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**THE IMPACT OF PERSISTENT SADNESS AND BULLYING VICTIMIZATION
ON SUICIDAL THOUGHTS AND BEHAVIORS AMONG HETEROSEXUAL-
IDENTIFIED SEXUAL MINORITY AND LGBTQ ADOLESCENTS**

BY

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DISSERTATION

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For Buddy.

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ABSTRACT

Participants who identify as heterosexual comprise a proportion of those who report same-sex contact that is as large as or larger than their gay, lesbian, bisexual, and questioning peers. However, little research has explored psychosocial outcomes among heterosexuals with same- or both-sex contact, referred to herein as heterosexual-identified sexual minority (HSM) participants. This study examined the impact of persistent sadness, bullying victimization, and sexual orientation on the probability of suicidal thoughts and behaviors (STBs) in a sample of heterosexual- and LGBQ-identified adolescents. Results showed that the probability the probability of STBs was higher for bisexual and questioning participants compared with their heterosexual peers even when considering bullying victimization and persistent sadness simultaneously. Notable sex differences in were found in outcomes for HSM participants. The results are discussed in terms of the effects of stigma and male gender role norms on outcomes for sexual minority males.

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Introduction

Physical and mental health inequities between heterosexual and non-heterosexual people are well-documented, but less is known about disparities between subgroups of the sexual minority population. In 2010, the US Department of Health and Human Services (HHS) released their goals for Healthy People 2020, including for the first time objectives for reducing health disparities experienced by lesbian, gay, bisexual, and transgender (LGBT) individuals (HHS, 2010). In line with recommendations from the US Institute of Medicine (IOM; 2011), HHS set the goal of increasing the number of population-based data systems that collect standardized data on LGBT persons used to monitor Healthy People 2020 objectives. The Youth Risk Behavior Surveillance System (YRBSS), which monitors health risk behaviors in adolescents, added items assessing sex of sexual contacts and sexual identity to the national questionnaire in 2015 (Kann, Olsen, et al., 2016; HHS, 2015). In 2016, the National Institute of Minority Health and Health Disparities at the HHS formally designated sexual and gender minorities as a health disparity population for research funding (Pérez-Stable, 2016).

Sexual minorities include persons who identify as lesbian, gay, bisexual (LGB), and other non-heterosexual identities, persons who report same-sex or both-sex sexual contact, and people who endorse attraction to same- or both-sex persons. Individuals under the sexual minority umbrella are stigmatized and are more likely to experience ostracism, verbal abuse, and physical violence than their sexual majority peers (Hatzenbuehler & Pachankis, 2016; Herek, Gillis, & Cogan, 2009; Meyer, 2003; Rosario, Schrimshaw, Hunter, & Gwadz, 2002; Russell & Joyner, 2001). These stressors contribute to diminished mental health through the development of maladaptive coping

strategies such as substance abuse, rumination, and increased vigilance to discrimination, which increase risk for outcomes including psychological distress and suicide attempts (Hatzenbuehler, 2009; Marshal et al., 2011; Meyer, 2003, 2007).

Sexual orientation is a multidimensional construct that encompasses personal desires and interpersonal interactions regarding erotic preference (Savin-Williams & Ream, 2007). In their 2011 report, the IOM defined sexual orientation as

“...an enduring pattern of or disposition to experience sexual or romantic desires for, and relationships with, people of one’s same sex, the other sex, or both sexes” (IOM, 2011 p. 27).

At a minimum, sexual orientation includes the dimensions of sexual attraction, sexual identity, and sexual behavior (Saewyc, Bauer, Skay, Bearinger, & Resnick, 2004). Sexual attraction refers to the direction of sexual and/or romantic interests, as oriented by the gender/sex of the target (IOM, 2011). Sexual identity develops from a combination of one’s conception of themselves based on patterns of sexual and romantic attractions and a sense of membership in a social group based on a shared sexual orientation (IOM, 2011). The IOM (2011) recommends assessing sexual behavior at multiple time points to capture patterns of behavior.

Most studies assess sexual minority status using measures that attempt to address only one or two of the components of sexual orientation (Badgett, 2009; Ridolfo, Miller, & Maitland, 2012; Savin-Williams & Ream, 2006; Wolff, Wells, Ventura-DiPersia, Renson, & Grov, 2017). However, the percentage of people endorsing an indicator of sexual minority status varies greatly depending on the which dimension of sexual orientation is assessed. For example, Savin-Williams (2006) demonstrated that

prevalence estimates of sexual minorities ranged from 1% to 21% of the population depending on the dimension of sexual orientation assessed and the particular sample evaluated. Priebe and Svedin (2013) showed that prevalence estimates of sexual minorities ranged from 4.3% for sexual behavior (females 5.6%, males 2.9%) to 29.4% for emotional/sexual attraction (females 39.5%, males 17.7%) in a sample of Swedish high school seniors.

LGB persons are often collapsed into one group in analyses to preserve statistical power due to low population prevalence and small subgroup sample sizes. However, use of a single LGB group obscures within-group heterogeneity necessary for addressing health disparities among subgroups of sexual minorities (Bauer, 2014; Blosnich, Nasuti, Mays, & Cochran, 2016; Matthews, Blosnich, Farmer, & Adams, 2014). For example, Matthews and colleagues (Matthews et al., 2014) demonstrated the effect of manipulating the operational definition of sexual orientation on the relationships between sexual minority identity or behavior and three major health disparities: smoking, methamphetamine use, and making a plan to attempt suicide. By disaggregating non-heterosexual contact into same-sex-only and both-sex contact Matthews and colleagues (Matthews et al., 2014) found that risks originally attributed to all sexual minorities were driven primarily by those reporting both-sex contact. Other studies have also presented evidence of heterogeneity among lesbian, gay, bisexual, and questioning (LGBQ) participants when groups were analyzed separately (Kosciw, Greytak, Giga, Villenas, & Danischewski, 2016; Kosciw, Greytak, Zongrone, Clark, & Truong, 2018; Poteat, Aragon, Espelage, & Koenig, 2009; Riskind, Tornello, Younger, & Patterson, 2014; Zhao, Montoro, Igartua, & Thombs, 2010).

Studies that collect data on more than one dimension of sexual orientation regularly yield evidence of incongruence among those dimensions (K. L. Brewster & Tillman, 2012; Copen, Chandra, & Febo-Vazquez, 2016; Igartua, Thombs, Burgos, & Montoro, 2009; Lhomond, Saurel-Cubizolles, & Michaels, 2014; Pathela et al., 2006; M. W. Ross, Essien, Williams, Fernández-Esquer, & Ferna, 2003). For example, in a 2002 study of young adults in the Southeastern US, 37% of gay-identified and 52% of lesbian-identified participants reported sexual contact with both males and females (Maguen, Floyd, Bakeman, & Armistead, 2002). An analysis of the 2013 Youth Risk Behavior Survey (YRBS) in New York City found that 20% of lesbian-identified girls reported sexual contact with boys and 5% of heterosexual-identified girls reported sexual contact with girls (Coble, Silver, & Chhabra, 2017).

