals.

Chapter 4 - Methodology

Secondary Analysis of the NESARC

This study is a secondary analysis of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). Herbert Hyman was one of the first social scientists to legitimize secondary analysis by defending the validity this research methodology (Hyman, 1972). Social work recognizes secondary analysis but gives little explicit attention to this important topic in social work training programs (Sales, Lichtenwalter, & Fevola, 2006). Many researchers agree that a key element of secondary analysis is the reanalysis of existing data that were collected by researchers for research purposes (Epstein, 2009; Heaton, 1998; Sales et al., 2006; Sobal, 1982; Yegidis & Weinbach, 2008). Most research articles published on funded trials are only able to discuss key points of the study leaving a wealth of information available for additional analyses (Epstein, 2009; Yegidis & Weinbach, 2008). Secondary analysis helps fill this need and makes it possible to produce high quality research with limited time and money. Some researchers call for additional training of social work students to explicitly include instruction on secondary analysis to increase social workers ability to conduct research (Sales et al., 2006; Sobal, 1982), while others have begun developing methods for and writing about secondary analysis with qualitative data (Heaton, 1998; Sobal, 1982).

Secondary analysis is not without limitations. First and foremost, while secondary analysis does save time, it still requires a researcher to learn the intricacies and the details of the original study database that they are reanalyzing (Yegidis & Weinbach, 2008). The primary concern is that data gathered for one purpose may not have everything that is needed for a particular secondary study or the method that was used to

gather variables in the original study may differ from the method that is desired for the secondary study (Yegidis & Weinbach, 2008). With secondary analysis it is not possible to add new variables to the dataset if the variables were not included in the original study nor is there anyway to change the methods that were utilized to collect the original data. Additionally, researchers conducting secondary analysis have no control over the quality of the measurements used in the original study (Yegidis & Weinbach, 2008). Despite these limitations, secondary analysis can be incredibly helpful, can save time and effort in gathering and managing data and can produce very high quality research with limited resources.

NESARC Study Design

The NESARC was designed to be a longitudinal survey with its first wave fielded in 2001-2002 and the second wave using the same respondents was conducted in 2004-2005. The U.S. Bureau of the Census conducted the field work for this survey for the National Institute on Alcohol Abuse and Alcoholism (NIAAA), an agency of the National Institutes of Health. Both waves were conducted by computer assisted personal interviewing (CAPI). The NESARC target population was the civilian, non-institutionalized adult population of the United States, residing in households in all 50 states and the District of Columbia, who were 18 years of age or older (Bridget Grant, Kenneth, Shepard, & Moore, 2003). All potential NESARC respondents were informed in writing about the nature of the survey, the statistical uses of the survey data, the voluntary aspect of their participation, and the federal laws that rigorously provided for the strict confidentiality of the identifiable survey information. The respondents consenting to participate after receiving this information were interviewed. Wave 1 was

comprised of 43,093 respondents. Of those respondents, 39,959 of them were eligible for a NESARC Wave 2 interview. Of the 3,134 who were not eligible for Wave 2, 1731 were not eligible because the respondent was institutionalized, permanently physically disabled/impaired, mentally impaired or in the U.S. armed forces and deployed during Wave 2 and 1403 were not eligible because the respondent was deceased, had permanently moved (e.g., out of the country) or was deported (Bridget Grant & Kaplan, 2005). Of the 39,959 eligible study participants, 34,653 Wave 2 interviews were completed, the rest could not be reached or declined an interview (Bridget Grant & Kaplan, 2005).

Wave 2 of the NESARC included a sexual health component and asked participants about their sexual identity, sexual behavior and sexual attraction among other sexual health related questions, including alcohol use in conjunction with sexual activity, and rates of positive HIV and other STD tests and recent AIDS diagnosis. Wave 1 did not include a sexual health component. Therefore, the analysis of this study will utilize data from wave 2 only.

Population and Sampling

The NESARC is a representative sample of the United States population, including citizens and noncitizens. The target population of the NESARC is the civilian noninstitutionalized population, 18 years and older, residing in the United States and the District of Columbia (including Alaska and Hawaii). This includes persons living in households and the following noninstitutional group quarters: boarding houses, rooming houses, nontransient hotels and motels, shelters, facilities for housing workers, college quarters, and group homes.

The specific sampling strategy that was utilized to generate a representative sample of the US was based on the methods used by the US census to conduct the Census Supplementary Survey in 2000 to 2001. The primary sampling unit (PSU) of the Census Supplementary Survey mirror the county-based PSUs used in the Census Bureau's Current Population Survey with some small changes made to account for changes in Metropolitan Statistical Area and county definitions. According to the 1996 Census, the US consisted of 3,142 counties and county-equivalents. The Supplementary Survey included all of these as well as 42 additional counties in 2000. The strategy has been described in detail and is provided for review at

http://www.nesarc.niaaa.nih.gov/pdfs/w1%20source_and_accuracy_statement.pdf.

However in short, similar to the US Census, the NESARC also included a group quarters (GQ) sampling frame. A GQ sampling frame is needed in order to include individuals in noninstitutional settings such as boarding homes, college residences, group homes, etc. (listed above). Within the GQ sampling frame the race of each household was noted and as part of the NESARC sampling strategy, Blacks and Hispanics were oversampled to ensure proper inclusion of minority members and to accurately represent each racial group in the US (Bridget Grant et al., 2003). The oversampling procedure used in Wave 1 of the NESARC increased Black households from about 12.3 percent to 19.1 percent (8,245 cases) and increased Hispanic households from 12.5 percent to 19.3 percent (8,308 cases) (Bridget Grant et al., 2003).

The sampling frame response rate of Wave 1 was 99%, the household response rate was 89% and the person response rate was 93%, yielding an overall survey response rate of 81% (Bridget Grant et al., 2003). The NESARC Wave 2 response rate, using only the original NESARC Wave 1 eligible respondents was $34,653 / 39,959 = 86.7$ percent

(Bridget Grant & Kaplan, 2005). This response rate was due to individual nonresponse, which occurred when a respondent from Wave 1 did not complete a Wave 2 interview. The NESARC overall survey response rate including both waves consists of two parts and includes the total response rate from each wave. The total NESARC Wave 1 response rate was 81.0 percent and the total NESARC Wave 2 response rate was 86.7 percent, so the NESARC overall cumulative survey response rate including both waves equals 70.2 percent ($0.810 * 0.867$) (Bridget Grant & Kaplan, 2005). The overall NESARC nonresponse rate ($1 - (\text{response rate})$) is 29.8 percent (Bridget Grant & Kaplan, 2005).

NESARC Estimation Information

In order to make national representative estimates of people in the US, NESARC data must use weights during the statistical analysis. Weights used in analysis, give each case a certain amount of power to estimate multiple cases from the larger population, so that each individual case “weighs” (or “counts” as) more than just one individual. In other words, each individual case is statistically adjusted to represent a larger portion of the population from which the sample was drawn. The NESARC Wave 1 weights can be used to form national level estimates. The Wave 1 “final weight” is the product of the NESARC “base weight” and six other individual weighting factors, including “Type A Household Noninterview Adjustment”, “Within-Household Sampling Adjustment”, “Usual Residence Elsewhere (URE) Adjustment”, “Type A Person Noninterview Adjustment”, “First-Stage Ratio Adjustment”, and the “Second-Stage Ratio Adjustment” (Bridget Grant et al., 2003). These weights were derived by Census Bureau survey methodologists (Bridget Grant & Kaplan, 2005) and the individual details of each weight

unit has also been described at the website listed above but a short summary of each weight unit has been included here. The NESARC “base weight” is the inverse of the probability of selection of a sample housing unit or housing unit equivalent for GQs (Bridget Grant et al., 2003). The “Type A Household Noninterview Adjustment” accounts for those households in which no household information was obtained, no sample person was selected, and no interview was obtained from the household (Bridget Grant et al., 2003). The “Within-Household Sampling Adjustment” accounts for the selection of one sample person from a household as well as the oversampling of young adults (Bridget Grant et al., 2003). The “Usual Residence Elsewhere (URE) Adjustment” accounts for errors where the first person listed was sometimes mistakenly labeled as a URE as UREs are not eligible for interviews (Bridget Grant et al., 2003). The “Type A Person Noninterview Adjustment” accounts for those households in which a sample person was selected, but no interview was obtained (Bridget Grant et al., 2003). The “First-Stage Ratio Adjustment” is used to reduce the variance arising from selecting two PSUs to represent an entire stratum and the “Second-Stage Ratio Adjustment” adjusts weighted sample results to agree with independent estimates of the civilian noninstitutional population of the United States by region, age, sex, race, and ethnicity (Bridget Grant et al., 2003). Together these individual factors form the NESARC Wave 1 “final weight”.

The final Wave 2 NESARC weight is the product of the NESARC Wave 1 “final weight” (described above) and three other individual weighting factors including the “Type A Person Noninterview Adjustment”, “Ratio Adjustment”, “Type B and C Person Noninterview Adjustment” (Bridget Grant & Kaplan, 2005). The individual details of

each weight unit used in wave 2 are provided at the following website:

http://www.nesarc.niaaa.nih.gov/pdfs/w2%20source_and_accuracy_statement.pdf. A short summary of each NESARC Wave 2 weight unit is also included here. The “Type A Person Noninterview Adjustment” accounts for certain households in which an interview was obtained in Wave 1 but not in Wave 2 due to refusals, study participants who moved and participants who were unable to be located (Bridget Grant & Kaplan, 2005). The “Ratio Adjustment” adjusts weighted sample results to agree with independent estimates of the civilian noninstitutional population of the United States by region, age, sex, race, and ethnicity (Bridget Grant & Kaplan, 2005). The “Type B and C Person Noninterview Adjustment” removes those households in which an interview was obtained in Wave 1 but not in Wave 2 due to the sample person being institutionalized, being deceased, etc. (Bridget Grant & Kaplan, 2005).

NESARC Procedures and Quality Control

Approximately 1800 experienced lay interviewers from the United States Bureau of the Census administered the NESARC using laptop computer assisted software that included built in skip logic and consistency checks. On average, the interviewers had 5 years’ experience working on Census and other health-related national surveys. All NESARC interviewers completed a 5-day self-study at home and participated in a standardized 5-day in-class training session at one of the Bureau's 12 regional offices (Bridget Grant et al., 2003).

Regional supervisors re-contacted a random 10% of all respondents for quality control purposes. In the quality control interviews, a series of questions were re-asked to verify that respondents had completed the entire interview and that the questionnaire had

been administered properly. There was no case in which it was determined that the interview had been conducted in any manner that was inconsistent with the interviewer's extensive training (Bridget Grant et al., 2003).

Measuring Sexual Orientation in the NESARC sample

As mentioned earlier, Wave 2 of the NESARC inquired about sexual identity, sexual behavior and sexual attraction in the sexual health module (See Appendix 2 for a copy of the sexual health module used in this study). Together these three dimensions measure different aspects of sexual orientation. The sexual identity question was asked in the present tense (e.g. How do you choose to identify your sexuality?). Choices were given and the respondent could choose heterosexual, gay/lesbian, bisexual, or not sure. Sexual attraction was also asked about in the present tense and participants were provided the prompt “People are different in their sexual attraction to other people” and then asked to pick the category that best described their feelings and were supplied with the choices; only attracted to females, mostly attracted to females, equally attracted to females and males, mostly attracted to males, and only attracted to males. Respondents were asked about their sexual behavior over the course of their entire life and in thinking about their entire life respondents indicated if they had sex with only males, only females, both males and females or if they never had sex. Since the timeframe of the sexual behavior dimension is quite large, estimates of same sex behavior were expected to be large as well. This is a limitation of this study as a single same sex encounter was counted as indicative of same sex behavior. Had the timeframe of respondents’ sexual behavior been limited to the previous year or even the previous 5 years or 10 years, the estimates would likely have been smaller and perhaps, more accurate.

Since the questions about sexual attraction and sexual behavior include gender, the presence of same sex orientation was calculated separately for males and females. Males and females who showed any same sex attractions were considered to have demonstrated evidence of same sex attraction. In terms of sexual behavior, males who indicated that they have had sex with only males or both males and females were considered to have demonstrated evidence of same sex behavior. Similarly females who indicated that they have had sex with only females or both males and females were also considered to have shown evidence of same sex behavior. The sexual identity question did not require separate calculations for males and females and the indication of gay/lesbian or bisexual was considered a demonstration of same sex self identity. The prevalence of sexual identity choices including heterosexual, gay/lesbian, bisexual, and “not sure” were examined.

The three individual dimensions of sexual orientation were used to provide estimates of the presence of same sex identity, behavior and/or attraction. However, the summation of these three dimensions in which the presence of same sex orientation is found on *all* three dimensions, implies a more exclusive same sex orientation, so the summation of these three dimensions was also used. The combination of these three dimensions, in which the presence of same sex orientation is found on *any* of the three dimensions, is also a useful indicator of same sex orientation, particularly since these three dimensions have been found to be independent. Since the three dimensions have been found to be independent, it was expected that the summation in which same sex orientation is found on *all* dimensions is smaller than the number of respondents that report same sex orientation on *any* of the three dimensions.

Defining Discordance

The primary goals of this study were to determine rates of discordance, its prevalence across demographic categories and its connection to health behaviors. Individuals who have never engaged in sexual activity were excluded since it is not known if an individual will be discordant until they become sexually active. A male who identifies himself as “heterosexual” and only desires and engages in sexual activity with women was considered concordant. Similarly, a female who indicates that she is heterosexual and only desires and engages in sexual behaviors with men was also considered concordant. A male who identifies as gay and desires and engages in sexual activity with other men was considered concordant, while a woman who identifies as lesbian and desires and engages in sexual activity with other women was also grouped as concordant. A male who indicates that he is heterosexual but also reports same sex behavior or attraction was considered discordant. Similarly a female who indicates that she is heterosexual but also reports same sex behavior or attraction was also be considered discordant.

There are in fact other possible combinations of sexual identity, sexual behavior and sexual attraction that could produce discordance among these three dimensions, such as individuals who identify as gay or lesbian but who engage in or desire opposite sex behaviors. However, for this analysis discordance was only coded in individuals who identify as heterosexual but who desire or engage in same sex behaviors. This decision was made for two reasons. One study of 822 Black MSM from NY and PA found that 8.9% of the 226 MSM in the study who *also* had sex with women were gay identified (Wheeler et al., 2008). A further analysis of this study showed that 4.6% of the gay

identified men in the sample were discordant (calculated from data provided in the text of the study by this author). The US wide study (discussed earlier) was similar in that 5% of the lesbian identified women in the study were discordant and 13% of the gay identified men in the study were discordant (Laumann et al., 1994). While these results indicate that discordance should be coded for the entire sample regardless of sexual identity, there are two factors to consider. First, the most recent large scale studies of sexuality both in the US and abroad have found only a small portion of those samples indicated same sex identity (i.e. – 1-3%). Given the small number of participants who identified as gay or lesbian, coding discordance in this tiny portion of the sample would likely have produced rather unstable estimates. Second, most research has demonstrated individual and public health consequences associated with discordance in heterosexually identified individuals who participate in or who desire same sex behaviors not in gay or lesbian identified individuals. This includes participation in high risk behavior, less disclosure of sexual behaviors to medical doctors, less HIV testing and seeking less health care. That is not to say that risk factors do not exist for discordant gay and lesbian identified individuals but empirical data demonstrating increased risks in these groups are limited, likely due in part to the issues of sample size and coding of discordance in such a small group of individuals.

Individuals who identify as bisexual could also be discordant if they only reported sexual behavior with or sexual attraction towards one gender. Bisexuals as a separate group likely require their own study and HIV/STD prevention messages geared directly and specifically for them. Additionally, only a small portion of the sample was expected to identify as bisexual and coding discordance within this small subpopulation would

have produced unstable estimates as well. In summary, discordance was coded as a binary variable in heterosexually identified individuals who reported desiring or engaging in same sex behavior.

Subtypes of Discordance

It stands to reason that individuals who are discordant in one dimension of sexual orientation as opposed to another may be different from each other. In fact, there are different subtypes of discordance and all types of discordance are not necessarily the same. Individuals within each subtype of discordance could have their own set of predictors and negative outcomes. In general terms, discordance has been described as sexual identity with discordant sexual behavior and/or attraction (DBOA). However, there are three sub-types of discordance in individuals who identify as heterosexual but whom also indicate same sex behavior and/or attraction. For example, an individual might identify as heterosexual but report discordant same sex behavior *and* attraction (DBA). Another individual might identify as heterosexual and report opposite sex attraction but still participate in same sex behavior (DB) while another individual might identify as heterosexual and engage in opposite sex behavior but have discordant same sex attraction (DA). Figure 2 below indicates the three possible subtypes of discordance in individuals who identify as heterosexual.

It seemed likely that the greatest negative outcomes would be associated with those who demonstrate discordance on the behavior component. This is based on the notion that those with discordant behavior will likely be at greater risk for having a positive HIV/STD tests and/or AIDS diagnosis since behavior is a requirement in acquiring these negative outcomes, which might rule out those with discordant attraction

alone. All subtypes could be at equal risk for alcohol use and misuse. Those with both discordant behavior and attraction as well as those with discordant behavior alone are likely at the greatest risk for negative outcomes, followed by those with discordant attraction alone, since they lack the behavioral component. All analyses were first conducted using the main variable of discordance and then analyses were re-run utilizing each subtype of discordance.

Figure 2. Subtypes of Discordance

Identity	Same Sex Behavior	Same Sex Attraction	Discordant
Heterosexual	Yes	Yes	Yes DBA (Subtype1)
	Yes	No	Yes DB (Subtype2)
	No	No	No N/A
	No	Yes	Yes DA (Subtype3)

Demographic Characteristics of Discordant Sexual Identity

Determining the rates of discordance as they vary across demographic categories is necessary for public and individual health efforts. Analyses examined race, age, education, individual income, family income, employment, marital status, and nativity. Appendix 3 contains the portion of the NESARC interview that inquired about demographic information and includes a full description of how each demographic variable was collected and coded.

Discordance and its Association with Alcohol Use Before Sex

Although participation in high risk sexual behavior could not be directly examined in this study because the NESARC study participants were not directly asked about high risk sexual behaviors, alcohol use before sex, a noted risk factor for participation in high risk sexual behaviors was examined. Two questions about alcohol use before sex were asked (see Appendix 2). One question focused on alcohol use of the participant; “During the last 12 months, how often did you drink alcohol before having sex?” and the other question pertained to alcohol use of the participant’s partner(s); “During the last 12 months, how often did your partner drink alcohol before having sex?”. Both questions were followed by choices of Never (1), Rarely (2), Sometimes (3), Most of the time (4), and Always (5). Rates of these two variables were compared in concordant and discordant individuals.

Discordance and Alcohol Abuse, Alcohol Dependence, and Alcohol Use Disorder

Alcohol abuse and dependence in the NESARC were assessed based on the DSM-IV criteria with the National Institute of Alcoholism and Alcohol Abuse Alcohol Use Disorder and Associated Disabilities Interview Schedule—DSM-IV Version (AUDADIS-IV). This instrument was designed for use by professional interviewers who are not clinically trained and has shown good to excellent test-retest reliability and validity (Canino et al., 1999; Cottler et al., 1997; BF Grant et al., 2003; BF Grant, Harford, Dawson, Chou, & Pickering, 1995). Inquiring about behaviors and symptoms interviewers assessed for alcohol abuse and dependence. Past year alcohol abuse was determined by one of the following DSM-IV criteria; 1) Recurrent alcohol use resulting in failure to fulfill major role obligations at work, school, or home, 2) Recurrent alcohol

use in situations in which it was physically hazardous, 3) Recurrent alcohol-related legal problems, 4) continued alcohol use despite persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the alcohol (American Psychiatric Association, 1994). In order to be counted as having alcohol abuse these symptoms would also not have met criteria for alcohol dependence. Past year alcohol dependence was based on the presence of at least three of the seven DSM-IV dependence criteria in the 12 months preceding the interview. These criteria included; 1) tolerance, 2) withdrawal, 3) consumption of larger amounts or over a longer period than was intended, 4) a persistent desire or unsuccessful efforts to cut down or control alcohol use, 5) spending a great deal of time to obtain alcohol, use alcohol or recover from alcohol, 6) a reduction of important social, occupational, or recreational activities because of alcohol use, and 7) continuing to use alcohol despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the alcohol (e.g., continued drinking despite recognition that an ulcer was made worse by alcohol consumption) (American Psychiatric Association, 1994). Additionally, a category called “Alcohol Use Disorder” was constructed for this study that includes the summation of alcohol abuse and/or alcohol dependence.

Discordance and its Association with a Positive HIV or STD test or AIDS Diagnosis

Wave 2 of the NESARC study also asked participants if they tested positive for HIV or any other STD (Gonorrhea, Chlamydia, etc) or if they had an AIDS diagnosis over the previous 12 months (see Appendix 2). Additional analyses determined if discordant individuals were more likely than concordant individuals to have tested positive for HIV or an STD or more likely to have had an AIDS diagnosis over the

previous 12 months. It is important to note when interpreting the results of this analysis that discordant individuals have been shown to seek less health care (Kerker et al., 2006) and to test less often for HIV (Pathela et al., 2006; Rietmeijer et al., 1998; Wolitski et al., 2006), therefore low rates of positive test results and diagnoses were expected.

Nonetheless, this analysis was still a key factor in determining some of the negative outcomes that are associated with discordance. Similar to prior analyses, statistical analysis determined if discordance predicts the presence of any of these risk factors including testing positive for HIV, an STD or having had an AIDS diagnosis.

Reporting of Results

Hypothesis 1 includes males and females together yet hypotheses 2 and 3 are discussed separately by gender. Hypothesis 1 examined the prevalence of sexual identity, behavior and attraction and a comparison by gender was necessary since these variables have been shown to differ significantly between men and women, with men showing a more consistent pattern of sexuality while women have demonstrated more sexual fluidity (Bailey et al., 2003; Baumeister, 2000; Baumeister et al., 2001; Chivers et al., 2004; Diamond, 2000, 2003b, 2005, 2008a, 2008b; Laumann et al., 1994; M. Rosario et al., 2009; Rust, 1992, 1993). Yet, prior research pertaining to gender differences of sexual orientation has not specifically examined discordance by gender. Additionally, most research demonstrating negative ramifications of discordant sexual identity has focused on men to the exclusion of women and little is known about the outcomes associated with discordant sexual identity in women. Therefore hypotheses 2 and 3 are tested separately by gender.

Chapter 5 - Results

Using the NESARC database, this three part study examined the prevalence of sexual identity, sexual behavior, sexual attraction and sexual discordance. This study also examined demographic predictors that are associated with sexual discordance and compared the likelihood of engaging in eight negative outcomes between discordant and concordant individuals in the US.

Data Analysis Procedures

All analyses were conducted using the SUDAAN statistical software package (version 9.0.1) and all results have been weighted in order to provide national estimates. Data weights used in the analysis give each case a certain amount of power to estimate multiple cases from the larger population. Each individual case is statistically adjusted to represent a larger portion of the population from which the NESARC sample was drawn. The NESARC wave 2 weight is derived from the product of the NESARC wave 1 weight and three other individual weighting factors from wave 2 of the study (see Chapter 4 – Methodology for full description). Since all data are weighted, percentages are supplied rather than sample sizes. Data analysis with the NESARC database that seeks to determine US statistics depend on use of percentages since each case from the sample represents a larger portion of the overall US.

Part 1 of this study examined variations in the prevalence of sexual identity, behavior, attraction and sexual discordance with weighted cross-tabulations. Results were compared separately by gender. The prevalence of same sex orientation (Hypothesis 1A) was examined with a frequency analysis of the three variables related to sexuality, including sexual identity, sexual behavior and sexual attraction. Next,

discordance was coded (described in chapter 4) and using this new variable, the frequency of sexual discordance in the US was examined separately for males and females (hypothesis 1B). Additional frequency analyses were conducted to determine the prevalence of each subtype of discordance. Next, Chi-Square analysis compared the rates of discordance by gender (hypothesis 1C).