Although only a small percentage of the population reports same-sex behavior, a surprisingly large percentage of those participants identify as heterosexual (Hoy & London, 2018; Vrangalova & Savin-Williams, 2010). For example, an analysis of pooled 2005-2007 YRBS data from several states and urban districts found that most participants who engaged in same-sex (64.5%) and both-sex (32%) behavior identified as heterosexual (Mustanski et al., 2014). Silva and Whaley (2018) analyzed 2011-2013 National Survey of Family Growth (NSFG) data for men aged 15 to 44 and estimated that 7.4% of men are attracted to men and/or have had two or more male sex partners, of whom 53.4% identified as heterosexual. Hoy and London (2018) analyzed 2011-2015 NSFG data and found that 65.2% of women and 43.4% of men who reported same-sex contact identified as heterosexual.

Estimating the prevalence of sexual minority individuals and identifying persons who may be at increased risk for experiencing health disparities but do not disclose an LGB identity has been an ongoing challenge for researchers in psychology and public health. Population-based surveys yield small percentages of sexual minority participants, but Savin-Williams (2005) warns that participants recruited from LGB centers may differ from their peers in ways that can obscure meaningful differences between students who openly identify as LGB and those who do not. A 2016 systematic review and meta-analysis of sexual minority suicide risk concluded that after combining population-based studies and those that sampled from LGB communities, 33% of the between-study variability was attributable to the sample type (Hottes, Bogaert, Rhodes, Brennan, & Gesink, 2016).

Most research with individuals who identify as heterosexual but report same-sex contact has focused on HIV transmission (Dodge, Jeffries, & Sandfort, 2008; Lapinski, Braz, & Maloney, 2010; Young & Meyer, 2005). The term men who have sex with men (MSM) developed in epidemiology to more effectively estimate the incidence of HIV infections and identify high-risk populations to target for intervention, regardless of their self-reported identity (Young & Meyer, 2005). Although useful for shifting the emphasis of HIV transmission from stigmatized identities to high-risk sexual practices, MSM and the related terms WSW (women who have sex with women) and MSMW (men who have sex with men and women) miss meaningful differences in the social experiences of those who identify as LGB and those who do not (Young & Meyer, 2005).

Krueger and Upchurch (2019) suggest that heterosexual-identified sexual minorities (HSM)—those who identify as heterosexual and report same-sex behavior or

attraction—represent a large and important subgroup of sexual minority persons with differential risk factors compared with their LGB-identified peers. Research into psychosocial outcomes in this population is emerging but has primarily focused on adult samples (Caplan, 2017; Gattis, Sacco, & Cunningham-Williams, 2012; Krueger & Upchurch, 2019; Nield, Magnusson, Brooks, Chapman, & Lapane, 2015; Przedworski et al., 2015). The addition of sexual identity and sexual contacts items to the 2015 national YRBS created a new opportunity to study dual dimensions of sexual orientation in adolescents.

Sexual orientation has widespread influences on the structure of a person's life, affecting an individual's public and private behavior as well as shaping the behavior of other people and institutions (Baunach & Burgess, 2013; Diamond, 2003; Diamond & Butterworth, 2008). Sexual orientation is particularly critical to self-concept in adolescence and impacts adolescent mental health (Lourie & Needham, 2017; Rostosky, Dekhtyar, Cupp, & Anderman, 2008; Savin-Williams & Diamond, 2000). Persons who identify as LGB or another non-heterosexual identity face stigma and discrimination on the basis of their sexual identity, but also have the opportunity to find support in a community of similar others (Baunach & Burgess, 2013; Corrigan & Matthews, 2003; Frable, Platt, & Hoey, 1998; Gray, Mendelsohn, & Omoto, 2015; Quinn et al., 2014).

HSM females and males avoid the stigma associated with an LGB identity by concealing their sexual contacts but may struggle with internalized homophobia and cognitive dissonance and are unable to access support in the LGB community (Caplan, 2017; Frable et al., 1998; Lindley, Walsemann, & Carter, 2012; Pachankis, 2007).

However, some heterosexuals view same-sex sexual experiences as compatible with their

heterosexual identity (Carrillo & Hoffman, 2018; Silva, 2017b; Ward, 2015). An additional possibility is that sexual identity labels are used with more flexibility than current survey research methods can effectively capture (Carrillo & Hoffman, 2018; Eliason, Radix, McElroy, Garbers, & Haynes, 2016; Wolff et al., 2017). Although exploring the internal processes that affect sexual minority identification is beyond the scope of the current study, later sections discuss sexual identity development and the forces that influence the adoption of an identity label in adolescents in order to understand more about HSM adolescents before understanding their risk for suicidality relative to their heterosexual and LGBTQ-identified peers.

Before proceeding, it is necessary to note a few things: first, gender minorities, including transgender, nonbinary, and genderless individuals, are a distinct population deserving of studies that focus on their unique health challenges. Only ten states in the 2017 YRBS cycle included a question asking if students identify as transgender, yielding a sample size too small for meaningful analysis in this context. Second, although gender is increasingly recognized as the appropriate term to use when describing sexual and/or romantic attraction, most of the studies reviewed herein assessed participant sex and sex of sexual contacts, and that terminology is used throughout. Third, there is no “incorrect” for an individual to align their sexual identity and sexual contacts. Exploring outcomes among persons who identify as heterosexual but report sexual behavior that is inconsistent with traditional understandings of heterosexuality is not meant as a judgment, nor is it meant to imply assumptions about internalized homonegativity, repression, or denial. To that end, Krueger and Upchurch (2019) note that the term discordant heterosexual may be perceived as derogatory and recommend the use of

heterosexual-identified sexual minority (HSM) to describe persons who maintain a heterosexual identity and report same-sex attractions or behaviors. When referencing specific studies, the authors' terminology is used. Finally, in this dissertation LGB is used when describing studies that included lesbian, gay, and bisexual participants, LGBQ refers to inclusion of lesbian, gay, bisexual, and questioning participants, and LGB(Q) is used when the referenced study did not include questioning participants, but the general finding is applicable to lesbian, gay, bisexual, and questioning persons.

From here, the introduction proceeds with an overview of the history of homosexuality as a mental disorder in the US before continuing to a consideration of the types of stigma that specifically target sexual minorities and how these sources of stigma come to affect health outcomes. The introduction then touches on milestones in adolescent sexual identity development, followed by sexual orientation discordance and a more focused discussion of HSM participants. Finally, the introduction concludes with the primary topic of this study: suicidal thoughts and behaviors in sexual minority adolescents.

Medicalizing Sexual Orientation

Medicalization is the social phenomenon whereby non-medical problems become defined as disordered and addressed with medical treatment; before medicalization, homosexual behavior in the West was considered to be a moral failure and was punishable as a crime (Conrad & Angell, 2004). In modern medical history, there have been three primary theories about homosexuality: pathology, immaturity, and normal variation, with pathological perspectives causing the most considerable harm to sexual minority persons (Drescher, 2015a). In the last quarter of the 19th century, the study of

human sexuality shifted from a focus on immoral acts, which were considered to be temporary deviations from the norm, to an innate pathological condition that drove patterns of deviant behavior (Oosterhuis, 2012).

The roots of the medical model are in an 1868 political treatise where Károly Mária Kertbeny coined the terms heterosexual and homosexual in a plea to the Prussian government to decriminalize homosexual behavior, arguing that sexual orientation is inborn and unchangeable (Drescher, 2015a). In 1886, German psychiatrist Richard von Krafft-Ebing coopted the terms heterosexuality and homosexuality in his book *Psychopathia Sexualis*, where he decried non-procreative sexual behaviors as pathological and suggested that homosexuality was a congenital disease (Conrad & Angell, 2004; Drescher, 2015a). Freud refuted claims that homosexuality was a congenital disease, arguing instead that people are innately bisexual, that homosexuality is an immature outcome but not an illness, and that homosexuality could not be a degenerative condition because it occurred in the unimpaired (Drescher, 2015a).

Breaking from Freud, a vocal group of psychoanalysts in the 1940s promoted the view that heterosexuality is the correct developmental outcome and that homosexuality is a phobic response to members of the other sex (Conrad & Angell, 2004; Drescher, 2015a; Herek, 2010). Medicalizing sexual orientation in this way legitimized anti-homosexual religious moral views and laws that criminalized same-sex contact (Herek, 2010; Silverstein, 2009). Sexual minorities suffered considerably because departures from heterosexuality were considered to be pathological (Herek, 2010).

In 1942, military psychiatrists warned that “psychopathic personality disorders” made homosexuals unfit to serve in the US Armed Forces (Naval Institute Staff, 2018).

The military strictly enforced its anti-gay policies and discharged gay men and lesbians from the military as “sexual psychopaths” (Bérubé 1990, cited in Herek, 2010). States passed sexual psychopath laws that placed homosexuals in the same category as rapists and other sex offenders, thereby barring them from employment, preventing professional licensure, and permitting indefinite institutional confinement until they were “cured” (Freedman, 2006; Herek, 2010). When attempts to change their sexual orientation through psychotherapy failed, many homosexuals turned to more drastic methods including aversive conditioning, hormone therapy, and castration; failed attempts to change the direction of sexual desires often resulted in suicide (Herek, 2010).

After World War II, gays and lesbians migrated to urban centers where anonymity and population density made the pursuit of same-sex relationships more accessible, but homosexuals risked arrest in public and at private gatherings when police raided suspected homosexual hangouts (Adkins, 2016; Herek, 2010). The “Lavender Scare” in the US government from the 1940s to 1960s saw the investigation and firing of thousands of suspected homosexual employees from government service (Adkins, 2016). In 1950, US Senator Joseph McCarthy claimed that homosexuals were more susceptible to Communist recruitment—a dominating fear at the time—and thus their employment in the US State Department was a risk to national security (Adkins, 2016). Political rhetoric linked “Communists and queers” based on beliefs that both groups were godless, psychologically disturbed, and engaged in recruitment efforts (Adkins, 2016).

In 1948, the World Health Organization (WHO) included homosexuality in the International Classification of Diseases (ICD) 6th edition, classifying it as a sexual deviation reflective of an underlying personality disorder (Cochran et al., 2014).

Homosexuality was classified as a “sociopathic personality disturbance” in the first edition of the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders* (DSM) in 1952 (American Psychiatric Association, 1952; Conrad & Angell, 2004; Drescher, 2015a, 2015b; Herek, 2010). Inclusion in these authoritative manuals further legitimized the mistreatment of gays and lesbians (Silverstein, 2009).

Despite the stigma associated with studying or advocating for gays and lesbians, a few researchers challenged the illness model. Alfred Kinsey and his team published their books on sexual behavior in the human male in 1948 and female in 1953, shocking readers with reports that over one third of their male respondents engaged in same-sex sexual behavior (Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953). Psychologist Dr. Evelyn Hooker argued that the use of participants from psychological treatment facilities had created a false correlation between homosexuality and psychopathology that was the basis for classifying homosexuality as a mental illness (Hooker, 1957). To debunk that false correlation, she recruited a community-based sample of 30 healthy homosexual men and matched them on IQ, age, and education with a sample of 30 healthy heterosexual men, ensuring that no one in her sample had a history of psychiatric illness or disciplinary confinement (Hooker, 1957, 1993). Meeting in secret to protect the anonymity of her participants, she built psychological profiles of the 60 men in her sample using the tools considered the best at the time for detecting homosexuality and assessing psychological adjustment (Hooker, 1957, 1993). Blinded expert raters could not differentiate between the homosexual and heterosexual participants and rated most of the psychological profiles as average or better-than-average psychological adjustment, commenting that “the records which they thought to

be homosexual were unlike the ones they were familiar with in the clinic” (Hooker, 1957, p. 63). Hooker presented her results at the 1956 meeting of the American Psychological Association where she was encouraged by the editors of the *Journal of Projective Techniques* to publish her work, which she did in 1957 despite her desire to build a large enough body of evidence that her results would be incontrovertible (Theerman, 2015).

Notwithstanding evidence that homosexual behavior was relatively common and that homosexuality did not indicate the presence of overt or latent psychopathology, the illness model persisted (Herek, 2010). The common perception at the time was that homosexuals were flawed, immoral, and dangerous, and that same-sex behavior was “a sin, a crime, and a disease” (Herek, 2010; Hooker, 1993, p. 453). In 1967, despite McCarthy-era moralistic views and the Lavender Scare, Hooker was appointed to chair the National Institute of Mental Health’s Task Force on Homosexuality (Theerman, 2015), which stated in its 1972 report that

“Homosexuality represents a major problem for our society largely because of the amount of injustice and suffering entailed in it, not only for the homosexual but also for those concerned about him.” (Livingood, 1972, p. 2).

A study using an objective measure of neuroticism in large numbers of gay and heterosexual men and women replicated Hooker’s results in 1972 (Hooker, 1993; Siegelman, 1972b, 1972a). Bolstered by this replication, Hooker’s groundbreaking work would continue to lay the foundation on which gay rights would be built.

Most states had inherited broadly defined, often vague, British Colonial sodomy laws that applied to a range of non-procreative sexual behaviors but were primarily used to justify the differential treatment of sexual minorities in employment, child custody,

and immigration (Freedman, 2006; Herek, 2004; Leslie, 2000). In 1961, Illinois was the first state to adopt the recommendations of the Model Penal Code, legalizing consensual same-sex contact but setting laws against solicitation of sodomy (Kane, 2003). It was nearly a decade before other states decriminalized or legalized same-sex sexual contact (Kane, 2003). Police in large cities continued to raid gay bars, but on June 27, 1969, patrons at the Stonewall Inn, a dive bar in New York City's East Village, fought back, starting a riot that signaled a massive shift in the movement for gay rights (Armstrong & Crago, 2006; Conrad & Angell, 2004).