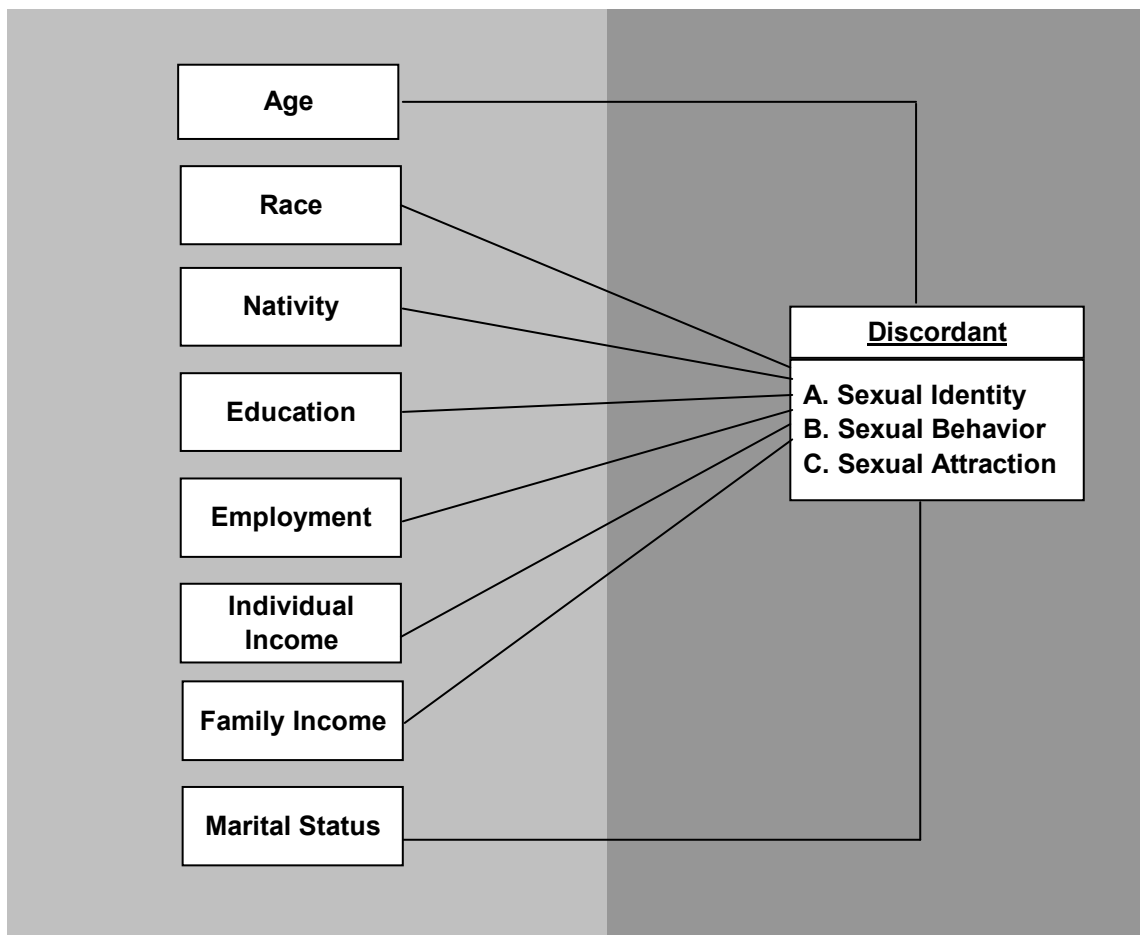
Parts 2 and 3 of these analyses utilized logistic regression to examine the predictors and negative outcomes associated with sexual discordance. Logistic regression is used to predict membership into one of two or more groups (Mertler & Vannatta, 2005). It is an extension of multiple regression but is used when the dependent variable (DV) is categorical. Discordance, the DV in this study, is categorical and each individual was assigned a value of “0” if they were concordant and a “1” if they were discordant.

Hypothesis 2 was examined with logistic regression analyses to predict the probability of an individual being concordant or discordant in their sexuality based on their demographic variables (See Figure 3. below). All of these variables are categorical, including both the DV and all of the independent variables (IVs). Although age was originally collected as a specific number, this variable has been collapsed into four categories including “18-29”, “30-49”, “50-64”, and “65 years of age and older” to assist in the ability to identify levels of discordance within each age group. These age groups were utilized to ensure equal distribution of the sample within each group. Since all of these variables are categorical, this indicates the appropriateness of using the logistic regression analysis to predict the likelihood of discordance. Separate logistic regression

analyses were conducted to determine the connection between discordance and each demographic predictor.

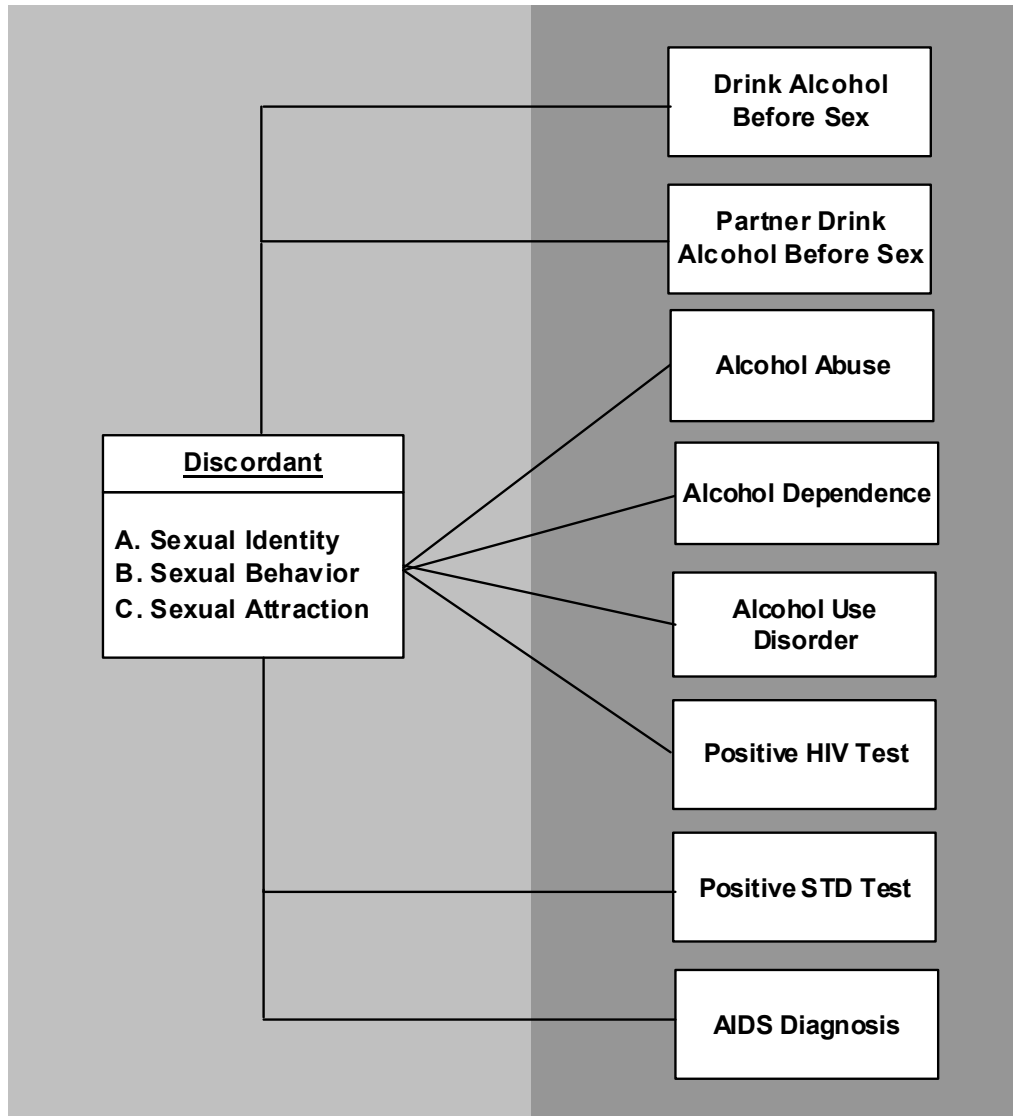
After the largest group of discordance was examined all analyses were conducted again within each subgroup of discordant individuals to determine the variation of predictors of discordance by each subtype. All 3 subtypes of discordance were coded as separate binary variables with “0” indicating that they did not have the subtype of discordance and “1” indicating that they did have the specified subtype of discordance. Logistic regression was used to determine if predictors of discordance vary by subtype.

Figure 3. Logistic Regression Models



Part 3 of this study examined eight possible negative outcomes that were associated with discordance including 1) use of alcohol prior to sexual activity by the study participant, 2) study participants' partner(s) use of alcohol prior to sexual activity, 3) having met criteria for alcohol abuse, 4) having met criteria for alcohol dependence, 5) having met criteria for alcohol use disorder, 6) having tested positive for HIV over the past 12 months, 7) having tested positive for any other STD over the past 12 months, and 8) having had an AIDS diagnosis over the past 12 months,.

In order to test discordance and its association with negative outcomes, the discordance variable in this analysis was used as the IV and the DVs were the eight possible negative outcomes. Since most studies on both discordance and use of alcohol and its association with high risk sexual behavior have been conducted primarily on men, separate analyses were conducted for men and women. Similar to hypothesis 2, all variables in this analysis are categorical including the IV (discordance) and all eight of the DVs (alcohol use by study participant, alcohol use of participants partner(s), alcohol abuse, alcohol dependence, alcohol use disorder, a positive HIV test, a positive STD test, and diagnosis of AIDS). Eight separate logistic regression analyses were conducted (See Figure. 4 below) to determine the connection between discordance and each negative outcome. In all cases, it was hypothesized that discordance would predict higher levels of negative outcomes. Next, separate logistic regression analyses were conducted again to determine if negative outcomes associated with discordance vary by each subtype of discordance.

Figure 4. Logistic Regression Models

All logistic regressions that were conducted for this study derived Odds Ratios (OR) and the 95% confidence interval was used. A confidence interval (CI) is “a range into which we would estimate a population parameter to fall” (Weinbach & Grinnell, 2006, p. 115) and the confidence level is “an estimate of the probability that the true population parameter lies within the confidence interval” (Weinbach & Grinnell, 2006, p. 115). In other words a 95% confidence level with a CI of 2 – 4 (written as 95% CI, 2 –

4) translates to a 95% chance that the parameter falls between 2 and 4. Odds ratios on the other hand determine the likelihood that an event will occur more or less often in one group as compared to the referent group. In this study, the ORs of the predictors and negative outcomes were compared between discordant and concordant (referent) individuals. Comparison of the percentages in the ORs are considered statistically significant if their 95% confidence interval does not include 1 (Blanco et al., 2008). This method of indicating statistical significance of ORs has been used before (Blanco et al., 2008) but to ensure the clarity of these findings the p values were also included and the analysis was deemed to be statistically significant if the p value was $<.05$.

A CI of 1 indicates that there is essentially no relationship between the variables being analyzed and that the odds of one variable occurring more or less often in each group do not differ. A CI of less than 1 indicates that the odds of the variable occurring in the experimental group are *less often* as compared to the referent group where as a CI greater than 1 indicates that the odds of the variable occurring in the experimental group *are greater* as compared to the referent group. In this case, since discordant individuals were compared to concordant individuals, a CI of less then 1 indicates that the odds of the variable occurring in discordant individuals is less than the odds of the variable occurring in concordant individuals and a CI greater than 1 indicates higher odds of the variable occurring in discordant individuals as compared to concordant individuals.

Discordant Sexual Identity in the US – Results of Analysis

Data from this study were collected from 34,653 subjects throughout the United States. The sample was comprised of 42% males and 58% females. Whites made up the majority of the sample with 71%, followed by Hispanics 12%, and Blacks 11%,

Asians 4%, and Native Americans made up the smallest group with 2%. Racial distributions were similar by gender (Table 1). These racial proportions are similar to the racial estimates that were determined in the latest US census (Grieco & Cassidy, 2001). Conducted in 2000, the US census estimated that 75% of the US is White, 12% is Black, 12.5% is Hispanic, 3.6% is Asian and nearly 1% is Native American (Grieco & Cassidy, 2001) indicating similar racial estimates in the US census and the NESARC studies.

Respondents in the 18-29 age category comprised the smallest portion of the sample (16%), 30-44 year olds were the second largest group (30%), 45-64 was the largest group (35%) and 65+ comprised nearly a fifth of the sample (19%). Most of the sample was married (64%), whereas the widowed (19%) and never married (17%) categories were similar in size. Nearly two thirds of the sample were employed or in school (65%) and the rest (33%) were unemployed. The sample was more evenly distributed across income categories and 19% were in the lowest income bracket of \$0-\$19,999, 19% were in the \$20,000-\$34,999 bracket, 32% were in the \$35,000-\$64,999, and 29% of the sample was in the highest income bracket of \$70,000 or more. Gender played an important role in income levels since 55% of the women reported an individual income in the \$0-\$19,999 category yet only 27% of the men reported an individual income that low. Similarly, nearly 33% of the men reported earning an annual individual income greater than \$70,000 yet only 26% of the women reported an individual income this high. Family income levels were more equally distributed by gender (Table 1). Similar to income, overall 65% of the sample reported being employed, yet only 57% of the women were employed while 73% of the men reported employment. A large portion of the sample had some college education and/or received a college or graduate degree (62%), 24%

were high school educated and 14% had less than a high school degree. Education levels were similar by gender (Table 1). Most of the sample was born in the US (86%) while 14% were foreign born. Levels of nativity were also similar by gender (Table 1).

Table 1. Demographic Characteristics

Prevalence/Characteristics	Total		Male		Female	
	N=34,653		N=14,564		N=20,089	
	%	SE	%	SE	%	SE
Race/Ethnicity						
White	70.91	1.54	71.22	1.59	70.62	1.55
Black	11.05	0.66	10.08	0.65	11.94	0.71
Native American	2.19	0.18	2.06	0.20	2.31	0.21
Asian	4.27	0.52	4.35	0.59	4.20	0.50
Hispanic	11.58	1.19	12.29	1.23	10.92	1.18
Individual Income (\$)						
0-19,999	42.19	0.55	27.87	0.66	55.36	0.65
20,000-34,999	23.11	0.35	24.52	0.52	21.82	0.41
35,000-64,999	24.29	0.38	31.00	0.53	18.12	0.44
>70,000	10.41	0.44	16.61	0.68	4.70	0.29
Family Income (\$)						
0-19,999	19.60	0.47	15.77	0.49	23.13	0.56
20,000-34,999	18.89	0.34	18.02	0.44	19.69	0.44
35,000-64,999	32.20	0.40	33.50	0.60	31.00	0.43
>70,000	29.31	0.73	32.72	0.84	26.18	0.75
Education						
< High School	14.02	0.45	14.12	0.49	13.93	0.53
High School	23.81	0.46	23.25	0.60	24.33	0.46
College	62.17	0.58	62.63	0.74	61.74	0.61
Age						
18-29	16.34	0.31	17.05	0.43	15.68	0.37
30-44	29.74	0.36	30.37	0.50	29.16	0.42
45-64	34.61	0.32	35.47	0.49	33.82	0.37
65+	19.31	0.34	17.11	0.42	21.34	0.40
Marital Status						
Married	63.79	0.48	67.41	0.56	60.46	0.59
Widowed	18.86	0.26	12.79	0.31	24.45	0.40
Never Married	17.35	0.45	19.80	0.56	15.09	0.48
Nativity						
US-born	86.14	1.38	85.67	1.39	86.56	1.40
Foreign-born	13.86	1.38	14.33	1.39	13.44	1.40
Employment Status						
Employed	65.06	0.42	72.87	0.49	57.87	0.54
Unemployed	33.38	0.40	25.49	0.47	40.63	0.53

Hypothesis 1 – Variations in the US Prevalence of Sexual Identity, Sexual Behavior, and Sexual Attraction

Part 1 of this study included an examination of the variation of sexual identity, sexual behavior and sexual attraction in the US. Ninety eight percent of both males and females identified as heterosexual. Of the men, 1.07% identified as gay, 0.42% as bisexual, and 0.4% indicated that they were “not sure” about their sexual identity. On the other hand, of the women 0.65% identified as lesbian, 0.80% as bisexual, and 0.51% indicated that they were “not sure” about their sexual identity. Almost double the proportion of women compared to men identified as bisexual and just slightly less than double the number of men compared to women identified as gay opposed to lesbian. Although there are differences in the number of men and women that identified as gay, lesbian or bisexual, the “not sure” category was similar by gender.

Same Sex Attraction in US Men and Women

In terms of sexual attraction, of the men 95.66% were only attracted to women, while the rest (4.34%) indicated some level of attraction to other men including 1.69% who were “mostly attracted to females”; 0.71% who were “equally attracted to females and males”; 0.5% who were “mostly attracted to males” and 1.44% who were “only attracted to males”. Of the women, 92.82% were only attracted to men, and the rest (7.18%) indicated some level of attraction to other women including 1.32% who were “only attracted to females”; 0.39% who were “mostly attracted to females”; 1.30% who were “equally attracted to females and males”; and, 4.17% who were “mostly attracted to males”. This demonstrates that any same sex attraction is more common among women than men. Table 2 lists each sexual attraction category by gender.

Table 2. Sexual Identity, Behavior, Attraction and Discordance by Gender

Prevalence/Characteristics	Total N=34653		Male N=14564		Female N=20089	
	%	SE	%	SE	%	SE
Sexual Attraction						
Only attracted to females	46.61	0.35	95.66	0.21	1.32	0.10
Mostly attracted to females	1.02	0.07	1.69	0.12	0.39	0.06
Equally attracted to females and males	1.01	0.06	0.71	0.07	1.30	0.09
Mostly attracted to males	2.41	0.11	0.50	0.07	4.17	0.19
Only attracted to males	48.95	0.35	1.44	0.12	92.82	0.26
Sexual Behavior						
Only males	50.50	0.34	2.18	0.15	95.04	0.18
Only females	45.66	0.34	94.24	0.26	0.89	0.08
Both males and females	1.86	0.09	1.69	0.12	2.02	0.12
Never had sex	1.98	0.13	1.90	0.16	2.05	0.15
Identity						
Heterosexual	98.07	0.10	98.10	0.15	98.04	0.12
Gay or lesbian	0.85	0.07	1.07	0.12	0.65	0.07
Bisexual	0.62	0.05	0.42	0.06	0.80	0.07
Not sure	0.46	0.04	0.40	0.06	0.51	0.06
Any Same Sex Attraction	5.82	0.18	4.34	0.21	7.18	0.26
Any Same Sex Behavior	3.37	0.11	3.87	0.19	2.91	0.14
Any Same Sex Orientation	7.06	0.20	6.04	0.25	8.01	0.27
Which Dimension						
None	92.94	0.20	93.96	0.25	91.99	0.27
Attraction Only	3.22	0.13	1.78	0.12	4.56	0.21
Behavior Only	1.04	0.06	1.56	0.11	0.57	0.07
Identity Only	0.17	0.03	0.12	0.03	0.22	0.05
Attraction and Behavior	0.89	0.06	0.83	0.09	0.95	0.09
Identity and Attraction	0.30	0.04	0.29	0.06	0.31	0.05
Identity and Behavior	0.05	0.01	0.05	0.02	0.05	0.02
Identity and Behavior and Attraction	1.38	0.08	1.41	0.13	1.35	0.09
Discordance (among individuals who identified as heterosexual)						
Straight Identified Concordance	94.72	0.17	95.72	0.20	93.79	0.25
Straight Identified Discordance	5.28	0.17	4.28	0.20	6.21	0.25

Same Sex Behavior in US Men and Women

Sexual behavior was measured over the course of each person's lifetime. The time frame that is used to investigate sexual behavior affects the prevalence of sexual behaviors that are reported with larger timeframes yielding larger results and vice-

versa. Measurement of sexual behavior over the course of a lifetime is expected to derive the largest estimates of reported same sex behavior. Of the men, 2.18% said they *only* had sex with males over the course of their lifetime yet, only 1.07% of the sample identified as gay. In other words, more than double the number of men who reported identifying as gay reported *exclusive* same sex behavior. Similarly, 1.69% of the men reported having had sex with males and females, yet only 0.42% reported identifying as bisexual. Of the rest of the men, 1.90% had never had sex and the remaining 94.24% reported only having had sex with women. In summary, a total of 3.87% of the men indicated any same sex behavior, either exclusively or with both males and females over the course of their lifetime.

Similar to the men, 0.89% of the women said that they have sex exclusively with women, yet only 0.65% identified as lesbian. In other words, nearly 25% more women reported exclusive same sex behavior than the number of women who reported identifying as lesbian. While the discrepancy between behavior and identity among women is not as large as the difference that was found among the men, the number of women who reported exclusive same sex behavior exceeded the number of women who identified as lesbian. An additional 2.02% of the women reported having had sex with men and women over the course of their lifetime compared to 0.80% of the women who identified as bisexual. Again, the number of women reporting sexual behaviors with both sexes exceeds the prevalence of women who identified as bisexual. Of the rest of the women, 2.05% never had sex, and the remaining 95.04% only had sex with men. In summary, 2.91% of the women indicated any same sex behavior (same or both) compared to 3.87% of the men who reported any same sex behavior over the course of

their lifetime. These findings support the hypothesis that there are significant variations across the different dimensions of sexual orientation (hypothesis 1A). Additionally, unlike same sex attraction, same sex behaviors are more common among males than among females. This offers some evidence to support the notion that sexual orientation is experienced and organized differently among men and women.

Combinations of Same Sex Orientation

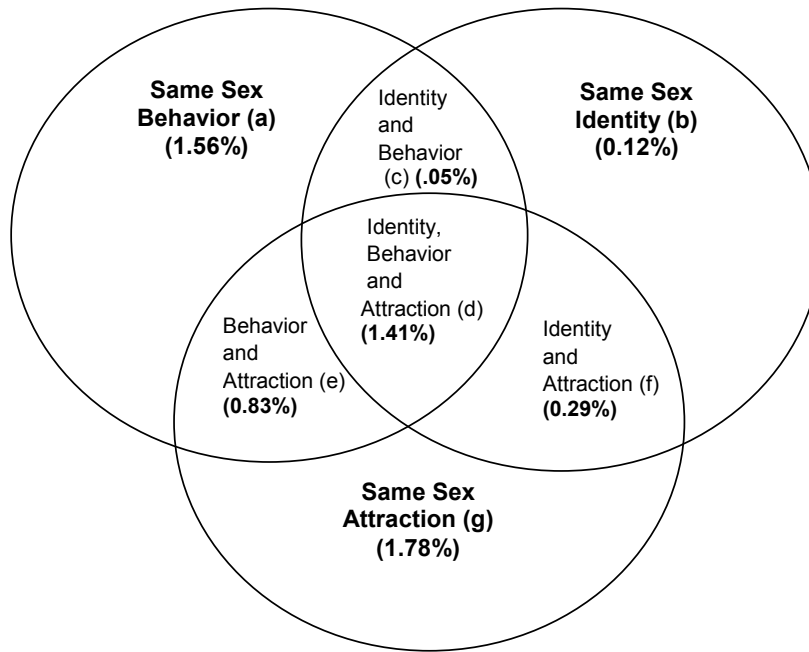
The estimated prevalence of same sex orientation among men ranges from 1.41% to 6.04%. Using the narrowest definition of same sex orientation that includes *all three* dimensions of sexual orientation, 1.41% of the men reported non-heterosexual identity, *and* same sex behavior *and* same sex attraction. Yet, using the broadest definition of same sex orientation that includes *any* dimension of sexual orientation, 6.04% of the men reported non-heterosexual identity, *and/or* same sex behavior *and/or* same sex attraction. The estimated prevalence of same sex orientation in men varies depending on the dimensions of sexual orientation that are investigated and the definition that is utilized to investigate sexual orientation.