In the early 1970s, gay and lesbian activists conducted protests at psychiatric and psychological professional meetings to demand that the diagnostic assumptions in the DSM be subjected to scientific scrutiny and debate (Conrad & Angell, 2004; Herek, 2010). In February 1973, the American Psychiatric Association's Nomenclature Committee met with an ad hoc committee of gay activists to discuss removal of homosexuality from the list of mental disorders in the DSM (Bayer, 1981; Drescher, 2015a; Silverstein, 2009). In a 2009 letter to the editor of the Archives of Sexual Behavior, a member of that ad hoc committee discussed his hope at the time of the meeting that removal of homosexuality from the DSM would have profound positive impacts on the lives of gay people, including the elimination of sodomy laws and "moral turpitude" clauses in state regulations, the establishment of civil rights protection for gay people, and the end to conversion therapy and other "cures" for homosexuality (Silverstein, 2009, p. 161).

In December 1973, the Board of Directors of the American Psychiatric Association accepted a resolution to declassify homosexuality *per se* as a diagnostic

category, a move that was endorsed by the American Psychological Association (Conger, 1975; Lyons, 1973; Spitzer, 1973; Stoller et al., 1973). A compromise made within the Nomenclature Committee yielded the recommendation that *Sexual Orientation Disturbance* be included in the sixth printing of the DSM-II in 1974 to allow for diagnosis of persons with same-sex attractions who found those attractions distressing and wanted to change (Silverstein, 2009; Spitzer, 1981).

In 1975, the American Psychological Association released a policy statement declaring its adoption of the resolution that homosexuality does not imply impairment and that all mental health professionals should be leaders in removing the stigma of mental illness associated with homosexual orientations and an additional resolution regarding the civil and legal rights of homosexual persons (Conger, 1975). In 1980, Sexual Orientation Disturbance was replaced with *Ego-Dystonic Homosexuality* in the DSM-III, which was then replaced in 1987's publication of the DSM-III-R by *Sexual Disorder Not Otherwise Specified* which could technically apply to any sexual orientation (American Psychiatric Association, 1980, 1987; Silverstein, 2009; Smith, 1980).

Homophobic attitudes in the US rose significantly in the mid-1980s due to the AIDS epidemic, the rise of fundamentalist Christianity, and the politicization of moral values within the Republican Party (Herek, 2010, 2011; McCormack & Anderson, 2014). In 1986, the US Supreme Court upheld the right of states to have sodomy laws, but reversed that decision in 2003 with *Lawrence v Texas*, ruling that intimate consensual sexual conduct is protected by the liberty rights implicit in the due process clause of the US Constitution, thereby invalidating sodomy laws in the 14 states that still had them (Kane, 2003). In 1992, the WHO removed homosexuality from its list of mental disorders

in the ICD-10 (Cochran et al., 2014; World Health Organization, 1992). In 1993, the “Don’t Ask Don’t Tell” policy was instituted by the US Department of Defense, allowing gays and lesbians to serve in the military but prohibiting them from disclosing their sexual orientation, speaking about homosexual relationships, or engaging in same-sex conduct while enlisted in the US military (Department of Defense, 1993). Don’t Ask Don’t Tell was repealed in 2011, giving LGB US military service members the right to serve openly (Naval Institute Staff, 2018). In 2015, same-sex couples gained the right to legally-recognized marriage in the US (Liptak, 2015; Supreme Court of the United States [SCOTUS], 2015).

Despite gains in legally-recognized rights and shifting public opinion about gays and lesbians (Gallup, 2016; Pew Research Center, 2017), LGBQ persons continue to contend with the consequences of stigma. Evidence of the continued presence and effects of stigma are apparent in reports from the Gay, Lesbian, Straight Education Network’s (GLSEN) National School Climate Survey, which has been conducted biennially since 1999 to assess indicators of negative school climate and their effects on sexual and gender minority youth aged 13-21 years across the US (GLSEN, 2019). GLSEN reported in 2018 that improvements to school climate slowed, stopped, or reversed in the 2017 survey cycle (Tuttle, 2018). From 2015 to 2017, physical harassment based on sexual orientation declined but verbal and physical harassment based on gender expression increased (Kosciw et al., 2018). In 2017, 87.3% of respondents reported experiencing harassment or physical assault based on their membership in a protected class and 70% of LGBQ students and their transgender peers experienced sexual orientation-based verbal harassment at school (Kosciw et al., 2018).

The illness model persisted in large part due to the false correlation Evelyn Hooker sought to refute. Through circular logic, homosexuals were assumed to be mentally ill because of familial patterns deemed by psychoanalysts to be problematic, and the proof that these patterns were pathological was that they had been commonly observed among homosexuals (Gonsiorek, 1991; Herek, 2010). The legacy of pathologizing homosexuality continues to impact sexual minorities today, with parties for and against gay rights turning to scientific studies to validate their claims (Herek, 2010). The next section discusses how that history of marginalization and oppression continues to affect sexual minorities through unique types of stigma directed towards non-heterosexual people and behaviors.

Sexual Stigma, Heterosexism, and Sexual Prejudice

In 1972, psychologist George Weinberg shifted the focus away from assumed defects in gays and lesbians to the problem of anti-gay prejudice and stigma with his introduction of the term *homophobia* (Herek, 2004). Link and Phelan (2001) define stigma as the co-occurrence of labeling, stereotyping, separation, status loss, and discrimination. Herek (2004, p. 14) discusses five points in the social psychological literature that are relevant to anti-gay stigma: 1) stigma refers to an enduring attribute that an individual has; 2) the attribute is not inherently meaningful but gains meaning through social interaction; 3) the meaning attached to the attribute by the dominant group involves negative valuation and it is understood by others that those with the stigma deserve shame, social ostracism, and condemnation; 4) the presence of a stigmatized attribute renders everything else about the individual secondary or invisible; 5) a difference in power separates the stigmatized and non-stigmatized.

Herek (2004) suggested three terms to describe the stigma that specifically affects sexual minorities: sexual stigma, heterosexism, and sexual prejudice. *Sexual stigma* refers to the negative regard, inferior status, and relative powerlessness that society collectively accords to non-heterosexual behaviors, identities, relationships, and communities (Herek, 2009). *Heterosexism* describes the ideological systems that support sexual stigma through “beliefs about gender, morality, and danger by which sexual minorities are defined as deviant, sinful, and threatening” (Herek, 2004, p. 15). Heterosexism assumes that all people are born heterosexual and different-sex relationships are considered to be normal, natural, and unproblematic, thereby rendering LGB persons invisible or abnormal (Herek, 2004, 2007, 2009). Differences between the majority group and stigmatized minorities are assumed to be deficits or problems inherent in the stigmatized population, ignoring the influence of societal structures and cultural attitudes (Herek, 2010). Heterosexism gives rise to ostracism, harassment, discrimination, and violence towards sexual minorities (Herek, 2007, 2009). *Sexual prejudice* is the individual-level aspect of oppressive stigma and refers to negative attitudes based on someone’s actual or perceived sexual orientation and the tendency to reflexively respond to non-heterosexual persons based on their outgroup membership (Herek, 2007, 2009; Herek & McLemore, 2013).