The estimated prevalence of same sex orientation among women ranges from 1.35% to 8.01%. Using the narrowest definition of same sex orientation that includes *all three* dimensions of sexual orientation, 1.35% of the women reported non-heterosexual identity, *and* same sex behavior *and* same sex attraction. Yet, using the broadest definition of same sex orientation that includes *any* dimension of sexual orientation, 8.01% of the women reported non-heterosexual identity, *and/or* same sex behavior *and/or* same sex attraction. Like the men, the estimated number of women with same sex

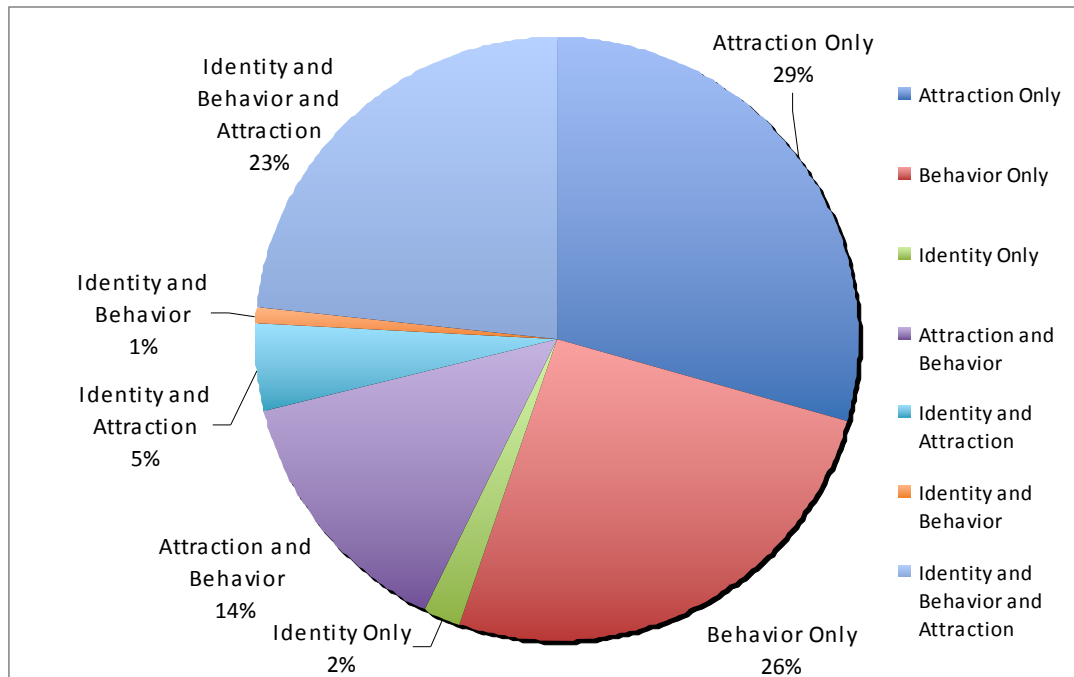
orientation varies depending on the definition that is utilized and the combination of sexual orientation dimensions that are examined.

Dimensions of Sexual Orientation

Of the men, 6.04% indicated any of the same sex orientation variables (Figure 5), which included a non-heterosexual identification and/or same sex behavior and/or same sex attraction. This estimate utilizes the broadest definition of same sex orientation and includes men who demonstrated any same sex behaviors over the course of their lifetime and/or any level of same sex attraction and/or any non-heterosexual identity. Figure 5 displays the intersection of the three dimensions of same sex orientation and the proportion of the 6.04% of the men who reported each dimension and their combinations. While 1.41% of the men indicated same sex orientation on *all* three dimensions, 1.78% indicated only same sex attraction, 1.56% indicated same sex behavior only and 0.12% indicated only same sex identity but not behavior or attraction (Figure 5). Of the 6.04% of the men who demonstrated any same sex orientation, only 23% of them reported all three dimensions (Figure 6). Yet 14% of those with any same sex orientation, reported both same sex attraction and behavior but also identified as heterosexual (Figure 6). Similarly, 26% of the men with any same sex orientation reported same sex behavior alone and 29% of them reported same sex attraction alone (Figure 6).

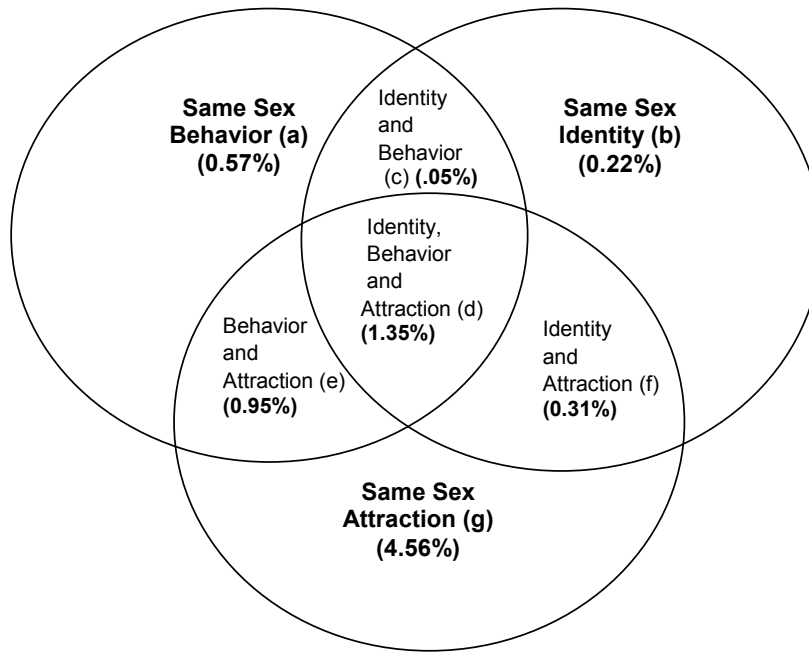
Figure 5. Same Sex Orientation of Men in the US (Total 6.04%)

Key – Men with ANY same sex orientation	
a	Same sex behavior only
b	Same sex identity only
c	Same sex identity and behavior without same sex attraction
d	Same sex identity, behavior and attraction
e	Same sex behavior and attraction without same sex identity
f	Same sex identity and attraction without same sex behavior
g	Same sex attraction only

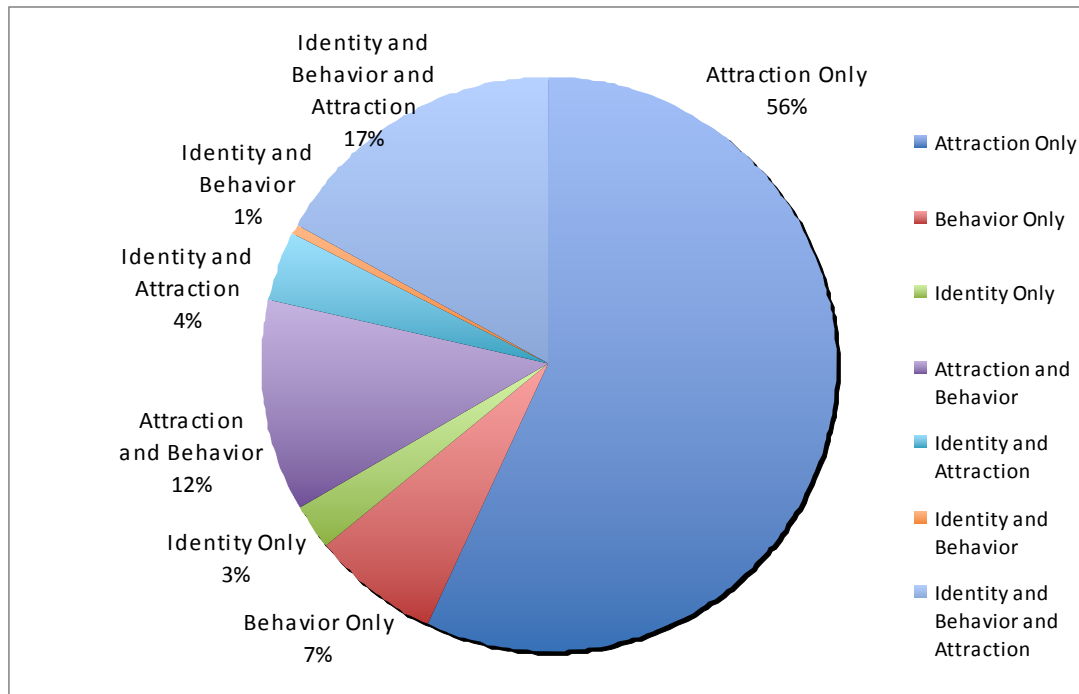
Figure 6. Dimensions of Same Sex Orientation of Men in the US (Total 6.04%)

Of the women, 8.01% indicated any same sex orientation, including either a non-heterosexual identity and/or reported any same sex behavior and/or same sex attraction. Figure 7 displays the intersection of the three dimensions of same sex orientation and the proportion of the 8.01% of the women who reported each combination. Although more women than men indicated any same sex orientation, more than half of the 8.01% who reported any same sex orientation reported same sex attraction alone (4.56%). This figure is much higher than the 1.78% of the men who reported same sex attraction alone, with women being 2.5 times more likely than men to report same sex attraction without same sex behavior or identity. On the other hand, same sex behavior alone was much less common among women than men. Of the women, only 0.57% of them reported same sex behavior without identifying as lesbian or indicating same sex attraction

compared to 1.04% of the men who reported same sex behavior without same sex identity or attraction. Similar to the men, any same sex identity without same sex behavior or attraction was relatively uncommon as only 0.22% of the women demonstrated this combination (Figure 7). This group contains women who take on a non-heterosexual identity for reasons other than same sex attraction or behavior. A similar proportion of women as compared to men demonstrated same sex orientation on all three dimensions and included 1.35% of the women who did not identify as heterosexual and reported same sex behavior and attraction, compared to 1.41% of the men. Of the 8.04% of the women who reported any same sex orientation, only 7% of them reported same sex behavior alone, and only 12% of them reported same sex attraction and behavior (Figure 8). The majority of the women with any same sex orientation (56%) reported same sex attraction alone (Figure 8). Figure 8 displays the combinations of sexual orientation categories among women who reported any same sex dimension.

Figure 7. Same Sex Orientation of Women in the US (Total 8.01%)

Key - Women with ANY same sex orientation	
a	Same sex behavior only
b	Same sex identity only
c	Same sex identity and behavior without same sex attraction
d	Same sex identity, behavior and attraction
e	Same sex behavior and attraction without same sex identity
f	Same sex identity and attraction without same sex behavior
g	Same sex attraction only

Figure 8. Dimensions of Same Sex Orientation of Women in the US (Total 8.01%)**Hypotheses 1B and 1C - Prevalence of Discordance and Discordance by Gender**

Discordance was coded separately for men and women. As figures 5-8 indicate, sexual discordance was fairly common in both groups as 4.28% of the men and 6.21% of the women identified as heterosexual and reported same sex attraction and/or behavior (Table 2), confirming hypothesis 1B. Chi-square analysis determined that the difference in rates of discordance among men and women was statistically significant ($p < 0.0001$). Although sexual discordance was fairly common in both groups, women were significantly more likely to be discordant than men, demonstrating support of hypothesis 1C.

Hypothesis 2 - Predictors of Discordant Sexual Identity in US Men

A total of 98.10% of the men in the US reported at least one or more sexual experiences. Of those who identified as heterosexual, 4.28% reported discordant behavior and/or attraction. This was the largest and most general group of discordance and includes individuals who identify as heterosexual but who also reported same sex behavior *and/or* same sex attraction (DBOA). Logistic regression analyses examined demographic predictors in men with DBOA and adjusted ORs are presented in Table 3. Men with DBOA had significantly greater odds than concordant men of being Black, over the age of 65, widowed, and unemployed (OR range: 1.42 for being Black to 1.95 for being over the age of 65) and significantly less odds of being in the higher income groups (OR range: 0.62 for having a family income greater than \$70,000 to 0.70 for having an individual income greater than \$70,000). Race, income, age, marital status and employment were all important predictors in men with DBOA and men with DBOA had odds nearly two times greater than concordant men of being over the age of 65 (95% CI, 1.31 – 2.90) and nearly half the chance (0.62) of having a family income greater than \$70,000 (95% CI, 0.47 – 0.83). No differences were found in education level or nativity status. Support was found for the hypothesis that discordant men are more likely to be Black yet, Latinos are not any more likely to be discordant. Support of the hypotheses that discordant men tend to earn a lower income, are unemployed and older was found, meanwhile discordant men were not significantly more likely to be married but they were significantly more likely to have been widowed.

Table 3 – Predictors of DBOA in Men

Prevalence/Characteristics	Male					
	Straight Identified Discordance – Yes N=663		Straight Identified Discordance – No ⁺ N=13422			
	%	SE	%	SE	OR	95% CI
Race/Ethnicity						
White ⁺	67.88	2.71	71.42	1.60	1.00	1.00 1.00
Black	13.38	1.89	9.92	0.65	1.42*	1.03 1.95
Native American	2.02	0.63	2.03	0.20	1.05	0.54 2.05
Asian	4.56	1.52	4.32	0.57	1.11	0.61 2.02
Hispanic	12.17	1.79	12.31	1.25	1.04	0.78 1.39
Individual Income (\$)						
0-19,999 ⁺	35.37	2.47	27.30	0.67	1.00	1.00 1.00
20,000-34,999	23.60	2.05	24.53	0.52	0.74*	0.57 0.97
35,000-64,999	25.89	2.27	31.36	0.54	0.64**	0.48 0.84
>70,000	15.14	1.85	16.80	0.70	0.70*	0.51 0.95
Family Income (\$)						
0-19,999 ⁺	21.13	1.96	15.18	0.50	1.00	1.00 1.00
20,000-34,999	18.26	1.84	17.86	0.45	0.73	0.54 1.00
35,000-64,999	31.87	1.94	33.76	0.61	0.68**	0.52 0.88
>70,000	28.74	2.27	33.20	0.85	0.62**	0.47 0.83
Education						
< High School	15.82	1.63	14.19	0.52	1.11	0.84 1.46
High School	21.17	2.34	23.32	0.60	0.90	0.67 1.20
College ⁺	63.01	2.97	62.49	0.74	1.00	1.00 1.00
Age						
18-29 ⁺	12.90	1.93	17.27	0.46	1.00	1.00 1.00
30-44	25.05	2.09	30.63	0.52	1.10	0.75 1.60
45-64	37.57	2.21	35.27	0.53	1.43	0.98 2.08
65+	24.48	2.28	16.83	0.42	1.95**	1.31 2.90
Marital Status						
Married ⁺	63.09	2.28	68.57	0.56	1.00	1.00 1.00
Widowed	16.83	1.64	12.55	0.32	1.46**	1.15 1.85
Never Married	20.08	2.21	18.88	0.55	1.16	0.88 1.53
Nativity						
US-born ⁺	84.24	2.26	85.76	1.40	1.00	1.00 1.00
Foreign-born	15.76	2.26	14.24	1.40	1.13	0.83 1.53
Employment Status						
Employed ⁺	64.47	2.28	73.37	0.50	1.00	1.00 1.00
Unemployed	35.53	2.28	26.63	0.50	1.52**	1.24 1.85

⁺ Reference group, *P<0.05, **P<0.01, ***P<0.001

Predictors of Discordant Sexual Behavior and Sexual Attraction in Men (DBA)

Of the men who were found to be discordant, 19% of them reported discordant same sex behavior *and* same sex attraction while identifying as heterosexual (DBA). Please note, that 5 men (0.75%) were excluded from all discordant subtype analyses because they were missing EITHER attraction *or* behavior data (but not both) – so although it was possible to determine that they are discordant it was not possible to determine their subtype of discordance. Table 4 presents the adjusted Odds Ratios (ORs) from logistic regression analyses examining men with DBA and each demographic predictor.

Men with DBA had significantly greater odds than concordant men of being over the age of 30, and unemployed (OR range: 1.64 for being unemployed to 4.43 for being 65 years of age or older) and significantly less odds of being in either of the top two individual income levels (ORs: 0.45 for being in the \$35,000 - \$64,999 level and 0.51 for earning more than \$70,000). These discordant men had roughly half the chance of being in either of the top two individual income levels (95% CI, 0.26 – 0.78 and 95% CI, 0.28 – 0.95) and nearly 3 times the chance of being 30-44 years old (95% CI, 1.15 – 7.36), 45-64 years of age (95% CI, 1.21 – 6.46) and nearly 4.5 times the chance of being 65 years of age or older (95% CI, 1.87 – 10.49). This supports the hypotheses that discordant men are more likely to earn a low income, be unemployed and older. There were no differences in race, marital status, family income, education, or nativity between men with DBA and men who are concordant.

Table 4 – Predictors of DBA in Men

Prevalence/Characteristics	Male					
	Straight Identified Discordance -- Yes N=126		Straight Identified Discordance – No+ N=13422			
	%	SE	%	SE	OR	95% CI
Race/Ethnicity						
White+	68.39	5.41	71.42	1.60	1.00	1.00 1.00
Black	12.18	3.31	9.92	0.65	1.28	0.68 2.42
Native American	1.08	1.08	2.03	0.20	0.56	0.07 4.24
Asian	7.25	3.21	4.32	0.57	1.75	0.68 4.51
Hispanic	11.10	3.73	12.31	1.25	0.94	0.46 1.94
Individual Income (\$)						
0-19,999+	42.85	5.38	27.30	0.67	1.00	1.00 1.00
20,000-34,999	21.40	4.70	24.53	0.52	0.56	0.30 1.02
35,000-64,999	22.30	4.13	31.36	0.54	0.45**	0.26 0.78
>70,000	13.45	3.38	16.80	0.70	0.51*	0.28 0.95
Family Income (\$)						
0-19,999+	13.90	3.44	15.18	0.50	1.00	1.00 1.00
20,000-34,999	18.53	4.09	17.86	0.45	1.13	0.57 2.24
35,000-64,999	33.18	5.36	33.76	0.61	1.07	0.55 2.10
>70,000	34.39	5.51	33.20	0.85	1.13	0.59 2.16
Education						
< High School	13.07	3.77	14.19	0.52	0.81	0.41 1.60
High School	15.99	3.70	23.32	0.60	0.60	0.35 1.06
College+	70.95	4.92	62.49	0.74	1.00	1.00 1.00
Age						
18-29+	6.18	2.39	17.27	0.46	1.00	1.00 1.00
30-44	31.89	4.77	30.63	0.52	2.91*	1.15 7.36
45-64	35.29	4.61	35.27	0.53	2.80*	1.21 6.46
65+	26.64	4.40	16.83	0.42	4.43**	1.87 10.49
Marital Status						
Married+	72.89	4.45	68.57	0.56	1.00	1.00 1.00
Widowed	16.56	3.75	12.55	0.32	1.24	0.71 2.16
Never Married	10.56	3.02	18.88	0.55	0.53	0.27 1.01
Nativity						
US-born+	81.64	4.23	85.76	1.40	1.00	1.00 1.00
Foreign-born	18.36	4.23	14.24	1.40	1.35	0.78 2.36
Employment Status						
Employed+	62.67	4.82	73.37	0.50	1.00	1.00 1.00
Unemployed	37.33	4.82	26.63	0.50	1.64*	1.09 2.47

+ Reference group

Predictors of Discordant Sexual Behavior but Not Sexual Attraction in Men (DB)

Of the men coded as discordant, 36.05% of them identified as heterosexual but reported same sex behavior without same sex attraction (DB). Logistic regression analysis was utilized to examine the demographic predictors of discordant sexual behavior and their adjusted ORs are presented in Table 5. Compared to concordant men, men with DB had approximately half the chance of being in the \$20-34,999K income bracket for both individual (OR: 0.62; 95% CI, 0.41–0.95) and family income (OR: 0.48; 95% CI, 0.29-0.80). These were the only significant predictors found in men with DB. This finding indicates that men with DB are equally as likely to be in the lowest income category or in the two highest income categories but significantly less likely to be in this mid-range income level. Results also indicate that there are no differences in race, education, age, employment, nativity or marital status between men with DB and men who are concordant. Although differences in income level were found in men with DB, the hypothesis that lower income would be more common in those who are discordant was not supported.

Table 5 – Predictors of DB in Men

Prevalence/Characteristics	Male					
	Straight Identified Discordance – Yes N=239		Straight Identified Discordance -- No+ N=13422			
	%	SE	%	SE	OR	95% CI
Race/Ethnicity						
White+	70.89	3.90	71.42	1.60	1.00	1.00 1.00
Black	12.54	3.11	9.92	0.65	1.27	0.74 2.20
Native American	2.79	1.30	2.03	0.20	1.38	0.51 3.73
Asian	2.23	1.13	4.32	0.57	0.52	0.20 1.32
Hispanic	11.55	2.64	12.31	1.25	0.95	0.57 1.56
Individual Income (\$)						
0-19,999+	32.29	3.78	27.30	0.67	1.00	1.00 1.00
20,000-34,999	18.00	2.94	24.53	0.52	0.62*	0.41 0.95
35,000-64,999	31.18	3.68	31.36	0.54	0.84	0.55 1.28
>70,000	18.52	3.45	16.80	0.70	0.93	0.55 1.57
Family Income (\$)						
0-19,999+	21.38	3.14	15.18	0.50	1.00	1.00 1.00
20,000-34,999	12.05	2.43	17.86	0.45	0.48**	0.29 0.80
35,000-64,999	33.88	3.65	33.76	0.61	0.71	0.47 1.09
>70,000	32.68	4.05	33.20	0.85	0.70	0.44 1.11
Education						
< High School	12.84	2.73	14.19	0.52	0.89	0.52 1.50
High School	23.33	3.89	23.32	0.60	0.98	0.62 1.54
College+	63.83	4.77	62.49	0.74	1.00	1.00 1.00
Age						
18-29+	15.01	3.20	17.27	0.46	1.00	1.00 1.00
30-44	28.37	3.56	30.63	0.52	1.07	0.59 1.93
45-64	43.05	3.52	35.27	0.53	1.40	0.83 2.39
65+	13.57	2.54	16.83	0.42	0.93	0.51 1.69
Marital Status						
Married+	62.92	3.67	68.57	0.56	1.00	1.00 1.00
Widowed	14.76	2.31	12.55	0.32	1.28	0.88 1.86
Never Married	22.32	3.55	18.88	0.55	1.29	0.85 1.96
Nativity						
US-born+	90.64	2.51	85.76	1.40	1.00	1.00 1.00
Foreign-born	9.36	2.51	14.24	1.40	0.62	0.36 1.08
Employment Status						
Employed+	72.52	3.59	73.37	0.50	1.00	1.00 1.00
Unemployed	27.48	3.59	26.63	0.50	1.04	0.72 1.51

* Reference group, *P<0.05, **P<0.01, ***P<0.001

Predictors of Discordant Sexual Attraction but Not Sexual Behavior in Men (DA)

Approximately 44% of the discordant men reported same sex attraction without same sex behavior (DA). Logistic regression analyses determined that men with DA had significantly greater odds than concordant men of being Black, having less than a high school education, being 65+, widowed, and unemployed (OR range: 1.51 for having less than a high school diploma to 2.43 for being 65 years of age or older) and had significantly less odds of having individual or family income of \$35,000 or higher (OR range: 0.42 for having family income above \$70,000 to 0.61 for having individual income above \$70,000). Adjusted ORs are presented in Table 6. Men with DA had roughly 2.5 times the chance of being over the age of 65 (95% CI, 1.37 – 4.33) and roughly double the chance of being unemployed (95% CI, 1.49 – 2.70) and nearly half the chance of being in the two highest income levels (95% CI, 0.27 – 0.85). Therefore, support was found for the hypotheses that men with DA tend to be Black, lower income, less educated, older age, and unemployed. While men with DA were more likely to be widowed, the hypothesis that discordant men are more likely to be married was not supported. Additionally, there were no differences in nativity status.

Table 6 – Predictors of DA in Men

Prevalence/Characteristics	Male					
	Straight Identified Discordance – Yes N=293		Straight Identified Discordance – No+ N=13422			
	%	SE	%	SE	OR	95% CI
Race/Ethnicity						
White+	65.80	4.12	71.42	1.60	1.00	1.00 1.00
Black	14.51	2.59	9.92	0.65	1.59*	1.02 2.47
Native American	1.56	0.76	2.03	0.20	0.83	0.30 2.33
Asian	4.70	2.27	4.32	0.57	1.18	0.47 2.99
Hispanic	13.43	2.27	12.31	1.25	1.18	0.80 1.74
Individual Income (\$)						
0-19,999+	34.99	3.86	27.30	0.67	1.00	1.00 1.00
20,000-34,999	29.97	3.44	24.53	0.52	0.95	0.64 1.42
35,000-64,999	21.79	3.06	31.36	0.54	0.54**	0.35 0.83
>70,000	13.24	2.44	16.80	0.70	0.61*	0.39 0.97
Family Income (\$)						
0-19,999+	24.40	3.50	15.18	0.50	1.00	1.00 1.00
20,000-34,999	23.92	3.16	17.86	0.45	0.83	0.52 1.34
35,000-64,999	29.44	3.50	33.76	0.61	0.54**	0.35 0.85
>70,000	22.23	3.01	33.20	0.85	0.42**	0.27 0.64
Education						
< High School	20.00	2.63	14.19	0.52	1.51*	1.06 2.16
High School	21.82	2.96	23.32	0.60	1.01	0.70 1.43
College+	58.18	3.53	62.49	0.74	1.00	1.00 1.00
Age						
18-29+	14.02	3.13	17.27	0.46	1.00	1.00 1.00
30-44	19.19	2.69	30.63	0.52	0.77	0.45 1.33
45-64	33.57	3.34	35.27	0.53	1.17	0.67 2.06
65+	33.23	3.60	16.83	0.42	2.43**	1.37 4.33
Marital Status						
Married+	58.91	3.76	68.57	0.56	1.00	1.00 1.00
Widowed	19.09	2.39	12.55	0.32	1.77**	1.28 2.46
Never Married	22.01	3.49	18.88	0.55	1.36	0.89 2.06
Nativity						
US-born+	80.27	3.73	85.76	1.40	1.00	1.00 1.00
Foreign-born	19.73	3.73	14.24	1.40	1.48	0.95 2.31
Employment Status						
Employed+	57.86	3.66	73.37	0.50	1.00	1.00 1.00
Unemployed	42.14	3.66	26.63	0.50	2.01***	1.49 2.70

+ Reference group, *P<0.05, **P<0.01, ***P<0.001

Predictors of Sexual Discordance in US Men – Summary

Demographic predictors of sexual discordance in US men varied by each dimension of sexual orientation that was examined (Table 7). The only predictor that was consistently more likely in all groups of discordant men was low individual income. Increased rates of unemployment and older age were the next most common predictors of sexual discordance in men. Men with DB had the fewest demographic predictors and men with DBOA had the most. Blacks were the only racial group that was more likely to be discordant either in their sexual attraction or their sexual attraction and/or behavior. Each subgroup of discordance that was analyzed varied in their predictors of discordance, yet the majority of the variance was found in men with DA. Of all three subgroups, men with DA differed most when compared to men who are concordant.

Table 7 - Summary of Demographic Predictors in Discordant US Men

Hypothesis	Predictor	DBOA	DBA	DB	DA
2A	Age	↑ 65+	↑ 30+		↑ 65+
2B	Race/Ethnicity	↑ Black			↑ Black
2C	Nativity				
2D	Education				↑ < high school
2E	Employment Status	↑ unemployed	↑ unemployed		↑ unemployed
2F	Individual Income	↓ 20K+	↓ 35K+	↓ 20K-35K	↓ 35K+
2G	Family Income	↓ 35K+		↓ 20K-35K	↓ 35K+
2H	Marital Status	↑ widowed			↑ widowed

↓ = less likely

↑ = more likely

Hypothesis 2 - Predictors of Discordant Sexual Identity in US Women

A total of 97.95% of the women in the US reported one or more prior sexual experiences and of those who identified as heterosexual, 6.21% were found to be discordant. This was the largest and most general group of discordance in women and included women who identified as heterosexual but who also reported same sex behavior

and/or same sex attraction (DBOA). Logistic regression analyses examined DBOA with each demographic predictor and Adjusted ORs are presented in Table 8.

Women with DBOA had significantly greater odds than concordant women of being Asian, foreign born, 65 and over, widowed, and unemployed (OR range: 1.23 for being unemployed to 1.43 for being Asian) and significantly less odds of being in either of the two highest family income levels (ORs: 0.76 for \$35,000 - \$64,999 and 0.62 for greater than \$70,000). Women with DBOA were roughly 1.5 times more likely to be Asian (95% CI, 1.07 – 1.92) and nearly half as likely to have the highest family income level (95% CI, 0.48 – 0.79). Similar to men with DBOA, differences were found in race, family income, age, marital status and employment, except discordant men were more likely to be Black yet discordant women were more likely to be Asian. Unlike the men, women with DBOA were also more likely to be foreign born. Discordance was predicted to be higher in those who are married, yet analyses in men and women failed to support this notion. Although it was not predicted, analyses revealed that both discordant men and women are more likely to be widowed. Results also support the hypotheses that discordant women tend to be lower income, older, unemployed and foreign born but differences in education were not found.

Table 8 – Predictors of DBOA in Women

Prevalence/Characteristics	Female					
	Straight Identified Discordance – Yes N=1271		Straight Identified Discordance -- No+ N=18144			
	%	SE	%	SE	OR	95% CI
Race/Ethnicity						
White+	69.15	2.08	70.89	1.54	1.00	1.00 1.00
Black	11.22	1.02	11.98	0.74	0.96	0.80 1.15
Native American	2.23	0.55	2.25	0.21	1.02	0.62 1.66
Asian	5.62	0.99	4.02	0.47	1.43*	1.07 1.92
Hispanic	11.78	1.44	10.87	1.21	1.11	0.91 1.36
Individual Income (\$)						
0-19,999+	56.22	1.79	55.29	0.67	1.00	1.00 1.00
20,000-34,999	21.51	1.41	21.88	0.41	0.97	0.81 1.15
35,000-64,999	17.68	1.40	18.14	0.45	0.96	0.78 1.17
>70,000	4.59	0.76	4.70	0.29	0.96	0.68 1.36
Family Income (\$)						
0-19,999+	28.07	1.63	22.39	0.56	1.00	1.00 1.00
20,000-34,999	21.39	1.48	19.61	0.45	0.87	0.72 1.05
35,000-64,999	29.85	1.54	31.17	0.45	0.76**	0.64 0.92
>70,000	20.69	1.80	26.82	0.77	0.62**	0.48 0.79
Education						
< High School	15.10	1.36	13.70	0.53	1.15	0.93 1.42
High School	25.45	1.46	24.27	0.47	1.09	0.93 1.28
College+	59.45	1.78	62.03	0.61	1.00	1.00 1.00
Age						
18-29+	15.44	1.39	15.63	0.39	1.00	1.00 1.00
30-44	26.22	1.47	29.20	0.44	0.91	0.71 1.16
45-64	29.82	1.62	34.33	0.39	0.88	0.68 1.14
65+	28.52	1.52	20.85	0.42	1.38**	1.10 1.75
Marital Status						
Married+	55.54	1.86	61.79	0.61	1.00	1.00 1.00
Widowed	29.07	1.61	23.96	0.42	1.35*	1.13 1.61
Never Married	15.39	1.21	14.25	0.49	1.20	0.98 1.48
Nativity						
US-born+	83.97	2.01	86.77	1.37	1.00	1.00 1.00
Foreign-born	16.03	2.01	13.23	1.37	1.25**	1.05 1.50
Employment Status						
Employed+	53.07	1.67	58.27	0.54	1.00	1.00 1.00
Unemployed	46.93	1.67	41.73	0.54	1.23**	1.08 1.41

+ Reference group, *P<0.05, **P<0.01, ***P<0.001

Similar to the men, three subtypes of discordance in women were also investigated. Please note that 4 cases (0.31%) were excluded from subtype analyses because they were missing EITHER attraction OR behavior data (but not both). Although it was possible to determine that these women are discordant it was not possible to determine their subtype of discordance and thus they were excluded from all subtype analyses. Subtype analyses included women with discordant sexual behavior and attraction (DBA), discordant sexual behavior alone (DB) and discordant sexual attraction alone (DA).

Predictors of Discordant Sexual Behavior and Sexual Attraction in Women (DBA)

Of the discordant women, 15.03% of them reported DBA (discordant sexual behavior and attraction). Adjusted Odds Ratios (ORs) are presented from logistic regression analyses examining DBA with each demographic predictor (Table 9). Women with DBA had significantly greater odds of being in either of the two highest income levels (ORs: 1.82 for \$35,000 - \$64,999 and 3.93 for income of \$70,000 or greater). These discordant women also had significantly less odds of having finished High School (though an equal chance of having less than a high school education or a college education), of being 30-44 years of age or 65 years of age or older, and were significantly less likely to be unemployed (OR range: 0.50 for having a High School education and for being 65 years of age or older to 0.59 for being 30-44 years old). In contrast to the other groups of discordant women and men, these women had nearly 4 times the chance of being in the highest income level (95% CI, 2.09 – 7.38) and were nearly half as likely to be unemployed (95% CI, 0.36 – 0.83). Results from this subgroup were different than

every other subgroup of sexual discordance in women and men and none of the hypotheses were supported.

Table 9 – Predictors of DBA in Women

Prevalence/Characteristics	Female					
	Straight Identified Discordance – Yes N=191		Straight Identified Discordance -- No+ N=18144			
	%	SE	%	SE	OR	95% CI
Race/Ethnicity						
White+	69.90	4.30	70.89	1.54	1.00	1.00 1.00
Black	9.85	2.30	11.98	0.74	0.83	0.50 1.40
Native American	2.05	0.98	2.25	0.21	0.93	0.34 2.50
Asian	7.25	2.96	4.02	0.47	1.83	0.76 4.43
Hispanic	10.95	2.46	10.87	1.21	1.02	0.60 1.73
Individual Income (\$)						
0-19,999+	41.50	3.77	55.29	0.67	1.00	1.00 1.00
20,000-34,999	19.85	3.44	21.88	0.41	1.21	0.77 1.89
35,000-64,999	24.80	3.57	18.14	0.45	1.82**	1.24 2.67
>70,000	13.86	3.59	4.70	0.29	3.93**	2.09 7.38
Family Income (\$)						
0-19,999+	18.94	3.49	22.39	0.56	1.00	1.00 1.00
20,000-34,999	16.43	3.45	19.61	0.45	0.99	0.54 1.83
35,000-64,999	36.37	3.61	31.17	0.45	1.38	0.89 2.15
>70,000	28.26	4.41	26.82	0.77	1.25	0.71 2.19
Education						
< High School	13.19	2.86	13.70	0.53	0.82	0.49 1.38
High School	14.25	3.06	24.27	0.47	0.50*	0.30 0.83
College+	72.56	3.92	62.03	0.61	1.00	1.00 1.00
Age						
18-29+	23.16	3.94	15.63	0.39	1.00	1.00 1.00
30-44	25.72	3.53	29.20	0.44	0.59*	0.36 0.98
45-64	35.64	4.26	34.33	0.39	0.70	0.43 1.14
65+	15.48	3.53	20.85	0.42	0.50*	0.26 0.97
Marital Status						
Married+	60.22	4.72	61.79	0.61	1.00	1.00 1.00
Widowed	21.00	3.05	23.96	0.42	0.90	0.60 1.35
Never Married	18.78	3.41	14.25	0.49	1.35	0.83 2.20
Nativity						
US-born+	80.55	4.02	86.77	1.37	1.00	1.00 1.00
Foreign-born	19.45	4.02	13.23	1.37	1.58	0.95 2.64
Employment Status						
Employed+	71.91	4.20	58.27	0.54	1.00	1.00 1.00
Unemployed	28.09	4.20	41.73	0.54	0.55**	0.36 0.83

* Reference group, *P<0.05, **P<0.01, ***P<0.001

Predictors of Discordant Sexual Behavior in Women (DB)

Of the discordant women, 9.68% of them reported discordant sexual behavior but not discordant sexual attraction. Logistic regression analyses found that women with DB were significantly less likely to have a high school education or less than a high school education and were significantly less likely to be 65 years of age or older (OR range: 0.33 for being 65 years of age or older to 0.57 for having a high school diploma). Similar to the men with DB, there were very few demographic predictors of discordant same sex behavior in women. Contrary to the hypothesis that discordant women would be older, women with DB were much *less likely* to be over the age of 65. In fact, the only hypothesis that was supported by these results was the prediction that discordant women would be less educated. Race, individual income, family income, marital status, nativity and employment status did not differ between women with DB and women who are concordant (Table 10).

Table 10 – Predictors of DB in Women

Prevalence/Characteristics	Female					
	Straight Identified Discordance – Yes N=123		Straight Identified Discordance -- No ⁺ N=18144			
	%	SE	%	SE	OR	95% CI
Race/Ethnicity						
White ⁺	67.24	5.04	70.89	1.54	1.00	1.00 1.00
Black	10.97	2.61	11.98	0.74	0.97	0.57 1.65
Native American	6.29	3.36	2.25	0.21	2.95	0.93 9.40
Asian	2.42	1.63	4.02	0.47	0.64	0.16 2.57
Hispanic	13.07	3.64	10.87	1.21	1.27	0.65 2.47
Individual Income (\$)						
0-19,999 ⁺	47.68	5.63	55.29	0.67	1.00	1.00 1.00
20,000-34,999	25.19	5.34	21.88	0.41	1.34	0.73 2.43
35,000-64,999	23.25	4.51	18.14	0.45	1.49	0.87 2.55
>70,000	3.88	2.06	4.70	0.29	0.96	0.32 2.88
Family Income (\$)						
0-19,999 ⁺	20.16	3.75	22.39	0.56	1.00	1.00 1.00
20,000-34,999	26.69	4.70	19.61	0.45	1.51	0.85 2.70
35,000-64,999	33.15	4.83	31.17	0.45	1.18	0.70 1.98
>70,000	20.00	4.64	26.82	0.77	0.83	0.42 1.62
Education						
< High School	7.50	2.30	13.70	0.53	0.45*	0.22 0.90
High School	16.92	3.75	24.27	0.47	0.57*	0.33 0.99
College ⁺	75.58	4.56	62.03	0.61	1.00	1.00 1.00
Age						
18-29 ⁺	22.24	4.38	15.63	0.39	1.00	1.00 1.00
30-44	36.35	5.04	29.20	0.44	0.87	0.49 1.56
45-64	31.61	4.93	34.33	0.39	0.65	0.36 1.16
65+	9.80	2.95	20.85	0.42	0.33**	0.15 0.71
Marital Status						
Married ⁺	52.33	5.20	61.79	0.61	1.00	1.00 1.00
Widowed	30.20	4.79	23.96	0.42	1.49	0.91 2.42
Never Married	17.46	3.39	14.25	0.49	1.45	0.88 2.39
Nativity						
US-born ⁺	93.41	2.67	86.77	1.37	1.00	1.00 1.00
Foreign-born	6.59	2.67	13.23	1.37	0.46	0.19 1.12
Employment Status						
Employed ⁺	65.28	4.75	58.27	0.54	1.00	1.00 1.00
Unemployed	34.72	4.75	41.73	0.54	0.74	0.49 1.13

⁺ Reference group, *P<0.05, **P<0.01, ***P<0.001

Predictors of Discordant Sexual Attraction in Women (DA)

The largest subtype of discordant women reported same sex attraction alone along with a heterosexual identity. Of the discordant women, 74.98% of them were in the DA group. Logistic regression analyses were conducted to determine the predictors associated with DA in women. Adjusted ORs are presented in Table 11 and it was found that women with DA had significantly greater odds of being Asian, having lower levels of education, being over the age of 65, widowed, foreign born and unemployed (OR range: 1.29 for being foreign born to 1.93 for being 65 years of age or older) and significantly less odds of earning an individual income of \$35,000 or greater and a family income of \$20,000 or greater (OR range: 0.51 for greater than \$70,000 individual and family income to 0.80 for having a family income of \$20,000 - \$34,999). Similar to men with DA, women with DA were most different from those who are concordant. Additionally, most of the variance among the subgroups of discordance in women was accounted for within this subgroup. Support of the hypotheses that discordant women will be lower income, have less education, be older, foreign born and unemployed was found. However, it was also predicted that discordant women would be more likely to be Black and Latino, yet discordant women were more likely to be Asian. Additionally, it was predicted that discordance would be more prevalent in those who are married, yet women with DA were more likely to be widowed.

Table 11 – Predictors of DA in Women

Prevalence/Characteristics	Female					
	Straight Identified Discordance – Yes N=953		Straight Identified Discordance -- No+ N=18144			
	%	SE	%	SE	OR	95% CI
Race/Ethnicity						
White+	69.34	2.39	70.89	1.54	1.00	1.00 1.00
Black	11.50	1.20	11.98	0.74	0.98	0.80 1.21
Native American	1.77	0.55	2.25	0.21	0.81	0.44 1.48
Asian	5.55	0.98	4.02	0.47	1.41*	1.06 1.88
Hispanic	11.83	1.70	10.87	1.21	1.11	0.88 1.42
Individual Income (\$)						
0-19,999+	60.52	2.02	55.29	0.67	1.00	1.00 1.00
20,000-34,999	21.44	1.62	21.88	0.41	0.90	0.73 1.09
35,000-64,999	15.42	1.52	18.14	0.45	0.78*	0.61 0.99
>70,000	2.63	0.61	4.70	0.29	0.51**	0.32 0.81
Family Income (\$)						
0-19,999+	31.02	1.83	22.39	0.56	1.00	1.00 1.00
20,000-34,999	21.79	1.59	19.61	0.45	0.80*	0.66 0.97
35,000-64,999	28.20	1.87	31.17	0.45	0.65**	0.52 0.82
>70,000	18.99	1.81	26.82	0.77	0.51***	0.39 0.66
Education						
< High School	16.50	1.62	13.70	0.53	1.37**	1.09 1.72
High School	28.93	1.80	24.27	0.47	1.35**	1.13 1.62
College+	54.57	2.07	62.03	0.61	1.00	1.00 1.00
Age						
18-29+	13.05	1.59	15.63	0.39	1.00	1.00 1.00
30-44	25.15	1.93	29.20	0.44	1.03	0.74 1.45
45-64	28.13	1.89	34.33	0.39	0.98	0.72 1.35
65+	33.67	1.92	20.85	0.42	1.93***	1.45 2.59
Marital Status						
Married+	55.03	2.10	61.79	0.61	1.00	1.00 1.00
Widowed	30.52	1.92	23.96	0.42	1.43**	1.17 1.75
Never Married	14.45	1.28	14.25	0.49	1.14	0.90 1.44
Nativity						
US-born+	83.60	2.28	86.77	1.37	1.00	1.00 1.00
Foreign-born	16.40	2.28	13.23	1.37	1.29*	1.06 1.56
Employment Status						
Employed+	47.54	1.83	58.27	0.54	1.00	1.00 1.00
Unemployed	52.46	1.83	41.73	0.54	1.54***	1.33 1.79

+ Reference group, *P<0.05, **P<0.01, ***P<0.001

Predictors of Sexual Discordance in US Women – Summary

Predictors of sexual discordance varied by the dimension(s) of discordant sexual orientation that were analyzed (Table 12). None of the demographic predictors were consistently found across all groups of discordant women. Although age differences were found in each group of discordant women the direction of the discrepancy varied by group; women with DB and DBA were less likely to be under the age of 65, and women with DBA were also less likely to be 30-44, yet women with DA and DBOA were more likely to be over the age of 65. Women with DA and DBOA were more likely to be Asian, foreign born, widowed and have lower levels of family income. Overall, compared to all discordant women, DBA women were most distinct in their demographic predictors and tended to be younger, higher income and were more likely to be employed.

Table 12 - Summary of Demographic Predictors in Discordant US Women

Hypothesis	Predictor	DBOA	DBA	DB	DA
2A	Age	↑ 65+	↓ 30-44, 65+	↓ 65+	↑ 65+
2B	Race/Ethnicity	↑ Asian			↑ Asian
2C	Nativity	↑ foreign born			↑ foreign born
2D	Education			↓ < high school, ↓ high school	↑ < high school, ↑ high school
2E	Employment Status	↑ unemployed	↓ unemployed		↑ unemployed
2F	Individual Income		↑ 35K+		↓ 35K+
2G	Family Income	↓ 35K+	↓ high school		↓ 20K+
2H	Marital Status	↑ widowed			↑ widowed

↓ = less likely
↑ = more likely

Hypothesis 3 – Negative Outcomes Associated With Discordant Sexual Identity, in US Men

The third part of this study examined eight possible negative outcomes associated with being discordant; drinking before sex; partner(s) drinking before sex; meeting

criteria for alcohol abuse or alcohol dependence; or alcohol use disorder (the summation of alcohol abuse and/or alcohol dependence); having had a positive HIV test, having had a positive STD test or having been diagnosed with AIDS. All negative outcomes were examined over the course of the previous year.

Table 13 presents the negative outcomes that were found to be associated with DBOA (discordant sexual behavior and/or attraction) in US men. Logistic regression analyses determined that men with DBOA were no more likely to have any of the eight negative outcomes than the concordant men. Contrary to the vectorization of Black discordant men that has been noted in popular media and by the CDC (CDC, 2006; Denizet-Lewis, 2003), Black men with discordant sexual behavior and/or attraction were not found to be at a greater risk for any of the negative outcomes that were examined.

Table 13 – Negative Outcomes Associated With DBOA in Men

	Straight Identified Discordance – Yes		Straight Identified Discordance -- No ⁺				
Prevalence/Characteristics	%	SE	%	SE	OR	95% CI	
Drink Before Sex (past year) ⁺⁺	N=340		N=8157				
Yes	3.39	0.92	4.17	0.27	0.81	0.45	1.45
No+	96.61	0.92	95.83	0.27	1.00	1.00	1.00
Partner Drink Before Sex (past year) ⁺⁺⁺	N=461		N=10737				
Yes	2.35	0.67	2.09	0.17	1.13	0.61	2.07
No+	97.65	0.67	97.91	0.17	1.00	1.00	1.00
	N=663		N=13422				
Positive HIV Test (past year)	0.64	0.38	0.21	0.04	3.05	0.86	10.80
AIDS Diagnosis (past year)	0.00	0.00	0.05	0.02			
Positive STD Test (past year)	0.27	0.16	0.42	0.07	0.65	0.19	2.14
Alcohol Use Disorder	13.56	1.63	14.35	0.42	0.94	0.70	1.25
Alcohol Abuse	8.81	1.39	8.15	0.32	1.09	0.76	1.55
Alcohol Dependence	4.75	0.98	6.20	0.26	0.75	0.48	1.18

⁺⁺ respondent has never had sex, respondent has had sex in the PY but abstains from alcohol and respondent has not had sex in PY are excluded

⁺⁺⁺ respondent has Never had sex and respondent has not had sex in PY are excluded

⁺ Reference group, *P<0.05, **P<0.01, ***P<0.001

Yes – Most of the time, Always No -- Never, Rarely, Sometimes

Negative Outcomes Associated With DBA in Men

Negative outcomes associated with DBA (discordant sexual behavior *and* attraction) in men were also examined. Logistic regression analyses revealed that Alcohol Use Disorder (but not alcohol abuse nor alcohol dependence separately) was significantly *less likely* in discordant individuals reporting same sex behavior and attraction as opposed to concordant individuals (OR: 0.28, 95% CI, 0.11 – 0.70). This was contrary to the hypothesis that discordant men are more likely to meet criteria for this disorder. Also contrary to hypothesis 3, DBA men and their partners were not any more likely to use alcohol prior to sex, and they were no more likely to meet criteria for

alcohol abuse, alcohol dependence, have a positive HIV test, a positive STD test or be diagnosed with AIDS (Table 14).