Bisexual persons and others with non-exclusive sexual identities face additional stigma in the forms of monosexism and biphobia (Bostwick & Hequembourg, 2013; Flanders, Dobinson, & Logie, 2017; L. E. Ross, Dobinson, & Eady, 2010). *Monosexism* is the privileging of sexual attraction to one gender/sex or the belief that people can only legitimately be heterosexual or gay/lesbian (Roberts, Horne, & Hoyt, 2015; L. E. Ross et al., 2010). *Biphobia* is sexual prejudice directed towards bisexual people due to negative

stereotypes and attitudes regarding bisexual identity; bisexuals report experiencing biphobia from heterosexual and gay/lesbian people (Flanders, Dobinson, & Logie, 2015; Israel & Mohr, 2004; Roberts et al., 2015; L. E. Ross et al., 2010). Bisexual persons encounter microaggressions and attitudes that question the existence or authenticity of bisexual people (e.g. the assumption that they are confused, dishonest, or in transition to lesbian/gay identities), attitudes that assume the sexual practices of bisexuals are deviant, that bisexuals are incapable of maintaining monogamous relationships, and related attitudes regarding beliefs that bisexual persons are disloyal, untrustworthy, or not dependable as friends or relationship partners (M. E. Brewster & Moradi, 2010; Israel & Mohr, 2004; Kaufman, Baams, & Dubas, 2017).

Sexual minorities are directly and indirectly affected by heterosexist social forces and those forces in turn affect the physical and mental health of sexual minorities. Two frameworks are dominant in the literature for understanding the mechanisms by which stigma leads to poor outcomes among sexual minorities: minority stress theory (Meyer, 2003) and the psychological mediation framework (Hatzenbuehler, 2009).

Minority Stress Theory & The Psychological Mediation Framework

Stigma is a source of both disadvantage and stress (Hatzenbuehler, Phelan, & Link, 2013). Minority Stress Theory (MST) was developed to explain how sexual stigma, heterosexism, and sexual prejudice affect the health of non-heterosexuals through exposure to unique sources of chronic stress (Meyer, 1995, 2003, 2007). These stressful experiences are unique in that

“minority stress is additive to general stressors that are experienced by all people, and therefore, stigmatized people

require an adaptation effort above that required of similar others who are not stigmatized” (Meyer, 2003, p. 676).

In the MST, adverse health outcomes among sexual minorities develop through chronic exposure to stress from relatively stable social and structural sources (Meyer, 2003). Stressors are on a continuum from distal, objective stressful events and conditions that are chronic or acute, to proximal expectations of and vigilance about these stressful events and the internalization of stigma (Meyer, 1995, 2003). Distal stressors include prejudice, discrimination, harassment, and bullying. Internal proximal stress processes are often the byproduct of distal stressors and include identity concealment, hypervigilance and anxiety about prejudice, rejection sensitivity, and internalized homophobia (Hatzenbuehler, 2009; Meyer, 2003). Stressors are interconnected and bidirectional (Meyer, 2003). For example, a negative disclosure experience may increase expectations of rejection, but concealing one’s identity in anticipation of rejection reduces the likelihood of being victimized (Meyer, 2003).

To better explain the proximal mechanisms underlying MST processes, Hatzenbuehler (2009) proposed the Psychological Mediation Framework (PMF) which suggests that stigma-related stress increases the vulnerability of sexual minorities to the same general psychological processes that affect the mental health of nonstigmatized persons. The PMF differs from MST in that it examines intra- and interpersonal psychological processes that allow stigma to “get under the skin” (Hatzenbuehler, 2009). Stigmatization requires emotion regulation strategies to managed a devalued social identity, but reliance on such strategies depletes self-control and reduces the ability to adaptively regulate emotions (Inzlicht, McKay, & Aronson, 2006). In the PMF, stigma-

related stress leads to social and interpersonal problems, general emotional dysregulation, and cognitive processes that increase risk for psychopathology; these processes then mediate the relationship between stigma and outcomes like drinking, substance abuse, and suicidality (Hatzenbuehler, 2009; Hatzenbuehler, Nolen-Hoeksema, & Dovidio, 2009). For example, emotion regulation mediated the relationship between sexual orientation and non-suicidal self-injury in a community sample of 1,800 adolescents (Fraser et al., 2018). In an online sample of bisexual adults, loneliness mediated the effects of both distal and proximal bisexual minority stressors on psychological distress and suicidality (Mereish, Katz-Wise, & Woulfe, 2017).

Distal Stressors

Distal stressors are those that stem from objective external sources, including poor social support and low socioeconomic status, but the most well-recognized sources of sexual minority stress are sexual prejudice and discrimination (Pascoe & Richman, 2009). A meta-analysis of studies published from 1992 to 2009 by Katz-Wise and Hyde (2012) found that 55% of LGB individuals experienced verbal harassment and 41% experienced discrimination.

Discrimination often takes the form of bullying in adolescence (Nansel et al., 2003). Sexual minorities are bullied or otherwise victimized based on actual or perceived sexual identity and gender non-conformity (Camodeca, Baiocco, & Posa, 2018; Patrick, Bell, Huang, Lazarakis, & Edwards, 2013; Poteat & Espelage, 2007; Tucker et al., 2016). LGB-identified adolescents experience traditional school-based bullying and electronic bullying at increased rates compared with their heterosexual peers (Ash-Houchen & Lo, 2018; Kahle, 2017). Bullying has lifelong effects: controlling for other suicide risk

factors including childhood sexual abuse and severe parental beatings in childhood, adults who recalled being bullied as children were twice as likely as other adults to report suicide attempt later in life (Meltzer, Vostanis, Ford, Bebbington, & Dennis, 2011).

Being “out” to more individuals is associated with higher rates of violence and victimization among adolescents (Baams, Grossman, & Russell, 2015; Chesir-Teran & Hughes, 2009; Kosciw et al., 2016, 2018). Disclosure of sexual identity or discovery of that identity by others can lead to experiences of stigma, discrimination, and victimization in school and community settings which can affect mental health, influence the development of maladaptive coping, and contribute to suicidal ideation and increased risk of suicide attempts (Burgess, Lee, Tran, & van Ryn, 2007; Rosario, Schrimshaw, & Hunter, 2009).

In addition to maintaining power differentials between the majority and minority group, stigma also functions as social norm enforcement (Phelan, Link, & Dovidio, 2008). Stigma by association—the discrediting of persons who are companions of stigmatized persons—may influence the social experiences of sexual minorities (A. E. R. Bos, Pryor, Reeder, & Stutterheim, 2013; Pryor, Reeder, & Monroe, 2012). Majority students might end friendships with students who disclose a minority identity as a way of avoiding personal loss of status. For example, students who reported bias-based harassment were more likely to report that they felt they had lost friends as a result of the harassment compared with those who experienced general harassment (Jones, Mitchell, Turner, & Ybarra, 2018). Sexual orientation-based bullying is also associated with social isolation (Galliher, Rostosky, & Hughes, 2004). In a study of 11th and 12th grade students

in the Southeast US, sexual minorities had less prominent social positions within their social networks compared with their heterosexual peers (Marshall et al., 2019).