Table 14 – Negative Outcomes Associated With DBA in Men

Prevalence/Characteristics	Male					
	Straight Identified Discordance – Yes		Straight Identified Discordance – - No ⁺			
	%	SE	%	SE	OR	95% CI
Drink Before Sex (past year)⁺⁺	N=60		N=8157			
Yes	0.00	0.00	4.17	0.27		
No ⁺	100.00	0.00	95.83	0.27	1.00	1.00 1.00
Partner Drink Before Sex (past year)⁺⁺⁺	N=88		N=10737			
Yes	1.54	1.54	2.09	0.17	0.73	0.10 5.62
No ⁺	98.46	1.54	97.91	0.17	1.00	1.00 1.00
	N=126		N=13422			
Positive HIV Test (past year)	0.41	0.41	0.21	0.04	1.98	0.28 14.08
AIDS Diagnosis (past year)	0.00	0.00	0.05	0.02		
Positive STD Test (past year)	0.00	0.00	0.42	0.07		
Alcohol Use Disorder	4.47	1.95	14.35	0.42	0.28**	0.11 0.70
Alcohol Abuse	2.11	1.47	8.15	0.32	0.24	0.06 1.01
Alcohol Dependence	2.36	1.32	6.20	0.26	0.37	0.12 1.15

⁺⁺respondent has never had sex, respondent has had sex in the PY but abstains from alcohol and respondent has not had sex in PY are excluded

⁺⁺⁺respondent has Never had sex and respondent has not had sex in PY are excluded

⁺ Reference group, *P<0.05, **P<0.01, ***P<0.001

Yes -- Most of the time, Always No -- Never, Rarely, Sometimes

Negative Outcomes Associated With DB in Men

Logistic regression analyses found that men with DB did not have increased odds of any of the negative outcomes that were tested (Table 15). Contrary to hypothesis 3, men with DB and their partners were not any more likely to use alcohol prior to sexual activity and DB men did not demonstrate increased risk of any of the alcohol disorder variables or of having a positive HIV or STD test or of being diagnosed with AIDS. Men

with DB did not differ from concordant men on any of the outcomes that were investigated.

Table 15 – Negative Outcomes Associated With DB in Men

Prevalence/Characteristics	Male					
	Straight Identified Discordance – Yes		Straight Identified Discordance - No ⁺			
	%	SE	%	SE	OR	95% CI
Drink Before Sex (past year) ⁺⁺	N=152		N=8157			
Yes	4.68	1.43	4.17	0.27	1.13	0.59 2.17
No ⁺	95.32	1.43	95.83	0.27	1.00	1.00 1.00
Partner Drink Before Sex (past year) ⁺⁺⁺	N=190		N=10737			
Yes	2.99	1.05	2.09	0.17	1.44	0.68 3.07
No ⁺	97.01	1.05	97.91	0.17	1.00	1.00 1.00
	N=239		N=13422			
Positive HIV Test (past year)	0.00	0.00	0.21	0.04		
AIDS Diagnosis (past year)	0.00	0.00	0.05	0.02		
Positive STD Test (past year)	0.25	0.25	0.42	0.07	0.59	0.08 4.51
Alcohol Use Disorder	20.09	3.17	14.35	0.42	1.50	1.00 2.25
Alcohol Abuse	12.53	2.62	8.15	0.32	1.62	1.00 2.62
Alcohol Dependence	7.56	1.91	6.20	0.26	1.24	0.70 2.18

⁺⁺ respondent has never had sex, respondent has had sex in the PY but abstains from alcohol and respondent has not had sex in PY are excluded

⁺⁺⁺ respondent has Never had sex and respondent has not had sex in PY are excluded

⁺ Reference group, *P<0.05, **P<0.01, ***P<0.001

Yes -- Most of the time, Always No -- Never, Rarely, Sometimes

Negative Outcomes Associated With DA in Men

Negative outcomes associated for men with DA (discordant sexual attraction) were also investigated with logistic regression analyses and Table 16 presents their adjusted ORs. Men with DA had 6.3 times the odds of having had a positive HIV test in the previous year (95% CI, 1.53 – 25.99). This means that for every 10 concordant men who tested HIV positive over the prior year, 63 men with discordant attraction tested

positive. This result suggests significant elevated risk of testing positive for HIV in men with DA, supporting the hypothesis that discordant men are more likely to be HIV positive. Contrary to the remaining hypotheses, no other negative outcomes that were investigated were found to be any more or less likely in men with DA, including all of the alcohol related variables, testing positive for any other STD and being diagnosed with AIDS.

Table 16 – Negative Outcomes Associated With DA in Men

Prevalence/Characteristics	Male					
	Straight Identified Discordance – Yes		Straight Identified Discordance – No ⁺			
	%	SE	%	SE	OR	95% CI
Drink Before Sex (past year)⁺⁺	N=125		N=8157			
Yes	3.43	1.82	4.17	0.27	0.82	0.27 2.49
No ⁺	96.57	1.82	95.83	0.27	1.00	1.00 1.00
Partner Drink Before Sex (past year)⁺⁺⁺	N=190		N=10737			
Yes	2.07	1.10	2.09	0.17	0.99	0.33 2.94
No ⁺	97.93	1.10	97.91	0.17	1.00	1.00 1.00
	N=293		N=13422			
Positive HIV Test (past year)	1.31	0.86	0.21	0.04	6.30*	1.53 25.99
AIDS Diagnosis (past year)	0.00	0.00	0.05	0.02		
Positive STD Test (past year)	0.42	0.30	0.42	0.07	1.01	0.24 4.32
Alcohol Use Disorder	12.31	2.21	14.35	0.42	0.84	0.55 1.27
Alcohol Abuse	8.82	2.13	8.15	0.32	1.09	0.64 1.85
Alcohol Dependence	3.49	1.05	6.20	0.26	0.55	0.29 1.03

⁺⁺ respondent has never had sex, respondent has had sex in the PY but abstains from alcohol and respondent has not had sex in PY are excluded

⁺⁺⁺ respondent has Never had sex and respondent has not had sex in PY are excluded

⁺ Reference group, *P<0.05, **P<0.01, ***P<0.001

Yes -- Most of the time, Always No -- Never, Rarely, Sometimes

Negative Outcomes Associated with Sexual Discordance in US Men – Summary

In summary, discordant men had very few negative outcomes relative to the eight outcomes that were studied here. In fact, compared to concordant men, risk of alcohol use disorder was significantly less likely in men with DBA. Yet men with DA demonstrated significantly increased odds of testing positive for HIV. This was the only negative outcome that was found in discordant US men. The hypothesis that discordant men are more likely to be HIV positive was only partly supported by these results. In fact, results show that only men with discordant attraction have elevated risk of testing positive for HIV, while all other discordant men were no more likely than concordant men to test positive for HIV. When combined into one large group (DBOA), discordant men appear as though they are not at risk for any of the negative outcomes, but when examined separately, men with DBA were *less likely* to meet criteria for alcohol use disorder, yet men with DA were *more likely* to test positive for HIV. None of the other hypotheses related to elevate risk of negative outcomes were supported (Table 17).

Table 17 - Summary of Negative Outcomes in Discordant US Men

Hypothesis	Outcome	DBOA	DBA	DB	DA
3A	Drink Before Sex				
3B	Partner Drink Before Sex				
3C	Alcohol Abuse				
3D	Alcohol Dependence				
3E	Alcohol Use Disorder		less likely		
3F	Positive HIV Test				more likely
3G	Positive STD Test				
3H	AIDS Diagnosis				

Hypothesis 3 – Negative Outcomes Associated With Discordant Sexual Identity, in US Women

Negative outcomes associated with sexual discordance in US women were also investigated and Table 18 presents the adjusted ORs of the logistic regression analyses that were conducted. Women with DBOA (discordant sexual behavior and/or attraction) had significantly greater odds of having had a positive HIV test, and meeting criteria for alcohol dependence and alcohol use disorder (OR range: 1.63 for alcohol use disorder and 2.70 for having had a positive HIV test). This means that for every 10 concordant women that had a positive HIV test over the prior year, 27 women with DBOA also tested positive. This suggests significant elevated risk of testing positive for HIV in women with DBOA. Women with DBOA were also 1.63 times more likely to meet criteria for alcohol use disorder and 2.08 times more likely to meet criteria for alcohol dependence. These findings support the hypotheses that discordant women are more likely to be HIV positive and meet criteria for alcohol dependence and alcohol use disorder. Yet women with DBOA and their partners were not any more likely to use alcohol prior to sexual activity, and they were not any more likely to meet criteria for alcohol abuse, to test positive for any other STD, or to be diagnosed with AIDS.

Table 18 – Negative Outcomes Associated With DBOA in Women

Prevalence/Characteristics	Female					
	Straight Identified Discordance -- Yes		Straight Identified Discordance -- No ⁺			
	%	SE	%	SE	OR	95% CI
Drink Before Sex (past year)⁺⁺	N= 516		N= 8033			
Yes	2.47	0.71	2.09	0.18	1.19	0.64 2.22
No ⁺	97.53	0.71	97.91	0.18	1.00	1.00 1.00
Partner Drink Before Sex (past year)⁺⁺⁺	N= 738		N= 11912			
Yes	3.03	0.66	2.95	0.20	1.03	0.65 1.62
No ⁺	96.97	0.66	97.05	0.20	1.00	1.00 1.00
	N=1271		N=18144			
Positive HIV Test (past year)	0.65	0.23	0.24	0.04	2.70*	1.24 5.86
AIDS Diagnosis (past year)	0.05	0.05	0.02	0.01	3.17	0.33 30.57
Positive STD Test (past year)	1.04	0.29	0.61	0.07	1.71	0.93 3.15
Alcohol Use Disorder	7.73	1.14	4.89	0.23	1.63**	1.16 2.28
Alcohol Abuse	2.96	0.58	2.53	0.16	1.17	0.77 1.79
Alcohol Dependence	4.77	0.95	2.36	0.15	2.08**	1.34 3.22

⁺⁺ respondent has never had sex, respondent has had sex in the PY but abstains from alcohol and respondent has not had sex in PY are excluded

⁺⁺⁺ respondent has Never had sex and respondent has not had sex in PY are excluded

⁺ Reference group, *P<0.05, **P<0.01, ***P<0.001

Yes -- Most of the time, Always No -- Never, Rarely, Sometimes

Negative Outcomes Associated With DBA in Women

Logistic regression analyses examined negative outcomes in women with DBA (discordant behavior and attraction) and confirmed the hypotheses that women with DBA have significantly greater odds of testing positive for HIV, and meeting criteria for Alcohol Abuse, Alcohol Dependence, and Alcohol Use Disorder (OR range: 2.83 for Alcohol Abuse to 5.67 for having had a positive HIV test). Testing positive for HIV over the prior year had the largest OR (5.67) found on any of the negative outcomes that were investigated in women who are discordant. This means that for every 10 concordant women who had a positive HIV test over the last year, nearly 57 discordant women tested

positive for HIV. This result suggests significant elevated risk of HIV in women with DBA, confirming the hypothesis that discordant women are more likely to be HIV positive. Similarly women with DBA demonstrated elevated rates of all three alcohol related outcomes, confirming the hypotheses that discordant women are at an elevated risk of alcohol disorders. At the same time, results also indicate that women with DBA and their partners were no more likely to use alcohol prior to sex, and women with DBA did not demonstrate elevated risk of other positive STD tests or increased rates of AIDS diagnoses, disproving the remaining hypotheses related to negative outcomes in discordant women (Table 19).

Table 19 – Negative Outcomes Associated With DBA in Women

Prevalence/Characteristics	Female					
	Straight Identified Discordance – Yes		Straight Identified Discordance – No ⁺			
	%	SE	%	SE	OR	95% CI
Drink Before Sex (past year)⁺⁺	N= 124		N= 8033			
Yes	3.35	1.83	2.09	0.18	1.62	0.51 5.16
No ⁺	96.65	1.83	97.91	0.18	1.00	1.00 1.00
Partner Drink Before Sex (past year)⁺⁺⁺	N= 148		N= 11912			
Yes	3.77	1.83	2.95	0.20	1.29	0.47 3.56
No ⁺	96.23	1.83	97.05	0.20	1.00	1.00 1.00
	N=191		N=18144			
Positive HIV Test (past year)	1.36	0.87	0.24	0.04	5.67*	1.49 21.62
AIDS Diagnosis (past year)	0.00	0.00	0.02	0.01		
Positive STD Test (past year)	1.08	0.68	0.61	0.07	1.78	0.48 6.61
Alcohol Use Disorder	13.86	3.08	4.89	0.23	3.13***	1.88 5.22
Alcohol Abuse	6.87	2.30	2.53	0.16	2.83**	1.39 5.79
Alcohol Dependence	7.00	2.44	2.36	0.15	3.12**	1.47 6.63

⁺⁺ respondent has never had sex, respondent has had sex in the PY but abstains from alcohol and respondent has not had sex in PY are excluded

⁺⁺⁺ respondent has Never had sex and respondent has not had sex in PY are excluded

⁺ Reference group, *P<0.05, **P<0.01, ***P<0.001

Yes – Most of the time, Always No -- Never, Rarely, Sometimes

Negative Outcomes Associated With DB in Women

Logistic regression analyses examined negative outcomes in women with DB (discordant behavior) and Adjusted ORs are presented in Table 20. Women with DB had greater odds of meeting criteria for alcohol abuse (OR: 2.40) and alcohol use disorder (OR: 2.55), confirming the hypotheses that discordant women are more likely to meet criteria for alcohol abuse and alcohol use disorder. However, compared to women who are concordant, women with DB and their partners were not any more likely to use alcohol prior to sex and DB women had no differences in rates of alcohol dependence, positive HIV tests, STD tests or diagnoses of AIDS, not supporting the remaining hypotheses associated with negative outcomes in discordant women.

Table 20 – Negative Outcomes Associated With DB in Women

Prevalence/Characteristics	Female					
	Straight Identified Discordance – Yes		Straight Identified Discordance -- No ⁺			
	%	SE	%	SE	OR	95% CI
Drink Before Sex (past year)⁺⁺	N= 73		N= 8033			
Yes	5.10	2.61	2.09	0.18	2.52	0.85 7.42
No ⁺	94.90	2.61	97.91	0.18	1.00	1.00 1.00
Partner Drink Before Sex (past year)⁺⁺⁺	N= 92		N= 11912			
Yes	1.02	0.80	2.95	0.20	0.34	0.07 1.64
No ⁺	98.98	0.80	97.05	0.20	1.00	1.00 1.00
	N=123		N=18144			
Positive HIV Test (past year)	0.47	0.47	0.24	0.04	1.92	0.25 14.90
AIDS Diagnosis (past year)	0.00	0.00	0.02	0.01		
Positive STD Test (past year)	1.78	1.36	0.61	0.07	2.95	0.62 14.15
Alcohol Use Disorder	10.99	3.41	4.89	0.23	2.40*	1.19 4.84
Alcohol Abuse	6.22	2.66	2.53	0.16	2.55*	1.02 6.39
Alcohol Dependence	4.77	2.22	2.36	0.15	2.07	0.77 5.61

⁺⁺ respondent has never had sex, respondent has had sex in the PY but abstains from alcohol and respondent has not had sex in PY are excluded

⁺⁺⁺ respondent has Never had sex and respondent has not had sex in PY are excluded

⁺ Reference group, *P<0.05, **P<0.01, ***P<0.001

Yes – Most of the time, Always No -- Never, Rarely, Sometimes

Negative Outcomes Associated With DA in Women

Adjusted ORs from logistic regression analyses investigating negative outcomes in women with DA (discordant attraction) are presented in Table 21. Women with DA had significantly greater odds of meeting criteria for alcohol dependence (OR: 1.87), confirming the hypothesis that discordant women are at an elevated risk for alcohol dependence. This result means that women with DA are nearly twice as likely as concordant women to be dependent on alcohol (95% CI, 1.08 – 3.25). No other negative outcomes were found to be significant in this group of discordant women, suggesting that women with DA and their partners were not anymore likely to use alcohol prior to sex, and women with DA were no more likely to have increased rates of alcohol abuse, alcohol use disorder, positive HIV or STD tests, or diagnoses of AIDS.

Table 21 – Negative Outcomes Associated With DA in Women

Prevalence/Characteristics	Female					
	Straight Identified Discordance – Yes		Straight Identified Discordance -- No ⁺			
	%	SE	%	SE	OR	95% CI
Drink Before Sex (past year)⁺⁺	N= 318		N= 8033			
Yes	1.59	0.71	2.09	0.18	0.75	0.29 1.94
No ⁺	98.41	0.71	97.91	0.18	1.00	1.00 1.00
Partner Drink Before Sex (past year)⁺⁺⁺	N= 92		N= 11912			
Yes	3.18	0.78	2.95	0.20	1.08	0.66 1.78
No ⁺	96.82	0.78	97.05	0.20	1.00	1.00 1.00
	N=953		N=18144			
Positive HIV Test (past year)	0.53	0.23	0.24	0.04	2.19	0.87 5.55
AIDS Diagnosis (past year)	0.06	0.06	0.02	0.01	4.23	0.44 40.67
Positive STD Test (past year)	0.94	0.32	0.61	0.07	1.55	0.75 3.19
Alcohol Use Disorder	6.08	1.27	4.89	0.23	1.26	0.79 2.00
Alcohol Abuse	1.75	0.52	2.53	0.16	0.69	0.37 1.29
Alcohol Dependence	4.33	1.10	2.36	0.15	1.87*	1.08 3.25

⁺⁺ respondent has never had sex, respondent has had sex in the PY but abstains from alcohol and respondent has not had sex in PY are excluded

⁺⁺⁺ respondent has Never had sex and respondent has not had sex in PY are excluded

⁺ Reference group, *P<0.05, **P<0.01, ***P<0.001

Yes – Most of the time, Always No -- Never, Rarely, Sometimes

Negative Outcomes Associated with Sexual Discordance in US Women – Summary

In summary, discordant women had many more negative outcomes than discordant men. Compared to concordant women, discordant women demonstrated elevated risk of meeting criteria for Alcohol Abuse, Alcohol Dependence and Alcohol Use Disorder and they were significantly more likely to test positive for HIV. Risk of each negative outcome varied by subgroup and women with DBA demonstrated the most risk while women with DA demonstrated the least risk (Table 22).

Table 22 - Summary of Negative Outcomes in Discordant US Women

Hypothesis	Outcome	DBOA	DBA	DB	DA
3A	Drink Before Sex				
3B	Partner Drink Before Sex				
3C	Alcohol Abuse		more likely	more likely	
3D	Alcohol Dependence	more likely	more likely		more likely
3E	Alcohol Use Disorder	more likely	more likely	more likely	
3F	Positive HIV Test	more likely	more likely		
3G	Positive STD Test				
3H	AIDS Diagnosis				

Chapter 6 – Discussion

The results presented in this study represent the largest US study to date examining the prevalence of sexual identity, behavior, attraction and discordance. This is also the first national study to address the prevalence, predictors and negative outcomes associated with discordant sexual identity and their subtypes. Results reinforce the importance of examining different dimensions of discordant sexual orientation separately and by gender since the predictors and negative outcomes associated with each dimension differed.

Prevalence of Same Sex Orientation and Sexual Discordance

Heterosexism and homophobia likely affect the reported prevalence of same sex orientation and sexual discordance in this study (Burn et al., 2005; Zea, Reisen, & Diaz, 2003). Prevalence rates could also have been affected by the fact that the NESARC interviewers did not receive specialized training in conducting sexuality interviews. Therefore, the reported prevalence of same sex identity, behavior, attraction and discordance likely represent the lower bounds of the true portion of the US that experience any or all aspects of same sex orientation. At the same time, sexual behavior was investigated using the broadest possible timeframe that included any sexual behavior over a lifetime. While this approach is the most inclusive timeframe that could have been utilized, it likely represents the higher bounds of those who have had same sex behavior and who are willing to disclose this information.

As was found in other sexuality studies that used a national sample, the prevalence of same sex orientation varied by the dimensions of sexual orientation that were examined (Laumann et al., 1994; McCabe et al., 2009; Michaels, 1996; Smith et al.,

2003). Similar to a national study conducted in Australia (Smith et al., 2003), discordance in the US was a relatively common phenomenon (4.28% of the men and 6.21% of the women). While both men and women in the US demonstrated high rates of discordance, women were statistically more likely to be discordant than men. Additionally, nearly double the number of women than men reported being bisexual (0.80% vs. 0.42%) and less women reported being lesbian than men who reported being gay (0.65% vs. 1.07%). Of those who reported any same sex orientation, women were 2.5 times more likely than men (4.56% vs. 1.78%) to report same sex attraction alone. Nearly 75% of all discordant women reported discordant sexual attraction alone. Other studies have indicated that women might be more likely to be attracted to people of the same sex (Baumeister, 2000; Baumeister et al., 2001; Chivers et al., 2004) and results of this study support this notion. Compared to men, women appear to be more fluid and are more likely to have same sex attraction. While sexual fluidity was not directly tested in this study, women were statistically more likely to be discordant than men. It is possible that gender differences in the way that sexuality is experienced might be playing a role in the theoretical divide between social constructionists and essentialists. Perhaps for men, sexuality is more innate, predetermined and thus concordant (essentialist) and perhaps for women sexuality is more fluid, amenable to time, place and environment and thus women are more likely to be categorized as discordant (social constructionist). In summary, results of this study demonstrate that women compared to men are more likely to report higher rates of discordance, same sex attraction and identification as bisexual suggesting gender differences in how sexuality is experienced by men and women.

Variations across Dimensions of Sexual Orientation

Of the women, 1.35% reported all three dimensions of same sex orientation simultaneously while 6.21% of the women who identified as heterosexual also reported same sex attraction and/or behavior. Of the men 1.41% reported all three dimensions of same sex orientation simultaneously while 4.28% of the men who identified as heterosexual also reported same sex attraction and/or behavior. Although women were statistically more likely to be discordant than men, discordance in both men and women was more common than identification as gay, lesbian and bisexual combined. Examination of the different combinations of same sex orientation indicate that men are more likely to engage in same sex behavior without same sex identity or attraction while women were more likely to report same sex attraction yet not act on or identify their attraction. These results provide an empirical rationale for investigating new sexual identity models that emphasize fluidity and new sexual identity labels that better “fit” those who are discordant. Additionally, these results suggest that new models and labels should be tailored to men and women separately since they experience same sex orientation differently.

Of all those with any same sex orientation, only 2% of the men and 3% of the women reported same sex identity alone. It is difficult to envision same sex identity without attraction, especially given societal homophobia and heterosexism. Yet, a small portion of the sample with any same sex orientation reported this. It is possible that these individuals misunderstood the questions related to sexual orientation. Alternatively, these individuals might have adopted a non-heterosexual identity for reasons other than sexuality and/or in a rejection of the heterosexual label and its meaning. Meanwhile 5%

of the men and 4% of the women with any same sex orientation reported same sex identity and attraction. These are likely individuals who have not yet had a chance to act on their attraction yet they are confident enough in their attraction to identify as something other than heterosexual.

Only 23% of the men and 17% of the women with any same sex orientation reported all three dimensions simultaneously. In other words, less than 1/4 of the men and less than 1/5 of the women with any same sex orientation report all three dimensions. Additionally, 4.28% of the men and 6.21% of the women who identified as heterosexual also reported same sex attraction and/or behavior. These results dispute the essentialist idea that identity, behavior and attraction are often concordant. On the contrary, of those with any same sex orientation, discordance is more likely than concordance, supporting the social constructionist notion that sexual identity, behavior and attraction are independent and dynamic elements of sexual orientation.