Proximal Stressors

George Weinberg defined homophobia as “the dread of being in close quarters with homosexuals—and in the case of homosexuals themselves, self-loathing” (Weinberg, 1972, p. 4). Self-stigmatization is the internalization of negative perceptions of one’s stigmatized status (Hatzenbuehler et al., 2013). Internalized heterosexism (also known as internalized homophobia or internalized homonegativity) refers to the psychological consequences of accepting society’s negative views of one’s group into one’s self-concept and aversion to other members of one’s group (Herek, 2004; Puckett, Mereish, Levitt, Horne, & Hayes-Skelton, 2016).

Internalized homophobia is associated with lower acceptance of one’s sexual orientation and higher concealment motivation—the tendency to prefer and to make efforts to maintain privacy about one’s sexual orientation (Mohr & Kendra, 2011). Internalized homophobia is both a source of stress and a mediator between other stressors and mental health outcomes. For example, internalized homophobia mediates the relationship between religious identity conflict and chronic suicidal ideation for sexual minorities raised in religious contexts (Gibbs & Goldbach, 2015).

Because sexual orientation is a concealable characteristic, some sexual minorities report “role flexing” by changing their mannerisms to draw attention away from the stigmatized components of their identity (Wilson & Miller, 2002). Sexual orientation-related stigma is a motivator of sexual identity concealment and is associated with hypervigilance about rejection and social isolation (Pachankis, 2007). Internalized

homophobia mediates the relationship between identity concealment and mental health (Schrimshaw, Siegel, Downing, & Parsons, 2013).

The relationship between outness and identity concealment is complicated by the consequences of revealing one's stigmatized identity. Perceptions of prejudice moderate stigma concealment's negative association with well-being (Nouvilas-Pallejà, Silván-Ferrero, de Apodaca, & Molero, 2018). In an analysis of data from 28 countries, sexual orientation concealment mediated the association between structural stigma and life satisfaction: those who lived in countries with higher levels of structural stigma experienced a protective effect of concealment because it partly protected against discrimination and victimization (Pachankis & Bränström, 2018). Pachankis (2007) suggests that concealment, although protective at times, can lead to hypervigilance, social isolation, and fear of rejection which can lead to avoidance of entering close relationships for fear of discovery.

Perhaps surprisingly, membership in a stigmatized group may protect the self-esteem of members of that group through the development and use of strategies that buffer self-concept from discrimination and daily setbacks alike (Crocker & Major, 1989). These strategies include making ingroup social comparisons rather than comparisons with the advantaged majority outgroup, attributing personal adverse outcomes to the effects of prejudice against the ingroup, and selectively valuing dimensions on which they or their ingroup excel while selectively devaluing negative feedback or comparisons on which their ingroup fares poorly (Crocker & Major, 1989). Moderating factors for the influence of stigma on self-esteem include concealability of the stigma, time since acquisition of the stigma, acceptance or internalization of negative

attitudes towards one's group, responsibility for the stigmatizing condition, centrality of the stigma in self-concept, and solo or "token" status within a larger group (Crocker & Major, 1989).

Stigma consciousness is the degree to which members of a stigmatized group expect to be treated in accordance with stereotypes about their group (Pinel, 1999). Stigma consciousness can increase well-being among gay and lesbian adults through increased ingroup identification and engagement in collective action (Nouvilas-Pallejà et al., 2018). Greater anticipated stigma, identity salience, and levels of outness about one's stigma are unique predictors of psychological distress across stigmatized groups (Quinn et al., 2014).

Multiple Minority Status and Intersectionality

Black feminist, legal scholar, and activist Kimberlé Crenshaw coined the term intersectionality to describe the necessity of considering race and gender simultaneously to understand the problems faced by minorities, and particularly Women of Color (Crenshaw, 1989, 1991). Intersectionality approaches the understanding of health disparities at the points where two social categories join such as considering the category "Black woman" in addition to "Black" and "woman" (Crenshaw, 1989, 1991).

Bowleg (2012, p. 1268) explains that "social categories (e.g., race, SES, gender, sexual orientation) are not independent and unidimensional but rather multiple, interdependent, and mutually constitutive." Intersectionality highlights the interaction of an individual's multiple identities and proposes that numerous social categories (e.g., race/ethnicity, gender, sexual orientation, socioeconomic status) intersect at the individual level and reflect interlocking systems of privilege and oppression at the macro

level (e.g., racism, sexism, heterosexism; Bowleg, 2012). Increasingly, scholars from within and without psychology have called for the incorporation of intersectionality to holistically attend to the nuanced ways in which minority stress impacts well-being for members of multiple marginalized groups (Bowleg, 2008; Cole, 2009; Else-Quest & Hyde, 2016; Remedios & Snyder, 2015; Rouhani, 2014).

Belonging to more marginalized groups increases exposure to sources of discrimination and stigma. Compared with White sexual minority women, Black sexual minority women experience more frequent discrimination, a greater number of social statuses on which to base discrimination, a wider scope of types of discriminatory acts experienced, and reported poorer psychological and social well-being (Calabrese, Meyer, Overstreet, Haile, & Hansen, 2015). Compared with Black sexual minority men, Black sexual minority women report more discrimination bases and higher levels of depressive symptoms (Calabrese et al., 2015). In that study, frequency and scope of discrimination mediated the association between participant race/ethnicity and mental health (Calabrese et al., 2015).

Although minority stress is cumulative, researchers suggest that belonging to multiple marginalized groups has a protective effect through the development of skills for coping with stressors (Crocker & Major, 1989; Meyer, 2010; Meyer, Schwartz, & Frost, 2008; Moradi et al., 2010). For example, a study of 577 self-identified LGB men and women examined discrimination based on race/ethnicity, gender, and sexual orientation and found higher odds of past-year mental health disorder only when sexual orientation discrimination was combined with other types of discrimination (Bostwick, Boyd, Hughes, West, & McCabe, 2014). Among participants in the National Longitudinal Study

of Adolescent Health (Add Health), participants who were less likely to report discrimination reported more perceived stress associated with experiences of discrimination (Everett, Onge, & Mollborn, 2016). However, perceived discrimination had a more substantial impact on depressive symptoms for members of minority groups compared with majority group members in that study (Everett et al., 2016).

Presumptions about higher levels of heterosexism in communities of color beget assumptions that LGB POC have higher levels of internalized homophobia and a tension between their racial/ethnic and sexual identities (Bowleg, 2008; Bowleg, Huang, Brooks, Black, & Burkholder, 2003). However, in a comparison between African-American and White college students, African-Americans initially showed evidence of slightly more negative reactions to LGB persons than White students, but the difference was attenuated when controlling for church attendance, religious commitment, and socioeconomic status (Negy & Eisenman, 2005). Moradi and colleagues (2010) found that People of Color (POC) who identified as LGB and White LGB-identified participants were similar in their levels of perceived heterosexist stigma, internalized homophobia, and comfort with identity disclosure, but LGB POC had lower levels of outness and a weaker relationship between heterosexist stigma and internalized homophobia. Lower levels of sexual identity disclosure may reflect a resilience strategy that allows LGB POC to use role flexing to present the aspect of identity that is less stigmatized in a particular context (Bowleg et al., 2003; Wilson & Miller, 2002).