Prevalence of Same Sex Orientation

Although other studies have disputed the Kinsey (1948/1998; 1953/1998) estimate that 10% of the US is gay, lesbian or bisexual this is the largest study to date offering contradictory evidence. In its broadest definition that includes any non-heterosexual identity or same sex attraction or lifetime same sex behavior, roughly 6% of the men and 8% of the women in the US reported one or more dimension(s) of same sex orientation. In its most narrow definition that includes any non-heterosexual identity and same sex attraction and lifetime same sex behavior, 1.41% of the men and 1.35% of the women reported all three same sex dimensions simultaneously.

Subgroups of Discordant Sexual Identity in US Men and Women

All analyses began with an examination of discordant sexual identity and/or behavior (DBOA) in men and women. Next subgroup analyses investigated men and women with DBA (discordant sexual behavior and attraction), DB (discordant sexual behavior) and DA (discordant sexual attraction). Although the results will be discussed separately by gender, there are some important details about each group of discordance that apply to both men and women.

The DBOA group is the largest and most broad category of sexual discordance. This group consists of those who reported sexual discordance on any dimension of orientation. Specifically, this group consists of men and women with discordant same sex behavior *and/or* attraction. Thus those who were included in the DBA, DA, and DB subgroups are also included within this broad category.

The DB group reported discordant sexual behavior absent same sex attraction. It is difficult to envision same sex behavior without attraction, particularly since multiple studies have identified initial same sex attraction as the earliest developmental milestone in sexual minority members (Dube & Savin-Williams, 1999; Floyd & Bakeman, 2006; Floyd & Stein, 2002; Maguen, Floyd, Bakeman, & Armistead, ; R. Savin-Williams & L. Diamond, 2000). Yet this study found a large portion of the sample that identified same sex behavior alone. Since same sex behavior was measured over the course of a lifetime, this group includes those who participate in same sex behaviors on a regular basis as well as those who only had one same sex experience during their lifetime even if it occurred during adolescence or early sexual exploration. In addition, since this group consists of those with same sex behavior without attraction, this group could include men and

women who engage in same sex behavior in exchange for money, drugs or other goods, and could also include those who had same sex behavior as a result of abuse or because of circumstances such as having been in prison. Unfortunately, the NESARC only assessed sexual behavior over the course of the lifetime and did not investigate the context in which any same sex behavior occurred, so it is impossible to determine the frequency or the context of same sex behavior(s).

The DA group reported discordant sexual attraction absent same sex behavior. Since sexual attraction was investigated in the present tense and sexual behavior was investigated over the course of a lifetime, men and women in the DA group never had a same sex experience despite experiencing same sex attraction. Developmentally, an initial awareness of same sex attraction has been identified as the first milestone in the “coming out” process (Dube & Savin-Williams, 1999; Floyd & Bakeman, 2006; Floyd & Stein, 2002; Maguen et al., ; R. Savin-Williams & L. Diamond, 2000). Therefore, it is quite possible that some of these individuals are in an early stage of coming out and have not yet had an opportunity to act on their same sex attraction or have not yet felt ready to do so. Alternatively, this group could also contain men and women who consciously choose a heterosexual lifestyle even though they have same sex attraction.

The DBA group on the other hand consists of men and women with both discordant same sex behavior and attraction. These men and women identified as heterosexual while having same sex behavior *and* attraction. Similar to the DA group, these individuals might also be on a “trajectory” towards identification as something other than heterosexual. Research has identified two pathways in the development of sexual identity. Both sequences begin with an initial awareness of same sex attraction.

One developmental pathway is followed by identification of orientation as something other than heterosexual and has been described as a “label first” or “identity centered” trajectory (Dube & Savin-Williams, 1999; Floyd & Stein, 2002; R. Savin-Williams & L. Diamond, 2000). Meanwhile the other sequence is followed by experimentation with same sex behavior and has been described as a “sex first” or “sex centered” trajectory (Dube & Savin-Williams, 1999; Floyd & Stein, 2002; R. Savin-Williams & L. Diamond, 2000). Individuals in the DBA group might correspond to the “sex centered” or “sex first” group and might developmentally be progressing towards identification as something other than heterosexual. This idea is further supported by one study that found an average of 10 years between an initial awareness of same sex attraction and a non-heterosexual identity (R. Savin-Williams & L. Diamond, 2000). Alternatively, it is possible that men and women with DBA reject non-heterosexual identity labels due to the social meanings that are attached to these labels. Similarly, these individuals might continue to identify as heterosexual despite same sex behavior and attraction based on their cultural definitions of sexual identity. This might be particularly true of male Black and Latino cultures in which only the receptive partner is considered “gay” and the insertive partner is considered “heterosexual” (Manalansan, 1996; R. Savin-Williams, 1996) even though both participate in same sex behavior. Therefore, some of these individuals might continue on a developmental pathway towards a non-heterosexual identity while others might continue to identify as heterosexual in rejection of other sexual identity labels.

Predictors of Men with Discordant Sexual Identity

Predictors of sexual discordance in US men that were investigated included; race, individual and family income, education, age, marital status, employment and nativity. The predictors associated with discordant sexual identity varied by the subtype of discordance that was analyzed. Of all men who were discordant, approximately 19% had DBA, 36% had DB and 44% had DA.

Race and Nativity as Demographic Predictors

Other studies found that discordance was highest in people of color (Finlinson et al., 2006; Grov et al., 2006; Jimenez, 2003; Ross et al., 2003). Predictor analyses of men with DBOA in this study support the notion that Black men are more likely to be discordant. However, subtype analyses tell a very different story. Men with DA were also found to have increased odds of being Black yet, men with DBA and men with DB did not demonstrate any racial differences in rates of discordance. Racial differences appear in categories of discordance that include same sex attraction (except DBA), and support that notion that some discordant men are more likely to be Black. Yet this study also demonstrates that compared to White men, Hispanic, Asian, and Native American men do not have any increased odds of being discordant. This might be indicating racial differences specifically among Black men and their understanding and/or personal meanings that are attached to sexual identity labels. Black men with same sex attraction might continue to identify as heterosexual and some might abstain from same sex behavior due to racial and cultural meanings attached to any same sex orientation. Men with DBA and men with DB did not demonstrate any racial differences in their prevalence of discordance and both groups include same sex behavior. Unlike discordant

same sex attraction, discordant same sex behavior appears to have similar meanings in different races and cultures and racial differences appear to be specific to the inclusion of discordant attraction. Overall however, this study supports the notion that men with DBOA and the smaller subgroup of men with DA are more likely to be Black.

A study in NYC determined that discordance was highest among men who were foreign born (Pathela et al., 2006), yet this study did not find increased rates of discordance by nativity in discordant men nor in any of the subgroups of discordant men that were analyzed. It is possible that increased rates of discordance among foreign born men are specific to those living in NYC or to those living in large urban areas. However, this study demonstrated that when examined on a national level, men born in the US and those who are born elsewhere are equally as likely to be discordant. This could indicate that men born in the US and men born elsewhere attribute similar meanings and implications to same sex orientation and sexual identity labels, although several studies have indicated that such labels have varied meanings in different cultures (Bhugra, 1997; Greene, 1994; Icard, 1986; Morales, 1990; Savin-Williams, 1996; Wheeler, 2006).

Income, Employment and Education as Demographic Predictors

A study conducted in NYC identified the connection between discordance and income (Pathela et al., 2006). This study supports the connection between male sexual discordance and low income in a national US sample and this study goes a step further by establishing the connection between men who are discordant and unemployment.

However, it is likely that low income is a product of unemployment. One possible reason that both low income and unemployment were more common in discordant men might be that these men are engaging in same sex behavior in exchange for money, drugs or other

goods. Although results from the DB group dispute this idea, results from all other groups of discordant men with same sex behavior (DBOA, DBA) support the connection between male discordance, unemployment and low income. Unfortunately, the NESARC did not investigate the context surrounding same sex behavior, so it is impossible to determine if sex in exchange for money, drugs or other goods contributes to the connection between sexual discordance, unemployment, and low income. Alternatively, it could be that those of lower economic status reject non-heterosexual identities due to their social background and the way in which an identity other than heterosexual is perceived in lower income environments. Earning a lower income likely increases concern about meeting daily living requirements such as having adequate shelter and enough food to eat, and a non-heterosexual identity could make meeting those needs even more difficult due to heterosexism and homophobia in the social environment. In other words, a higher income might also bring about an increased ability and/or freedom to identify as something other than heterosexual since basic daily needs can be met through one's earnings.

Education might also be related to employment and income. Yet this study only found that men with DA demonstrated lower levels of education, unlike other discordant men where there was no significant difference in education level. Men with DA however were also more likely to be Black, unemployed, and less likely to be in the higher income categories. It is likely that for men with DA these demographic factors work in tandem. Low education might be related to racial prejudice and low education and racial prejudice together might make finding gainful employment difficult. With this number of difficult demographic factors, exploration of same sex attraction might not be possible.

Alternatively, it is possible that DA creates psychological conflict that increases difficulty in areas of employment, education and income, particularly if same sex attraction is distressing to these men. It could be that in some men, unexpressed same sex attraction inhibits their ability to earn a higher level of education and/or stay employed due to psychological distress. This idea is supported by the finding that men with DA are also more likely to be Black and prior research has indicated that same sex orientation is particularly difficult in Black cultures (Greene, 1994; Icard, 1986; Savin-Williams, 1996; Wheeler, 2006).

Marital Status and Age as Demographic Predictors

Marital status was identified as a predictor of DA and DBOA in men. Although earlier studies have not shown that discordance is higher in men who are or were married to heterosexual partners, this conclusion is logical since being in a heterosexual marriage likely requires a heterosexual identity (note – as of November 2009, gay marriage was legal in 5 states, but when the NESARC was conducted only Massachusetts had legalized same sex marriage). Additionally, the connection between having been married and being discordant is also supported by this national dataset. The majority of men who are or were married to opposite sex partners likely identify as heterosexual even if they have same sex attraction or participate in same sex behavior. They might continue to identify as heterosexual simply because they are in a heterosexual marriage. On a social and interpersonal level, being in a heterosexual marriage likely requires a heterosexual identity.

However, this study found that when compared to concordant men, men with DBOA and men with DA were more likely to be widowed indicating that they were

married but are no longer. It could be that these men identified as heterosexual when they married and continue to do so even now that they are widowed and report same sex attraction. The groups DA and DBOA both contain same sex attraction indicating that these men married opposite sex partners either before or along with their same sex attraction. One possible explanation for this is that these men might have found non-heterosexual labels and the idea of a “gay lifestyle” incompatible with the way they envisioned their life. It is possible that only after being widowed were these men even able to disclose their same sex attraction, although we do not know if the same sex attraction preceded their being widowed or not. This result could be an indication that these men might be in an early stage of “coming out” and might one day identify as something other than heterosexual and/or might participate in same sex behavior. However, it is not known if these men became widowed before disclosing their same sex attraction or if they disclosed their attraction while still married. Unfortunately, the NESARC did not investigate this. It is also possible that maintaining same sex attraction while being in a heterosexual marriage might not have caused any psychological conflict. Further research is required to determine the affects of maintaining same sex attraction while married to opposite sex partners.

Age was also found to be an important predictor in discordant men, particularly being 65 years of age or older. In fact, men with DBOA were nearly twice as likely to be 65 or older compared to men who are concordant. Men with DA were also more likely to be 65 years of age or older, yet men with DBA were more likely to be over the age of 30. This age discrepancy likely points to the shifting cultural and social environment. Since the late 1990’s gay and lesbian identity has gained increased acceptance and there has

been an increase in public discourse about the “normality” of same sex orientation (for example, in President Barack Obama’s Inauguration speech). Meanwhile same sex marriage is a recent phenomenon and gay and lesbian characters that are portrayed in a positive light can only recently be seen with any regularity in popular media (e.g. see “Will and Grace”, “The L Word”, etc.). Increased positive visibility likely contributes to a more open, welcoming environment that older men were not exposed to during their earlier years of development. Only men with DB did not differ by age when compared to concordant men but this could have been due to the large timeframe that was utilized to investigate same sex behavior. Alternatively, this could indicate that same sex attraction is particularly sensitive to age differences and the cultural implications of growing up during different eras. A final possible reason that older men are more likely to be discordant might be related to increased social isolation that can occur with older age as friends and family members become deceased. The NESARC only offers a “snapshot” of sexual orientation at one point in time. Therefore it is possible that these men might have identified as gay, lesbian or bisexual in their younger age but as they grew older, they could have changed the way in which they identify their sexual identity, particularly since parts of the gay community reject older men and are especially prejudiced towards older men of color (Jimenez, 2003). In other words identification as gay, lesbian or bisexual after age 65 might increase social isolation and therefore some men might assume a heterosexual identity in order to maintain and/or establish social supports. This seems particularly likely for those who are no longer living independently and who must rely on others for support.

Predictors of Discordance in Men - Summary

Similar to the prevalence rates of same sex orientation which were found to vary by each dimension of sexual orientation, rates of sexual discordance also varied by the dimension(s) of discordant sexual orientation that were investigated. Each and every group of sexually discordant men differed in their demographic predictors. The nuances within each group of men are most important since the predictors varied in each group. Overall, when compared to concordant men, men with DB demonstrated the least demographic differences and men with DA demonstrated the most demographic differences. Next were men with DBOA followed by men with DBA. However, most of the variance in demographic predictors that were found can be accounted for within the DA group. Age, employment and income were important predictors across all types of discordance that included same sex attraction (DBOA, DBA, and DA). Being black and widowed was specific to those with DA and DBOA. This study partly supports the notion that Black men tend to be discordant, but only Black men with discordant same sex attraction and not necessarily those with discordant behavior. This study offers some contradictory evidence against the vectorization of discordant Black men (CDC, 2006; Denizet-Lewis, 2003), particularly since not all groups of discordant men tend to be Black but only those with same sex attraction and/or behavior.

Predictors of Women with Discordant Sexual Identity

Predictors of sexual discordance in US women that were investigated included; race, individual and family income, education, age, marital status, employment and nativity. Similar to the men, rates of discordance and the predictors of each group varied by the dimension(s) of discordant sexual orientation that were examined. Of all the

women who were discordant, approximately 15% had DBA, 9.7% had DB and nearly 75% of them had DA. Discordance was found to be statistically more likely in women than men and that result is likely related to the large proportion of women who reported same sex attraction without same sex behavior or identity. Women with DA demonstrated the highest number of demographic predictors. In fact, most of the variance found across all the groups of discordant women occurred within the DA group. On the other hand, women with DB demonstrated the least demographic predictors. This is likely related to the large timeframe that was utilized to investigate same sex behavior since this can include those who had even one same sex experience, even if it occurred during adolescence. Across all of the groups of discordant women, race, nativity, age, income, employment, and marital status were important predictors.

Race and Nativity as Demographic Predictors

Prior research indicated that Black women report higher rates of discordance than women from other races (Ross et al., 2003), yet this study found that Black women were no more likely to be discordant. In fact, this study determined that Asian women had significantly higher rates of discordance. It is possible that prior research did not have sample sizes large enough to determine elevated rates of sexual discordance in Asian women. Women with DBOA and women with DA were the most likely to be Asian. Both groups contain those with discordant sexual attraction indicating racial differences around same sex attraction but not necessarily behavior. Along with the result that many discordant women tend to be Asian is the finding that women with DA and women with DBOA were more likely to be foreign born. Prior research has indicated that Asian culture is particularly rigid around women's sexuality and racial and cultural notions of

Asian women's sexuality inhibit sexual identification and behavior that is anything but heterosexual (Dube & Savin-Williams, 1999; Savin-Williams, 1996). Additionally, cultural and social understandings of the sexual identity labels "lesbian" and "bisexual" might not be compatible within Asian cultures and this might be particularly true of those who are born outside the US. Alternatively, this could also indicate a different understanding of the concept of "sexual attraction" within Asian cultures and those born outside of the US. The idea of "being attracted to someone" might have been interpreted differently by these individuals than was intended. This concept might relate to the idea of acculturation. As these individuals become more acculturated to US cultures and norms, discordance might decrease either because these women identify differently or because they develop a new understanding of same sex attraction and its meaning within US culture. Future research could assess acculturation as a predictor of discordance to determine if socialization to US culture and norms decreases the likelihood of sexual discordance.

Income, Employment and Education as Demographic Predictors

Of all demographic predictors, income varied the most across the different groups of discordant women. Women with DBOA and women with DA were *less likely* to be in the highest income groups, women with DB did not demonstrate any income differences, and women with DBA were *more likely* to be in the highest income groups. In fact, women with DBA were nearly 4 times more likely to be in the highest income category than concordant women.

Women with DBA demonstrated higher rates of individual income but not family income, indicating that this was due to their own employment. Concordant women might

be more likely to be in “traditional” relationships with opposite sex partners in a household with one primary income earner. This would explain why individual but not family income was different. In addition to earning a higher income than concordant women, women with DBA were also nearly half as likely to be unemployed. It is possible that for women with DBA, being discordant on both dimensions of sexual orientation increases stress and psychological conflict over their discordance which is then “channeled” or sublimated into their work life. In essence these women might be workaholics who earn a high income through their employment, in an effort to “escape from” or “cope with” their discordance. It could also be that compared to other women, DBA women are less likely to have children and thus able to work more and earn a higher individual salary. Future research could examine children as a predictor of discordance.

Lower levels of education were found in women with DA but not in other groups of discordant women. In fact, women with DB were less likely to be in the two lowest categories of education. It is possible that those who engage in same sex behavior even once happen to be higher educated and engaging in same sex behavior might have been facilitated by a more liberal environment that is found at many colleges. On the other hand, low levels of education in women with DA likely contribute to other demographic predictors that were found in this group such as lower income and unemployment. It is possible that lower levels of education found in women with DA might be related to cognitive dissonance and psychological stress induced by their discordant same sex attraction. Women with DA might be distressed by their same sex attraction which

inhibits their ability to complete higher levels of education and contributes to their difficulty in earning a higher salary and finding employment.

Marital Status and Age as Demographic Predictors

Only women with DA resulted in marital status as a predictor of discordance. Women with DA were more likely to be widowed but all other discordant women did not demonstrate any differences in terms of their marital status. This might be related to the fact that women with DA were also more likely to be Asian and foreign born. Perhaps related to their racial and cultural understandings of same sex orientation, these women married heterosexual partners despite their same sex attraction or it could also be that their opposite sex attraction was stronger than their same sex attraction. It is possible that only after being widowed were these women even able to disclose their same sex attraction. This could be an indication that after marrying heterosexual partners these women might be in the early stages of “coming out” and might one day identify as something other than heterosexual and/or might participate in same sex behavior. It is also possible that these women maintained same sex attraction even while married and same sex attraction might not have caused any cognitive dissonance or psychological distress for these women. Determining why some discordant women tend to be widowed and when they become aware of their same sex attraction requires future empirical research examining same sex attraction in those who marry opposite sex partners.

Age also varied significantly across the dimensions of discordance in women. Women with DA and women with DBOA were more likely to be 65 years of age or older, yet women with DBA and DB were less likely to be 65 years of age or older. This indicates that discordant behavior is specific to those who are under age 65. Younger

women with and without same sex attraction (DBA and DB) are more likely to engage in same sex behavior than older women. This might be related to increased social and cultural acceptance of same sex orientation in the US. This could also be related to a general increase in acceptance of same sex behavior for experimentation, particularly among younger women. This notion is supported by literature related to the term “hetero-flexible” in younger women which indicates same sex behavior with or without same sex attraction (Ambrose, 2009), and in research indicating that women under the age of 30 are more likely to identify as bisexual (Bailey et al., 2003). Alternatively, this could also be related to a rejection of current sexual identity labels as has been found in younger women who identify as “mostly straight” (Thompson & Morgan, 2008). These findings support the need for additional empirical inquiry into new sexual identity labels that might better account for those who have been found discordant in this study.

Women with Discordant Sexual Identity Summary

Women with DB demonstrated the least number of predictors. Women with DA demonstrated more predictors than all other groups of discordant women including; being foreign born, less educated, less likely to be in the highest income groups, unemployed, widowed and over the age of 65. Women with DBA demonstrated the most variation in their predictors compared to all of the other groups of discordant women and men. These women were less likely to be unemployed, less likely to be over the age of 65 and more likely to earn a high salary. Although women with DBA identified as heterosexual, they have similar demographic characteristics as the women described in the sexual fluidity literature (Diamond, 2000, 2003b, 2005, 2008a, 2008b) and it is possible that these groups are similar. Overall predictors of discordance in women varied depending on the

dimension(s) of sexual orientation that were investigated, emphasizing the importance of examining subtypes of discordance. The variation of predictors within each subgroup indicates the need to account for different types of sexual discordance and points to the notion that each subgroup likely has individualized needs.

Predictors of Discordant Sexual Identity Summary of Men and Women

Overall, both men and women with DA demonstrated the highest number of demographic predictors yet those with DB demonstrated the least number of predictors. Almost all groups of discordant men and women demonstrated older age as a predictor of discordance. The only exceptions to this were men with DB who did not demonstrate any age related differences and women with DBA who were less likely to be older. Age differences in discordant men and women are likely related to the changing social environment that has (slowly) become more accepting of same sex orientation. Older men and women who grew up in a society that was much less open to gays and lesbians, before the era of gay marriage, were found to have increased odds of being discordant. It is possible, perhaps even likely that a more open and accepting environment fosters concordance in both men and women in the US.

Both men and women with DA demonstrated lower levels of education, employment and income. Men and women with DA might be distressed by their same sex attraction which might inhibit their ability to complete higher levels of education and contributes to their difficulty in earning a higher salary and finding employment. Additionally, both men and women with DBOA and DA demonstrated marital status as a predictor of discordance. Specifically, both groups were more likely to be widowed when compared to their concordant counterparts. It is possible that only after being

widowed were these men and women even able to disclose their same sex attraction.

Determining why some discordant men and women tend to be widowed and when they become aware of their same sex attraction requires future empirical research examining same sex attraction in those who marry opposite sex partners.

One of the largest differences between men and women is that discordant men were more likely to be Black yet discordant women were more likely to be Asian. Both findings suggest unique social and cultural understandings of a non-heterosexual identity in Black men and Asian women. Additionally, in both men and women it was the DBOA and DA groups that demonstrated racial differences and both groups contain those with discordant sexual attraction indicating racial differences around same sex attraction but not necessarily behavior.

In the largest groups of discordance (DBOA), the factors of race, employment, marital status and age cut across gender distinctions as both discordant men and women reported elevated odds of these factors. In this same group, both men and women reported odds less likely to be in the highest income groups. The demographic predictors including race, income, employment, age, and marital status apply to both discordant men and women. This might be related to the social, racial and cultural implications surrounding same sex orientation.

Perhaps the most significant finding in both the men and women is that the predictors that were found varied by the group or subgroup of discordance that was analyzed. Much is lost when discordance is analyzed as a whole within the DBOA group. Examining the different dimensions of discordance revealed varied predictors within each subgroup, supporting the notion that discordance should not be treated as one

large summary group but rather requires an approach that accounts for the different subtypes of this varied group. Results demonstrate the need to distinguish between subgroups of discordance and questions earlier studies on discordant sexual identity that did not investigate subgroup differences. Additionally, since results varied among each subgroup of discordance, this study further supports the notion that all three dimensions of sexual orientation should be included in future research studies.

Negative Outcomes Associated with Sexual Discordance

In addition to the prevalence and demographic predictors of sexual discordance in the US, negative outcomes associated with discordance were also examined. Negative outcomes that were investigated included; drinking alcohol prior to sexual activity, sexual partner(s) drinking alcohol prior to sexual activity, meeting criteria for Alcohol Abuse, Alcohol Dependence or Alcohol Use Disorder, having had a positive HIV test, a positive STD test, and having been diagnosed with AIDS.

Negative Outcomes Associated with Sexual Discordance in Men

Like the prevalence and the predictors of discordance in US men, negative outcomes associated with sexual discordance varied by the dimension of discordant sexual orientation that was analyzed and each subgroup of men with discordant sexual identity was unique in their outcomes.

Many studies have indicated a number of negative individual and public health risks associated with being discordant (Bernstein et al., 2008; Finlinson et al., 2006; Grov et al., 2006; Millett et al., 2007; Pathela et al., 2006; Rietmeijer et al., 1998; Ross et al., 2003; Siegel et al., 2008; Wolitski et al., 2006) yet this study found so few negative outcomes among discordant men. Given the established literature on the risks of sexual

discordance in men, this result was not expected. In fact, this study found that men with DBA were 4 times *less likely* to meet criteria for alcohol use disorder. One possible explanation for this finding is that these men might be hyper-vigilant around maintaining healthy behavior(s) since they are discordant in their sexual attraction *and* sexual behavior. Since alcohol use and misuse have been implicated in high risk sexual behavior, the result that men with DBA were less likely to meet criteria for alcohol use disorder might be an indication that outreach and prevention efforts are working with this group. The fact that men in this group continue to identify as heterosexual but report same sex behavior *and* attraction might be playing a factor in this result. These men might be following the “sex centered” or “sex first” trajectory, in which same sex behavior occurs before identification as something other than heterosexual (Dube & Savin-Williams, 1999; Floyd & Stein, 2002; R. Savin-Williams & L. Diamond, 2000). Therefore, DBA men might be in the process of developing a non-heterosexual identity and they might be attending more gay related venues in an effort to explore their sexual identity and/or to find same sex partners. Through those venues, these men might be exposed to outreach and prevention messages explaining the dangers of alcohol usage and high risk sexual behavior. Additionally, these messages may have been effective in helping these men to reduce their use of alcohol. Since these men desire same sex behavior and engage in sex with other men yet continue to identify as heterosexual, this might contribute to their need to be “extra careful” and thus abstain from alcohol. Alternatively discordance in this group of men could be indicating a rejection of non-heterosexual identity labels. Non-heterosexual labels might be rejected by these men based on the implications and meanings that are attached to these terms and this might be

particularly true of racial minorities (Bhugra, 1997; Greene, 1994; Icard, 1986; Morales, 1990; Savin-Williams, 1996; Wheeler, 2006) and of those who assume the “insertive” role during sexual intercourse (Hart et al., 2003; Manalansan, 1996; Savin-Williams, 1996).

On the other hand, men with DA report that they have never acted on their sexual attraction, yet they were found to be 6.3 times more likely to have tested positive for HIV in the prior year. This was the exact opposite of what was hypothesized. HIV risk in discordant men was assumed to be associated with same sex behavior since this has been previously demonstrated in the research literature (Catania et al., 2001; CDC, 2005a; Chan, 2007; Hall et al., 2007; Lite, 2007; Millett et al., 2007; Valleroy et al., 2000; Wilson et al., 2008). Yet, this study shows that discordant attraction and not behavior is associated with increased HIV risk. This could be pointing to reporting bias related to same sex behavior. On the one hand, if someone is able to disclose same sex attraction, this would seem to indicate that they would also disclose same sex behavior, if they actually had such experience(s). On the other hand, it is possible that these men might consider same sex behavior to be more “taboo” than same sex attraction. Perhaps to some, having same sex attraction is acceptable so long as one chooses not to act on their attraction. Perhaps admitting same sex attraction absent same sex behavior was considered more acceptable for cultural, racial and/or social reasons. This idea does seem to be supported by the fact that these men are more likely to be Black, lower educated, unemployed, 65 years of age or older, and widowed. Perhaps their cultural, racial and/or social backgrounds prohibit them from reporting same sex behavior and these same demographic factors might prevent them from engaging in same sex behavior

at all. Alternatively, men with DA might have been more likely to become infected with HIV as a result of unsafe opposite sex behavior or through IV drug use. For example, these men might be caused cognitive dissonance or psychological distress by their same sex attraction and they might be more likely to use IV drugs in an attempt to cope with or to deny their attraction. Similarly, because of cognitive dissonance, these men might be more likely to engage in unprotected opposite sex behavior also in an attempt to deny their same sex attraction. Together, these behaviors might be an explanation for the elevated risk of HIV that was found in this group.

Regardless, the finding that men with discordant sexual attraction alone were 6.3 times more likely to have tested positive for HIV in the prior year is significant since it represents the largest and the *only* negative outcome found among any of the discordant men. While the largest and broadest category of discordance disputes the notion that discordant Black men are a source of HIV infection to women, this subtype analysis demonstrates partial validity to this claim. Results indicate that men who identify as heterosexual and report discordant same sex attraction without ever engaging in same sex behavior are more likely to be Black and have increased odds of testing positive for HIV. Yet this study shows that HIV infection in discordant men is not related to same sex behavior. This study offers some evidence disputing the notion that men on the down-low participate in unsafe, same sex behavior and are a significant source of HIV infection to heterosexual women because of their unsafe same sex behavior. Some discordant Black men might be more likely to be HIV positive but these results suggest that increased rates of HIV in this group are unrelated to same sex behavior.

Discrepancies in negative outcomes across the subtypes of sexual discordance in men might be related to participation in same sex behavior. Those who reported discordant same sex behavior (either with or without discordant attraction) were no more likely to participate in any of the negative outcomes that were investigated and they were less likely to meet criteria for alcohol disorder. Perhaps participating in same sex behavior causes less cognitive dissonance than maintaining same sex attraction without participating in same sex behavior. It is possible that maintaining same sex attraction without ever acting on that attraction might be a contributing factor in participation in other behaviors that contribute to HIV infection (e.g. IV drug use or unsafe opposite sex behavior).

Since discordant men have been found to seek less HIV testing (Pathela et al., 2006; Rietmeijer et al., 1998; Wolitski et al., 2006), this could partially explain why many discordant men were no more likely to report having had a positive HIV test, STD test or AIDS diagnosis, since it is possible that these men simply are not being tested. Although most analyses of discordant men did not find elevated rates of positive HIV tests, STD tests or AIDS diagnoses, this does not definitively mean that rates of HIV tests, STD tests and AIDS diagnoses are not elevated in these men. In fact, since men with DA were more likely to test positive for HIV, this could be an indication that other discordant men are also at risk but are unaware of their status.

Negative Outcomes Associated With Sexual Discordance in Men Summary

In summary, men with DBA were *4 times less likely* to meet criteria for alcohol use disorder and men with DA were *more than 6 times more likely* to test positive for HIV. Compared to concordant men, those with DB and those with DBOA did not

demonstrate any increased or decreased odds of any of the negative outcomes that were investigated. Despite earlier studies indicating negative ramifications associated with sexual discordance in men, no other negative outcomes were found. Of course this does not rule out all possible negative outcomes in men who are discordant and only pertain to the eight outcomes that were investigated in this study.

Negative Outcomes Associated with Sexual Discordance in Women

Unlike the men in this study, women had many more negative outcomes associated with sexual discordance and each subgroup of discordant women was unique in their resulting negative ramifications. Every group of discordant women that was analyzed resulted in increased odds of one or more alcohol related disorders. Discordant women were consistently found to be at an elevated risk for alcohol use disorders and this was true for each and every subgroup analysis that was conducted. Additionally, some discordant women demonstrated elevated risk of having a positive HIV test but this risk varied by the subgroup of discordance that was examined.

Compared to other discordant women, those with DBA demonstrated the most negative ramifications associated with their discordance. This was opposite the men with DBA, who were *less likely* to meet criteria for alcohol use disorder. Women with DBA were more likely to test positive for HIV, meet criteria for alcohol abuse, alcohol dependence and alcohol use disorder. Among all discordant women, women with DBOA demonstrated the second highest level of risk and their negative outcomes included increased odds of having a positive HIV test, and being more likely to meet criteria for alcohol dependence and alcohol use disorder. Women with DB were more likely to meet criteria for alcohol use disorder and alcohol abuse, yet women with DA only

demonstrated increased risk of alcohol dependence. In fact, compared to other discordant women, those with DA had the least amount of risk associated with their discordance. It is possible that same sex attraction among women might be considered more socially acceptable than same sex behavior, and the negative outcomes found in some groups of discordant women might be related to engaging in same sex behaviors that are stigmatized.

In prior research studies, MSM and especially MSM of color have demonstrated the highest risk of HIV infection (Catania et al., 2001; CDC, 2005a; Chan, 2007; Hall et al., 2007; Lite, 2007; Millett et al., 2007; Valleroy et al., 2000; Wilson et al., 2008). Since sexual behaviors in MSM have shown the most risk for HIV infection, it could be theorized that discordance in women might even be protective in terms of HIV risk. Yet, this study has shown that women with DBOA and women with DBA demonstrate significantly increased risk of HIV infection.

DBOA and DBA include dimensions of attraction *and* behavior and both of these groups demonstrated the highest levels of risk overall among all discordant women. While these groups were more likely to test positive for HIV, these groups were also more likely to meet criteria for more alcohol disorders than other discordant women. It could be that discordance on both dimensions in women influence risk due to cognitive dissonance and psychological unease. In other words, alcohol might be misused in an attempt to mediate the psychological stress that is generated by discordance. At the same time, alcohol has been implicated as a risk factor for high risk sexual behavior (Bagnall et al., 1990; Calzavara et al., 1993; Cooper, 1992; Dolezal et al., 1997) which indicates that alcohol disorders and HIV infection are likely influencing each other. The relationship

between alcohol misuse and testing positive for HIV is further supported by the finding that women with DBA met criteria for all three alcohol related outcomes that were investigated and they demonstrated nearly 5.7 times the odds of testing positive for HIV. Yet, women with DBOA met criteria for alcohol dependence and alcohol use disorder but not alcohol abuse and their HIV risk was 2.7 times the odds of those who are concordant. While HIV risk is highly elevated in this group it is not as elevated as women with DBA who also met criteria for alcohol abuse. It is also possible that discordant women are at an elevated risk for HIV because of high risk opposite sex behavior and or IV drugs use. Discordant women might engage in these risky behaviors in an effort to “cope” with or deny their discordance. In other words, these self destructive behaviors might be a result of cognitive dissonance or psychological distress that is generated from discordant same sex attraction and/or behavior.

Negative Outcomes Associated With Sexual Discordance in Women Summary

In summary, discordant women demonstrated elevated risk of alcohol disorders and HIV infection. Risks associated with sexual discordance in women could be placed on a continuum beginning with DBA women who demonstrated the most risk, followed by women with DBOA, women with DB and women with DA who demonstrated the least risk. Across the board, all discordant women were at risk for at least one or more of the alcohol use disorders and the more alcohol related disorders they met criteria for the greater their risk for HIV infection. It is likely that risks associated with sexual discordance in women were unknown prior to this study simply because so few studies have examined discordance in women. Finally, increased risk might be related to

cognitive dissonance generated from their discordance and/or a result of engaging in same sex behaviors that are stigmatized.

Negative Outcomes Associated With Discordant Sexual Identity in Men and Women

In both men and women, the negative outcomes associated with discordant sexual identity varied by the dimensions(s) of sexual orientation that were investigated.

Variations across each subgroup of discordance are lost when discordance is analyzed within the largest group (DBOA). While men with DBOA did not demonstrate elevated risk of any of the negative outcomes, men with DA demonstrated significantly elevated risk of HIV. Without investigating the subgroups of discordance, this finding would not have been discovered. Similarly, women with DBOA did not demonstrate elevated risk of alcohol abuse yet women with DBA and women with DB did. Again, investigation of discordance without examination of the different subtypes of discordance would have missed these important results. Along these same lines women with DBOA were at an elevated risk of testing positive for HIV but not all discordant women have an increased risk of this negative outcome. Examining only the largest group of discordance would have determined that discordant women are at risk for HIV, yet subgroup analyses show that women with DB and women with DA are not at risk. Therefore, multiple dimensions of sexual orientation and discordance should be investigated in future research studies.

Discordant attraction appears to have different implications for men and women. In women, those with DA were least at risk for the negative outcomes that were investigated, yet men with DA had the greatest risk overall among discordant men. While discordant attraction posed the greatest risk for men, the combination of discordant

same sex behavior and attraction in women posed the most risk and had the highest odds of negative outcomes. This seems to suggest that women more than men are caused distress by their same sex behavior, yet women appear to be caused less distress by their same sex attraction. This might be related to the notion that same sex attraction among women is more socially acceptable than same sex attraction among men. Alternatively, this might be further demonstrating differences in the way that same sex behavior and same sex attraction are experienced and interpreted by men and women. These findings also provide further empirical support of the notion that sexual orientation might be organized differently by men and women.

This study was designed to determine which (if any) negative outcomes were more or less associated with sexual discordance and do not explain the reason(s) for the association simply because the original NESARC study was not designed to do so. Further empirical study into the factors that contribute to lower rates of alcohol use in men with DBA will need to be conducted in order to determine the reasons behind this finding. Similarly the reasons for increased risk of HIV infection among men with DA remain unknown as do the reasons for increased alcohol disorders and increased HIV infection in some discordant women. These results do not rule out other possible negative outcomes that might be associated with sexual discordance. Other negative outcomes not investigated in this study might be more or less likely among men and women with discordant sexual identity.

Chapter 7 – Limitations, Implications and Conclusion

Limitations

The results of this study should be considered in the context of the following limitations. The first, and perhaps the largest, limitation of this study is the timeframe that was utilized to examine sexual behavior. The timeframe that is employed to examine sexual behavior affects the prevalence of same sex behavior that is found, with larger time periods resulting in larger estimates of same sex behavior. This study examined lifetime prevalence of sexual behavior, resulting in the largest possible estimate of same sex behavior. The group analyzed as discordant includes those who identified as heterosexual and who reported even just one same sex encounter *at any point* in their life, even if it occurred only once and even if it occurred during adolescence. While subgroup analyses partially compensated for the large timeframe that was used to measure sexual behavior, this study could have been improved by examining same sex behavior over several time periods. Using this method, the prevalence of same sex behavior within each time period could be compared and more recent experiences of same sex behavior could be investigated. While limiting the study to only one time period is a clear limitation, examining sexual behavior over the course of a lifetime does offer the most inclusive estimate of same sex behavior. Although this analysis is most inclusive in its' definition of discordance, it includes those who may not be considered discordant when using a more stringent definition, such as having engaged in same sex behavior in the last 5 years or even in the last 10 years. Additionally, while same sex behavior was examined over the course of a lifetime, both same sex attraction and

identity were asked in the present tense. Utilizing different timeframes for same sex identity, attraction and behavior could have confounded the results.

Next, this study, like many studies, was limited by the use of self report data and reported sexual identity, sexual behavior and sexual attraction were based on the participants' willingness to disclose this information and their tendency to give socially acceptable answers. Third, similar to reported sexual identity, sexual attraction and sexual behavior, having had a positive HIV test, STD test, or AIDS diagnosis were also based on self report. This study could have been improved by confirming self reported positive HIV or STD tests and diagnoses of AIDS with actual tests and/or a medical provider's diagnosis.

The fourth limitation is that the context in which any same sex behavior occurred was not investigated and reports of same sex behavior could include those who engaged in same sex behavior for economic reasons, in exchange for money/drugs, while in prison or due to sexual abuse. The fifth and final limitation was that this study was created to investigate psychiatric disorders in the US and was not specifically designed to investigate issues of sexual orientation. While the NESARC interviewers were all well trained, they did not systematically receive specialized training to investigate issues of sexuality. This could have affected the way in which individuals chose to report their sexual identity, behavior, and attraction.

Despite these limitations the NESARC is the largest US study to date that included questions related to sexual orientation. The NESARC is further strengthened by the inclusion of all three dimensions of sexual orientation. Finally, this study is also the largest US study to date to investigate the prevalence, predictors and negative outcomes

associated with discordant sexual identity in a national sample and it is one of the only studies that examined discordance in both men and women.

Implications for Social Work Practice

Results of this study include implications for social work practice. Clinically, this study demonstrates that sexual identity often does not indicate sexual attraction or behavior. Mental health clinicians need to be informed about and become aware of the clinical implications and differences between sexual identity, behavior and attraction as well as rates of alcohol disorders and HIV infection in discordant populations. Mental health and medical providers should also be prompted to ask about sexual identity, sexual behaviors, and sexual attractions separately in order to gain a more thorough understanding of their clients. Social workers and other mental health and medical providers need to be aware of the differential risk factors that have been found in each subgroup of individuals with discordant sexual identity in order to guide their treatment approaches.

One or more alcohol related disorders were more common in every group of women with discordant sexual identity and some groups of discordant men and women demonstrated an increased risk of HIV infection. General HIV and alcohol related outreach and prevention efforts might not be applicable to those who are discordant. These results indicate the need for alcohol and HIV related outreach, prevention and intervention methods designed specifically for discordant men and women. Results also indicate that individuals with discordant sexual identity pose unique risks and needs. Components that include sexuality likely need to be incorporated into the prevention, outreach and intervention efforts to these communities. Similarly, social work clinicians

should tailor their interventions to discordant populations and include an approach that is sensitive to the needs of these groups. It is possible that each group of sexually discordant individuals requires a specialized and individualized approach in their outreach, prevention and intervention efforts, since each group differed in their predictors and negative outcomes. The one exception to this is men with DBA. Men with discordant sexual behavior and attraction were 4 times *less likely* to meet criteria for alcohol use disorder. Future research efforts determining factors that might contribute to decreased risk of alcohol use among these men could be helpful to social work clinicians and other mental health professionals in designing interventions for those who are discordant.

Social workers should engage in outreach efforts that are aimed at ameliorating the increased risk of HIV infection and alcohol use disorders in people with discordant sexual identity. Efforts should include increased HIV testing to these groups and education about risks associated with alcohol use and HIV infection. Additionally, results of this study demonstrate that discordant women need increased prevention, education and intervention efforts specifically related to alcohol disorders. Social work practitioners are particularly well suited to develop support programming that would reach these groups. Social work practitioners could engage in outreach and prevention to these groups and can address the clinical mental health issues that are involved with discordant sexual identity and alcohol disorders.

Although results of this study have clinical, outreach, prevention and intervention implications, at no point should concordance be considered an objective in these efforts. Concordance might not be appropriate for all people and a non-heterosexual identity

might not be racially, culturally and socially appropriate for these groups. In fact, among those with any same sex orientation, discordance was more common than concordance and social workers should incorporate this knowledge into their outreach, prevention, and intervention efforts. Demographic predictor analyses have indicated which groups are most likely to be discordant and outreach efforts should target these communities directly since they are at an increased risk of HIV infection and/or alcohol disorders.

Implications for Sexual Identity Theory

Each group and subgroup of discordant individuals demonstrated unique predictors and negative outcomes that were associated with being discordant. However, among the variations in each group there were some commonalities across the whole sample. Overall almost all discordant people tended to be older, non-white, lower income and most had higher rates of unemployment and lower rates of education. This indicates that a non-heterosexual identity might not be appropriate for these individuals and demonstrates an empirical reason to develop new sexual identity labels that better “fit” these groups.

Meanwhile, sexual discordance was found to be more common in women than in men. Future research investigating the reasons for this discrepancy could be helpful in understanding gender differences in the way that sexuality is experienced by men and women. At the same time, discordance was a relatively common occurrence in the whole sample and more people were found to be discordant than those who identified as gay, lesbian and bisexual combined. This further demonstrates an empirical rationale for the development of new sexual identity labels that better “fit” those with same sex behavior and/or attraction or it disputes the usefulness of labeling or categorizing sexual identity.

Specifically, results of this study stand in stark contrast to the essentialist notion that there is a sense of concordance between identity, attraction and behavior and results support the social constructionists' perspective that sexual orientation is an on-going, dynamic, process that is socially and culturally influenced.

Implications for Future Research

These results also indicate the need for further empirical research and question earlier studies of discordance that did not investigate subgroup differences. This study shows that future research questions related to sexual identity should not be predicated on questions of sexual behavior or attraction. While some important questions have been answered by this study, new questions arise from these results. Determining why men with discordant sexual attraction alone are at an increased risk of HIV infection is important for personal and public health reasons. Along these same lines, determining what contributes to the increased odds of HIV infection in some discordant women is also important for health related reasons. Understanding if unsafe opposite sex behaviors or IV drug use play a role in elevated risk of HIV can help guide the creation of prevention and intervention efforts to those who are discordant. Additionally, determining why men with discordant sexual behavior and attraction are less likely to have alcohol related disorders might be helpful information that can be applied clinically to other discordant men. Similarly, determining why risk of alcohol related disorders varied among the subgroups of discordant women can be helpful in designing interventions to groups that need them. Future research should also determine if increased odds of alcohol related disorders in discordant women are implicated in their increased odds of HIV infection.

Knowing this can assist in the design of HIV and alcohol related intervention methods to women who are discordant.

Prior research has demonstrated lower rates of HIV testing in discordant individuals (Pathela et al., 2006; Rietmeijer et al., 1998; Wolitski et al., 2006), yet this study demonstrates increased risk of HIV infection in these groups. Since overall testing rates of discordant individuals have been shown to be low, it is possible that the risk of HIV infection found in this study represent only the lower bounds of the actual level of HIV risk in these communities. Rates of HIV testing in large samples of discordant men and women need to be determined in order to better identify risk of HIV infection in these groups. If rates of HIV testing in these populations are indeed diminished then it is likely that the risk of HIV infection found in this study is an under-estimate of the actual level of risk in these communities.

This study also indicates the importance of inquiring about sexual orientation in future research studies and the need to assess sexual orientation across all three dimensions that include sexual identity, behavior and attraction. Future research efforts that include only one or two dimensions of sexual orientation will likely overlook important subgroup differences that have been demonstrated in this study. Similarly, this study collapsed all individuals showing any same sex attraction into one group, yet sexual attraction was originally collected to include different strengths of same and opposite sex attraction. It is quite possible that the strength of same sex attraction influences the predictors and negative outcomes that are found. Future empirical studies should investigate whether predictors and negative outcomes in discordant individuals vary by strength of same sex attraction.

Additionally, this study only assessed for eight possible demographic predictors and these results do not rule out other possible predictors that might be associated with discordant sexual identity. Whether or not individuals have children could be an important predictor of sexual discordance and future research should examine this. Similarly, future research should assess the impact of acculturation and racism on discordance. Previous experiences of discrimination related to sexual orientation might also contribute to increased rates of discordance and future research should examine this possible predictor. Urbanization and the more liberal environment often found in large cities might make identifying as gay, lesbian or bisexual easier and thus future research should determine if discordance might be more common outside of large urban environments.

Similarly, this study only assessed eight possible negative outcomes, yet it is likely that other negative outcomes will be associated with discordant sexual identity. In an effort to deny their discordance some individuals might engage in unsafe opposite sex behavior or use IV drugs. Future research should examine these outcomes in discordant individuals. Additionally, rates of DSM based alcohol disorders were elevated in discordant individuals. This finding supports the need to investigate sexual discordance along with other DSM based mental health diagnoses. Such an investigation could determine and compare rates of psychopathology in discordant and concordant individuals. Results could also be used in outreach, prevention and intervention efforts. Finally, it has been hypothesized that discordance might cause distress or cognitive dissonance yet, it is also possible that discordance might not produce any psychological unease at all. Future empirical research investigating the psychological affects of

discordance could determine the role of cognitive dissonance (if any) in elevated negative outcomes that have been found in these groups.