Notwithstanding, Meyer (2010) warns against assuming that racial and sexual identities are necessarily in conflict, suggesting that LGB POC demonstrate both more stress and more resilience. For example, in a study of LGB students of color,

identification as a sexual minority predicted increased psychological distress but ethnic minority status was not an added source of stress (Hayes, Chun-Kennedy, Edens, & Locke, 2011). In a 2002 qualitative study of gay and bisexual Black men, participants described strategies they used to combat heterosexism, including assessing one's environment, role flexing (changing their dress and/or mannerisms in non-gay friendly contexts), standing up for oneself, and creating safe spaces (Wilson & Miller, 2002). The authors of that study noted similarities between the strategies used to combat heterosexism and those used to cope with racism (Wilson & Miller, 2002).

Unfortunately, the LGB community is not a refuge from racial discrimination. Black and Hispanic/Latino sexual minority men report higher levels of racial/ethnic stigma in LGB spaces and connection to the LGB community plays a less central role in mediating the relationship between stigma and stress for LGB POC men than it does for LGB White men (McConnell, Janulis, Phillips, Truong, & Birkett, 2018). Thompson (2012) interviewed nine bisexual mixed-raced women and found that all expressed discontent in the mainstream LGB community for being overwhelmingly White and biphobic.

Regardless of race/ethnicity, adolescence is a critical period in human development marked by heightened awareness of the opinions of peers and concerns about conforming to peer norms, including gender roles and sexual scripts tied to dominant cultural ideals of masculinity and femininity (American Psychological Association, 2012; Dunn, Clark, & Pearlman, 2017; Lourie & Needham, 2017). Adolescents experience increased vulnerability to peer influence, concerns about appearance, development of sexual interests and relationships, fluctuations in self-esteem,

strong peer identification, and an increase in health risk behaviors, which can contribute to difficulties in emotion regulation and impulse control (Christie & Viner, 2005).

Stigmatizing events during adolescence can disrupt the achievement of developmental tasks and continue to negatively impact health later in life (Radkowsky & Siegal, 1997).

As discussed in this section, sexual minorities are subject to unique sources of stigma-related stress (Meyer, 2003) and existing at the intersection of multiple marginalized groups increases exposure to minority stressors (Calabrese et al., 2015). However, membership in a stigmatized group can have protective effects for self-esteem (Crocker & Major, 1989), and awareness of the propensity to be stigmatized as a member of a group is associated with increased sense of group membership and desire to engage in collective action to benefit that group (Nouvilas-Pallejà et al., 2018).

In contrast, experiences with stigma can influence the development of rejection sensitivity (Hatzenbuehler & Pachankis, 2016) and the desire to conceal one's sexual identity in order to avoid further discrimination or rejection (Pachankis, 2007). In some settings, concealment ameliorates the effects of structural stigma on decreased well-being by protecting against discrimination and harassment (Pachankis & Bränström, 2018).

Adolescents are particularly sensitive to rejection and the opinions of their peers at a time when they are developing a sense of sexual identity (Lev-Wiesel, Nuttman-Shwartz, & Sternberg, 2006; Westenberg, Drewes, Goedhart, Siebelink, & Treffers, 2004). The section that follows provides an overview of adolescent sexual identity development and considers, generally, influences on the adoption and disclosure of an LGB identity. Influences on self-labeling are considered in more depth in the context of sexual orientation discordance.

Adolescent Sexual Identity Development

Forming a sexual minority identity is different from, and more complex than, heterosexual identity development because it entails overcoming early-life heterosexist and heteronormative socialization (D'Augelli & Grossman, 2006; Rosario, Schrimshaw, Hunter, & Braun, 2006; Rust, 1992). Formation of sexual identity is—at least in part—a social process in that it involves not only exploration of one's thoughts and feelings, but self-labeling with a sexual minority identity, revealing one's label to others, and being labeled by others (Ballard, Jameson, & Martz, 2017; Manning, 2015; Savin-Williams & Diamond, 2000a). Navigation of perceived norms and one's sexual self-concept affect what behaviors to engage in and behavioral experiences later contribute to self-concept by aiding in defining a sexual identity label for oneself (Hensel, Fortenberry, O'Sullivan, & Orr, 2011; Lourie & Needham, 2017; O'Sullivan & Thompson, 2014).

Early conceptualizations of sexual identity development suggested a linear trajectory culminating in a stable sexual orientation, marked by identifiable milestones (Cass, 1979; Morris, 1997; Troiden, 1989). More recent research challenges the assumption of a linear trajectory but supports the presence of sexual identity developmental milestones, including early feelings of being different from others, awareness of same-sex attraction, questioning one's sexuality, same-sex sexual contact, recognition and self-labeling, disclosure or "coming out" to others, first same-sex romantic relationship, and for many, self-acceptance (Saewyc et al., 2004; Savin-Williams & Cohen, 2007, 2015; Savin-Williams & Diamond, 2000).

The timing and sequence of sexual identity developmental milestones differentiate risk among sexual minorities and are influenced by contextual and

maturational factors (Calzo, Antonucci, Mays, & Cochran, 2011; Fish & Pasley, 2015; Floyd & Bakeman, 2006; Glover, Galliher, & Lamere, 2009; Needham, 2012; Savin-Williams & Cohen, 2015; Ueno, 2010). Earlier achievement of these developmental milestones is associated with increased risk of reporting anti-gay harassment, low levels of social support, family rejection, and adolescent suicide attempts (Almeida, Johnson, Corliss, Molnar, & Azrael, 2009; Corliss, Cochran, Mays, Greenland, & Seeman, 2009; Katz-Wise et al., 2017; Mustanski & Liu, 2013; Russell, Everett, Rosario, & Birkett, 2014). Younger cohorts of LGB adolescents have reported achievement of developmental milestones at earlier ages than older cohorts (Martos, Nezhad, & Meyer, 2015; Meyer, 2018; Savin-Williams, 2005).

Research suggests that sexual minority males reach most sexual identity milestones before females but may take more time between milestones (Maguen et al., 2002; Savin-Williams & Cohen, 2015). For example, a study of sexual minority young adults found that women tended to report reaching the milestones of age of first questioning sexual orientation, age of first same-sex sexual encounter, and age of first using an LGB label at later ages than men (Katz-Wise, 2015). Calzo and colleagues (2011) identified four developmental trajectories based on age at onset of milestones and found that females represented a larger proportion of the middle (ages 18-31) and late (ages 32-42) profiles whereas males were a larger proportion of child (ages 8-18) and teen (ages 14-22) profiles. However, no sex differences in age of identification as sexual minorities were identified in the Growing up Today Study (GUTS) dataset (Calzo, Masyn, Austin, Jun, & Corliss, 2017).