Conclusion

This study found similar rates of same sex orientation that were found in other large national studies (Laumann et al., 1994; Michaels, 1996; Smith et al., 2003). Rates of same sex orientation varied by each dimension that was examined and ranged from 1.41% to 6% in men and from 1.35% to 8% in women. Of those who identified as heterosexual, women were statistically more likely to be discordant than men, demonstrating a possible gender difference in the way that same sex orientation is organized and experienced by men and women. Yet, rates of discordance were high in the whole sample (4.28% for men and 6.21% for women) and the majority of individuals with any same sex orientation (6% of the men and 8% of the women) were discordant. This offers some evidence disputing the essentialist notion that same sex identity, attraction and behavior coincide. On the contrary, results support the social constructionists' perspective that same sex orientation is dynamic and influenced by external forces.

This study also confirms many earlier studies demonstrating predictors and risks associated with sexual discordance, yet subgroup analyses show that predictors and risks vary within each subgroup. Across all groups of discordant men, race, income, age, marital status, employment status, and education were significant predictors of discordance. Across all groups of discordant women, race, nativity, age, income, education, employment, and marital status were significant predictors.

Negative outcomes associated with sexual discordance in men were limited. In fact, men with DBA were 4 times *less likely* to meet criteria for alcohol use disorder. Yet men with DA were 6.3 times *more likely* to test positive for HIV. This was the one and the only negative outcome found in men with discordant sexual identity. Negative outcomes in discordant women far outweighed negative outcomes in men and included increased odds of having a positive HIV test, meeting criteria for alcohol abuse, alcohol dependence and/or alcohol use disorder. Negative outcomes within each group of discordant women ranged from containing all of these outcomes to meeting criteria for alcohol dependence alone. Each and every group of discordant women was at an increased risk of one or more alcohol related disorders. Placed on a continuum, women with DBA demonstrated the most risk, followed by women with DBOA, women with DB and women with DA.

This study was most limited by the lifetime examination of sexual behavior. Results of this study indicate the need for specific outreach, prevention and intervention efforts aimed directly at discordant men and women and each subgroup of discordance. Social workers are particularly well-suited to design and engage in efforts targeting discordant individuals. Future research should include all three dimensions of sexual orientation in order to further enhance the study of sexual discordance and to identify important subgroup differences that are found within each dimension of sexual orientation.

Appendix 1

Terminology Glossary (in alphabetical order)

Bisexual: a sexual identity label that can refer to men and/or women and indicates same sex and opposite sex attraction or behavior.

Closet, The: linked with “coming out” - refers to desiring or engaging in same sex behavior while identifying and/or as heterosexual, i.e. – being “in the closet” (Seidman, 1999).

Coming out: linked with “the closet” - refers to the process of identifying oneself as anything other than heterosexual to self, family, friends, coworkers and the general public (Seidman, 1999).

Discordant sexual identity: engaging in or desiring same sex behavior while identifying as heterosexual (Kerker et al., 2006; Pathela et al., 2006; Ross et al., 2003).

Down Low: to keep a secret; similar to “discordant sexual identity”, refers to individuals who engage in or desire same sex behavior while identifying as heterosexual. Often used to refer to Black men and less commonly used to refer to other people of color but could be applied to any racial group (CDC, 2006).

Gay: similar to “homosexual”, a sexual identity label that can refer to men and/or women and indicates same sex attraction or behavior.

Heteronormativity: is based in the idea of two distinct gender identities with two distinct gender roles; refers to the practices and institutions that legitimize and privilege heterosexuality and heterosexual relationships as fundamental and “natural” within society (Cohen, 2005, p. 24).

Heterosexism: “an ideological system that denies, denigrates and stigmatizes any non-heterosexual form of behavior, identity, relationship or community” (Herek, 1992, p. 89).

Homosexual: similar to “gay”, a sexual identity label that can refer to men and/or women and indicates same sex attraction or behavior.

Identity: the components that make someone who he or she is and is used to describe and categorize different components of one’s life. Contains personal aspects of functioning and a component of the social representation of those personal aspects (Cass, 1984; Identity, 2008).

Lesbian: a sexual identity label that refers only to women and indicates same sex attraction or behavior.

Men Who Have Sex With Men (MSM): created in response to AIDS crisis and is used to refer to men who engage in same sex behavior regardless of sexual identity (Young & Meyer, 2005).

Non Gay Identified: similar to “discordant sexual identity”, indicates engaging in or desiring same behavior without identification as gay (Finlinson et al., 2006; Harawa et al., 2008; Rietmeijer et al., 1998; Siegel et al., 2008).

Sexual Attraction: who one is drawn to sexually, marked by a physiological and cognitive response that push individuals away from or towards sexual behavior (Friedman et al., 2004; Levine, 2003).

Sexual Behavior: sexual activity or sexual practices.

Sexual Fluidity: notion that sexual identity, behavior and attraction are dynamic and flowing, that may adjust and change over time and in different situations (Diamond, 2005, 2008b).

Sexual Identity: a term used to indicate sexual orientation, i.e. “gay”, “lesbian”, “straight”, “heterosexual” (Grov et al., 2006; Laumann et al., 1994; Michaels, 1996; Pathela et al., 2006; Smith et al., 2003, among others).

Sexual Identity Trajectory: a path or progression of sexual identity development (Diamond, 2005; R. C. Savin-Williams & L. M. Diamond, 2000).

Sexual Orientation: refers to sexual attraction and/or sexual behavior and/or sexual identity and/or their combination (Chung & Katayama, 1996; Laumann et al., 1994; McCabe et al., 2005; McCabe et al., 2009; Sell, 1997).

Women Who Have Sex With Women (WSW): refers to women who engage in same sex behavior regardless of sexual identity (Young & Meyer, 2005).

Appendix 2

Section 14 - MEDICAL CONDITIONS AND PRACTICES		
Statement V → Now I'd like to ask some questions about your health and health practices.		
1.	(Not counting hospitalization for delivery of a healthy liveborn infant.) How many separate times did you stay in a hospital overnight or longer in the last 12 months?	0 ☐ No times - <i>SKIP to 3</i> OR _____ Number of times
2.	(Again not counting hospitalization for delivery of a healthy liveborn infant.) How many days altogether did you spend in the hospital in the last 12 months?	_____ Number of days
3.	In the last 12 months, how many times did you receive medical care or treatment in a hospital emergency room?	0 ☐ No times OR _____ Number of times
4.	In the last 12 months, how many injuries have you had that caused you to seek medical help or to cut down your usual activities for more than half a day?	0 ☐ No injuries OR _____ Number of injuries
5.	And now some questions about your health and sexual practices. (SHOW FLASHCARD 46) People are different in their sexual attraction to other people. Which category on the card best describes your feelings?	1 ☐ Only attracted to females 2 ☐ Mostly attracted to females 3 ☐ Equally attracted to females and males 4 ☐ Mostly attracted to males 5 ☐ Only attracted to males
6.	In your entire life, have you had sex with only males, only females, both males and females, or have you never had sex?	1 ☐ Only males 2 ☐ Only females 3 ☐ Both males and females 4 ☐ Never had sex
(SHOW FLASHCARD 47)		
7.	Which of the categories on the card best describes you?	1 ☐ Heterosexual (straight) 2 ☐ Gay or lesbian 3 ☐ Bisexual 4 ☐ Not sure
CHECK ITEM 14.1	Is "4" marked in 6?	1 ☐ Yes - <i>SKIP to Check Item 14.3</i>
	Has respondent never had sex?	2 ☐ No
8.	Have you had sex in the last 12 months?	1 ☐ Yes 2 ☐ No - <i>SKIP to 11</i>
CHECK ITEM 14.2	Did respondent drink alcohol in last 12 months (CONSUMER=1)?	1 ☐ Yes
		2 ☐ No - <i>SKIP to 10</i>
(SHOW FLASHCARD 48)		
9.	During the last 12 months, how often did you drink alcohol before having sex?	1 ☐ Never 2 ☐ Rarely 3 ☐ Sometimes 4 ☐ Most of the time 5 ☐ Always
(SHOW FLASHCARD 48)		
10.	During the last 12 months, how often did your partner drink alcohol before having sex?	1 ☐ Never 2 ☐ Rarely 3 ☐ Sometimes 4 ☐ Most of the time 5 ☐ Always
11.	How old were you when you first had (sex/sexual intercourse, or have you never had sexual intercourse)?	0 ☐ Never had sexual intercourse OR _____ Age
CHECK ITEM 14.3	If sex = 1, Is Q5 coded as 2,3,4,5,D,R OR Q6 coded as 1,3,D,R OR Q7 coded as 2,3,4,D,R?	If sex = 2, Is Q5 coded as 1,2,3,4,D,R OR Q6 coded as 2,3,D,R OR Q7 coded as 2,3,4,D,R?
		1 ☐ Yes 2 ☐ No - <i>SKIP to 15</i>

Appendix 2 (cont.)

Section 14 - MEDICAL CONDITIONS AND PRACTICES (Continued)		
(SHOW FLASHCARD 16)		
12a. Now I'd like to know about how often you have experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because you were assumed to be gay, lesbian or bisexual.		b. About how often did this happen BEFORE 12 months ago?
(1) During the last 12 months, about how often did you experience discrimination in your ability to obtain health care or health insurance coverage because you were assumed to be gay, lesbian or bisexual?	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often
(2) During the last 12 months, how often did you experience discrimination in how you were treated when you got care because you were assumed to be gay, lesbian or bisexual?	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often
(3) During the last 12 months, how often did you experience discrimination in public, like on the street, in stores or in restaurants, because you were assumed to be gay, lesbian or bisexual?	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often
(4) During the last 12 months, about how often did you experience discrimination because you were assumed to be gay, lesbian or bisexual in ANY other situation, like obtaining a job or on the job, getting admitted to a school or training program, in the courts or by the police?	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often
(5) During the last 12 months, about how often were you called names because you were assumed to be gay, lesbian or bisexual?	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often
(6) During the last 12 months, about how often were you made fun of, picked on, pushed, shoved, hit, or threatened with harm because you were assumed to be gay, lesbian or bisexual?	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often	1 ☐ Never 2 ☐ Almost never 3 ☐ Sometimes 4 ☐ Fairly often 5 ☐ Very often
CHECK ITEM 14.4 Are all items (1) - (6) in 12a AND 12b marked "1" OR "Never" OR D OR R?	1 ☐ Yes - SKIP to 15 2 ☐ No	
13. When you are treated unfairly because you were assumed to be gay, lesbian or bisexual, do you USUALLY accept it as a fact of life, or do you try to do something about it?	1 ☐ Accept it 2 ☐ Try to do something about it	
14. When you are treated unfairly because you were assumed to be gay, lesbian or bisexual, do you USUALLY talk to other people about it, or do you keep it to yourself?	1 ☐ Talk to other people 2 ☐ Keep it to yourself	
15. And now a few questions about your health. In the last 12 months, did you have... (Repeat phrase frequently)		b. Did a doctor or other health professional tell you that you had (Name of condition)?
(1) Hardening of the arteries or arteriosclerosis?	1 ☐ Yes —————→ 2 ☐ No - SKIP to next condition	1 ☐ Yes 2 ☐ No
(2) High blood pressure or hypertension?	1 ☐ Yes —————→ 2 ☐ No - SKIP to next condition	1 ☐ Yes 2 ☐ No
(3) Diabetes or sugar diabetes?	1 ☐ Yes —————→ 2 ☐ No - SKIP to next condition	1 ☐ Yes 2 ☐ No
(4) Cirrhosis of the liver?	1 ☐ Yes —————→ 2 ☐ No - SKIP to next condition	1 ☐ Yes 2 ☐ No
(5) Any other form of liver disease?	1 ☐ Yes —————→ 2 ☐ No - SKIP to next condition	1 ☐ Yes 2 ☐ No
(6) Chest pain or angina pectoris?	1 ☐ Yes —————→ 2 ☐ No - SKIP to next condition	1 ☐ Yes 2 ☐ No

Appendix 3

Section 1 - BACKGROUND INFORMATION		
Statement A → These first few questions are about your background.		
CHECK ITEM 1.0A	Does AGECHECK = 1? (Was age imputed at Wave 1?)	☐ Yes ☐ No - SKIP to Check Item 1.0C
1a.	How old are you as of today?	____ Age
CHECK ITEM 1.0B	Does AGE = D OR R?	☐ Yes ☐ No - SKIP to 1b(2)
1b.	Ask if not apparent. (1) Interviewer: Enter best guess as to respondent's age. (2) What is your date of birth? Please give me the month, day and year. Example: 01-20-1983 12-01-1963	____ Age Month Day Year
CHECK ITEM 1.0C	Does SEXCHECK = 1? (Was sex imputed at Wave 1?)	☐ Yes ☐ No - SKIP to Check Item 1.0D
1c.	What is your sex?	☐ Male ☐ Female
CHECK ITEM 1.0D	Does HISP CHECK = 1? (Was Hispanic origin imputed at Wave 1?)	☐ Yes ☐ No - SKIP to Check Item 1.0E
1d.	Are you of Hispanic or Latino origin?	☐ Yes ☐ No
CHECK ITEM 1.0E	Does RACECHECK = 1? (Was race imputed at Wave 1?)	☐ Yes ☐ No - SKIP to 2a
1e.	(SHOW FLASHCARD 1) On Card 1 is a list of racial categories. Please select 1 or more categories to describe your race. Mark (X) all that apply.	☐ American Indian or Alaska Native ☐ Asian ☐ Black or African American ☐ Native Hawaiian or Other Pacific Islander ☐ White
2a.	(SHOW FLASHCARD 2) What is your country of origin or heritage? Just tell me the number next to the country.	Code
b.	Were you born in the United States?	☐ Yes - SKIP to 2d ☐ No
c.	How many years have you lived in the United States? (Code 1 if less than 1 year.)	____ Year(s)
d.	In what country was your mother born? Just tell me the number next to the country.	Code
e.	In what country was your father born? Just tell me the number next to the country.	Code
3.	(SHOW FLASHCARD 2) In what country was your mother's mother born? Just tell me the number next to the country.	Code
4.	(SHOW FLASHCARD 2) In what country was your mother's father born? Just tell me the number next to the country.	Code
5.	(SHOW FLASHCARD 2) In what country was your father's mother born? Just tell me the number next to the country.	Code
6.	(SHOW FLASHCARD 2) In what country was your father's father born? Just tell me the number next to the country.	Code

Appendix 3 (cont.)

Section 1 - BACKGROUND INFORMATION (Continued)	
7. Before you were 18 years old, was there ever a time when your family received money from government assistance programs like welfare, food stamps, general assistance, Aid to Families with Dependent Children, or Temporary Assistance for Needy Families.	1 ☐ Yes 2 ☐ No - <i>SKIP to 9a</i>
8. About how many years altogether between the time you were born and the time you turned 18 did your family receive money from a government assistance program?	_____ Years
9a. Since your LAST interview in (MO/YR), have you had any of the following changes in your marital status, for example, getting married, becoming widowed, getting divorced or legally separated or did you start or stop living with someone as if married?	1 ☐ Yes 2 ☐ No - <i>SKIP to Check Item 1.2</i>
b. How old were you when this change took place? If you experienced more than one change in marital status since your last interview, please tell me your age at the FIRST of these changes.	_____ Age
c. What change took place at that time – did you get married, become widowed, divorced or separated, or did you start or stop living with someone as if married?	1 ☐ Married 2 ☐ Widowed 3 ☐ Divorced 4 ☐ Separated 5 ☐ Started living with someone as if married 6 ☐ Stopped living with someone as if married
CHECK ITEM 1.2 Does MARCHECK = 1? (Was marital status imputed at Wave 1?)	1 ☐ Yes - <i>SKIP to 10a</i> 2 ☐ No - <i>SKIP to 11a</i>
(SHOW FLASHCARD 3)	
10a. What is your current marital status?	1 ☐ Married 2 ☐ Living with someone as if married 3 ☐ Widowed 4 ☐ Divorced 5 ☐ Separated 6 ☐ Never married - <i>SKIP to 11a</i>
b. How many times have you been married in your life? Do not count times when you were living with someone as if married.	_____ Number
CHECK ITEM 1.3 Is number marked in 10a = 1? (Is respondent currently married?)	1 ☐ Yes 2 ☐ No - <i>SKIP to 11a</i>
10c. How old were you when you and your (CURRENT) spouse got married?	_____ Age
11a. Since your LAST interview in (MO/YR), have you (had any live births/ fathered any live born children) or had any adopted, foster or stepchildren come to live with you?	1 ☐ Yes 2 ☐ No - <i>SKIP to 12a</i>
b. How many children have you EVER had, including those who are not now living? Please include any adopted, foster or stepchildren who EVER lived with you.	_____ Number
c. How old were you when your (LAST) child was born or when your (LAST) adopted, foster or stepchild came to live with you? (Report latest age if experienced more than one of these events.)	_____ Age
(SHOW FLASHCARD 4)	
12a. Which of these statements describe your present situation? <i>Mark (X) all that apply.</i>	1 ☐ Working full time, that is, 35 hours or more per week 2 ☐ Working part time, that is, less than 35 hours per week 3 ☐ Have a job or business, but not at work because of temporary illness or injury 4 ☐ Have a job or business, but on paid vacation 5 ☐ Have a job or business, but absent from work without pay 6 ☐ Unemployed or laid off and looking for work 7 ☐ Unemployed or laid off and not looking for work 8 ☐ Unemployed and permanently disabled 9 ☐ Retired 10 ☐ In school, full time 11 ☐ In school, part time 12 ☐ Currently on summer break/holiday from school 13 ☐ Full-time homemaker 14 ☐ Something else

Appendix 3 (cont.)

Section 1 – BACKGROUND INFORMATION (Continued)	
12b. Were you a full- or part-time student at any time in the 2003-2004 school year? (If necessary, ask: Was that full-time or part-time?)	1 ☐ Yes, full-time student 2 ☐ Yes, part-time student 3 ☐ No - SKIP to 14a
(SHOW FLASHCARD 5) 13a. Where did you live MOST OF THE TIME when you were going to school in the 2003-2004 school year? (MARK ONE AND ONLY ONE)	1 ☐ In parent's or relative's home 2 ☐ In dormitory or residence hall 3 ☐ In house or apartment on campus 4 ☐ In fraternity or sorority house 5 ☐ In house, apartment or room off campus 6 ☐ Other
(SHOW FLASHCARD 6) b. What was your grade level during the 2003-2004 school year?	1 ☐ High school - any grade level 2 ☐ Enrolled in graduate equivalency degree (GED) program 3 ☐ Enrolled in technical school, like secretarial, medical technician, plumbing, computer, electrical, or beauty school, not including high school technical programs 4 ☐ 1st year undergraduate/never attended college before 5 ☐ 1st year undergraduate/attended college before 6 ☐ 2nd year undergraduate/sophomore 7 ☐ 3rd year undergraduate/junior 8 ☐ 4th year undergraduate/senior 9 ☐ 5th year/other undergraduate 10 ☐ 1st year graduate/professional 11 ☐ 2nd year graduate/professional 12 ☐ 3rd year graduate/professional or beyond 13 ☐ Other
(SHOW FLASHCARD 7) c. Which of the following best describes your grade point average during the 2003-2004 school year?	1 ☐ A 2 ☐ A- 3 ☐ B+ 4 ☐ B 5 ☐ B- 6 ☐ C+ 7 ☐ C 8 ☐ C- 9 ☐ D+ 10 ☐ D 11 ☐ D- 12 ☐ F 13 ☐ No grades given 14 ☐ Incomplete 15 ☐ Dropped out
14a. Are you or were you a full- or part-time student at any time in the 2004-2005 school year? (If necessary, ask: Was that full-time or part-time?)	1 ☐ Yes, full-time student 2 ☐ Yes, part-time student 3 ☐ No - SKIP to Check Item 1.5
(SHOW FLASHCARD 5) b. Where do you or did you live MOST OF THE TIME when you were going to school in the 2004-2005 school year? (MARK ONE AND ONLY ONE)	1 ☐ In parent's or relative's home 2 ☐ In dormitory or residence hall 3 ☐ In house or apartment on campus 4 ☐ In fraternity or sorority house 5 ☐ In house, apartment or room off campus 6 ☐ Other
(SHOW FLASHCARD 6) c. What is or was your grade level during the 2004-2005 school year?	1 ☐ High school - any grade level 2 ☐ Enrolled in graduate equivalency degree (GED) program 3 ☐ Enrolled in technical school, like secretarial, medical technician, plumbing, computer, electrical, or beauty school, not including high school technical programs 4 ☐ 1st year undergraduate/never attended college before 5 ☐ 1 st year undergraduate/attended college before 6 ☐ 2 nd year undergraduate/sophomore 7 ☐ 3 rd year undergraduate/junior 8 ☐ 4 th year undergraduate/senior 9 ☐ 5 th year/other undergraduate 10 ☐ 1 st year graduate/professional 11 ☐ 2 nd year graduate/professional 12 ☐ 3 rd year graduate/professional or beyond 13 ☐ Other

Appendix 3 (cont.)

Section 1 – BACKGROUND INFORMATION (Continued)	
(SHOW FLASHCARD 7) 14d. Which of the following best describes your grade point average during the 2004-2005 school year?	1 ☐ A 2 ☐ A- 3 ☐ B+ 4 ☐ B 5 ☐ B- 6 ☐ C+ 7 ☐ C 8 ☐ C- 9 ☐ D+ 10 ☐ D 11 ☐ D- 12 ☐ F 13 ☐ No grades given 14 ☐ Incomplete 15 ☐ Dropped out
CHECK ITEM 1.5 Does EDCHECK = 1 OR is 12b OR 14a = 1 OR 2? (Was educational attainment imputed at Wave 1?)	1 ☐ Yes 2 ☐ No – <i>SKIP to Check Item 1.6</i>
(SHOW FLASHCARD 8) 15a. What is the highest grade or year of school that you completed? (MARK ONE AND ONLY ONE)	1 ☐ No formal schooling - <i>SKIP to Check Item 1.6</i> 2 ☐ Completed grade K, 1 or 2 3 ☐ Completed grade 3 or 4 4 ☐ Completed grade 5 or 6 5 ☐ Completed grade 7 6 ☐ Completed grade 8 7 ☐ Some high school (grades 9-11) 8 ☐ Completed high school 9 ☐ Graduate equivalency degree (GED) 10 ☐ Some college (no degree) 11 ☐ Completed associate or other technical 2 year degree 12 ☐ Completed college (Bachelor's degree) 13 ☐ Some graduate or professional studies (completed Bachelor's degree but not graduate degree) 14 ☐ Completed Master's degree or equivalent or higher graduate degree
b. How old were you at that time?	_____ Age
CHECK ITEM 1.6 Is "1", "2", "3", "4", "5" checked in 12a?	1 ☐ Yes – <i>SKIP to 16b</i> 2 ☐ No
16a. In the last 12 months, did you work at any time at a JOB OR BUSINESS, either full-time or part-time, even for only a few days? Include unpaid work in a family business or farm.	1 ☐ Yes 2 ☐ No
b. Since your LAST interview, but BEFORE 12 months ago did you work at a JOB OR BUSINESS, either full-time or part-time, including unpaid work in a family business or farm?	1 ☐ Yes 2 ☐ No – <i>SKIP to Check Item 1.6B</i>
CHECK ITEM 1.6A Is "2" OR D OR R coded in 16a?	1 ☐ Yes 2 ☐ No – <i>SKIP to Check Item 1.6B</i>
16c. How old were you when you last worked for pay or as an unpaid worker in a family business or farm, either full-time or part-time?	_____ Age
CHECK ITEM 1.6B Is "1" coded in 16a OR 16b OR is "1", "2", "3", "4", OR "5" checked in 12a?	1 ☐ Yes 2 ☐ No – <i>SKIP to 18a</i>
CHECK ITEM 1.6C Is WORKCHECK= 1? (Was age at 1st full-time job imputed at Wave 1?)	1 ☐ Yes 2 ☐ No – <i>SKIP to 17a</i>
16d. How old were you when you started your FIRST full-time job, that is, when you worked at least 30 hours per week for pay or without pay including in a family business or farm?	_____ Age OR 0 ☐ Never worked 30 hours/week

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