Self-labeling and Identity Disclosure

Acknowledgment to oneself that same-sex attractions, fantasies, preferences, and behaviors signify a non-heterosexual sexual orientation is a critical milestone in sexual minority identity development (Savin-Williams & Cohen, 2015). The shift from acknowledgment to self-labeling involves developing acceptance of same-sex attraction, questioning one's sexual identity, and the internal integration of sexual minority identity, occurring at age 14 on average (D'Augelli et al., 2005; Dirkes, Hughes, Ramirez-Valles, Johnson, & Bostwick, 2016; Meyer, 2018).

Identity certainty and identity disclosure are associated with better psychological well-being among LGB individuals (Bejakovich & Flett, 2018), and identity affirmation has a protective effect on same-sex relationship satisfaction (Pepping, Cronin, Halford, & Lyons, 2018). Positive outcomes of adopting an LGB identity include a sense of living authentically, increased self-esteem, sense of community, and improved relationships with parents and romantic partners (Riggle, Whitman, Olson, Rostosky, & Strong, 2008).

Determinants of sexual identity disclosure include holding positive attitudes about one's identity and implicit devaluation of societal acceptance (Bry, Mustanski, Garofalo, & Burns, 2017). Reactions to identity disclosure vary. Emetu and Rivera (2018) identified seven experiential themes sexual minorities report after coming out: improvement in mental health, development of new relationships, social support, stereotypical perceptions of sexual identity, relationship estrangement, non-acceptance of sexual orientation, and minority stress.

Sexual identity disclosure to non-family members tends to occur before disclosure to family members with the average age of first disclosure estimated at 14.5 years to non-

family and 16.9 years to family members (D'Augelli et al., 2005; Meyer, 2018). Unfortunately, social group disapproval of non-heterosexual identities may lead to pressure for adolescents to hide their sexual identity, the direction of their attraction, and the gender/sex of their sexual partners (McIntyre, Antonucci, & Haden, 2014; Sandfort & Dodge, 2008; Schrimshaw et al., 2013). Youths who disclose their sexual minority status to their parents face the possibility of rejection by their family (Meyer, Teylan, & Schwartz, 2015; Rosario et al., 2009). Early openness about sexual orientation and being identified as non-heterosexual by parents increases the risk of suicide attempts in non-heterosexual youth (D'Augelli & Hershberger, 1993; Savin-Williams & Ream, 2003).

Bisexual adolescents face the additional challenges associated with confronting biphobia and monosexism when weighing the decision to share their sexual identity with others. Although bisexuals may report less sexual orientation-related violence and discrimination due to their ability to pass as heterosexual by having other-sex partners, they report more inner conflict related to sexual orientation and lower willingness to disclose their orientation to others (Kosciw et al., 2016; Lewis, Derlega, Brown, Rose, & Henson, 2009; Wandrey, Mosack, & Moore, 2015). Bisexual students reported lower sense of belonging in their school community, higher rates of depression, and lower self-esteem compared with gay and lesbian peers in the 2015 and 2017 GLSEN surveys (Kosciw et al., 2016, 2018).

First Same-Sex Sexual Encounter

The average age of first same-sex sexual encounter among sexual minority youth is 16.3 years (Meyer, 2018), but first same-sex contact does not necessarily imply first *any-sex* sexual contact. Gay males engage in sexual behavior consistent with their

orientation earlier than lesbians and tend to have more same-sex partners while lesbians tend to report more opposite-sex partners (D'Augelli & Hershberger, 1993). In a 2002 study, 14% of gay-identified and 45% of lesbian-identified young adults in the Southeastern US reported that their first sexual experience was with someone of the opposite sex (Maguen et al., 2002). For sexual minority males, first opposite-sex and first same-sex sexual contact occur around age 15, while first same-sex contact for sexual minority females may occur significantly later than their first opposite-sex contact (D'Augelli & Hershberger, 1993).

Savin-Williams and Cohen (2015) suggest that sexual minorities are aware early-on that their same-sex attractions imply a non-heterosexual identity and that first same-sex contact typically occurs after awareness of this fact. For example, in a study of sexual minority persons in the California Quality of Life Survey, nearly three-quarters of participants reported that self-identification occurred about one year before first same-sex sexual contact (Calzo et al., 2011). In a study of adolescents and young adults in the southeastern US, 33% reported disclosure prior to same-sex contact, 33% reported disclosure occurring near the time of same-sex contact, and 33% reported that same-sex contact preceded identity disclosure (Maguen et al., 2002). Further, Floyd and Bakeman (2006) reported that an identity-centered developmental path where self-identification preceded same-sex sexual experiences was more common in those who self-identified in adolescence compared to developing that identification in adulthood. This is in line with the finding that earlier identification as gay or lesbian is associated with lower likelihood of reporting opposite-sex contact (Drasin et al., 2008).

Individuals have multiple sources of information with which to develop their sexual identity including sexual attractions, sexual behavior, romantic attractions, desires, fantasies, gender expression, and participation in traditional family structures and individuals weigh these differently (Almazan, Roettger, & Acosta, 2014; Lund, Thomas, Sias, & Bradley, 2016; Sell, 2002; Silva & Whaley, 2018). Various dimensions of sexuality hold different meanings across groups of people and can vary by place and time (Gordon & Silva, 2015). For some, self-identification is based on the presence or intensity of attractions, but it is more closely tied to sexual experiences for others (Baldwin et al., 2015; Diamond & Butterworth, 2008; Katz-Wise & Hyde, 2015). For example, an analysis of pooled 2005-2007 YRBS data from several jurisdictions found that boys showed a stronger association between bisexual identity and same- or both-sex contact than girls and boys who had same-sex-only contact had higher odds of being unsure of their sexual identity than girls with same-sex-only contact (Mustanski et al., 2014).

Sexual Orientation Discordance

Sexual identity is not the sole determinant of sexual behavior, as evidenced by findings of incongruence in sexual orientation dimensions. This incongruence is commonly referred to in the psychological and public health literature as discordance (Hoy & London, 2018; Lourie & Needham, 2017). Identity-attraction and identity-behavior discordance are the most commonly studied forms of sexual orientation discordance. In their analysis of 2011-2015 NSFG data for adults aged 18-44, Copen and colleagues (2016) found that identity-attraction discordance was present in one-quarter of heterosexual-identified women and men (Copen et al., 2016). Vrangalova and Savin-

Williams (2010) found that about half of heterosexual-identified men and most heterosexual-identified women report at least some same-sex fantasies, attractions, or behaviors. Heterosexuals account for a significant percentage of those who report same-sex attraction: in 2011-2015 NSFG data 61.9% of women and 52% of men who reported current same-sex attractions identified as heterosexual (Hoy & London, 2018).

In evaluating sexual orientation discordance, distinctions in attraction may be more apparent than distinctions in number of same-sex and other-sex partners due to social constraints including availability of sexual partners, opportunities for sexual activity, and underreporting of same-sex behavior in surveys (Coffman, Coffman, & Ericson, 2016; E. M. Thompson & Morgan, 2008; Vrangalova & Savin-Williams, 2010). For example, a 2015 study showed that only 0.8% of female college students and 0.9% of male college students in the sample were categorized as discordant heterosexual based on past-year sexual contact (Przedworski et al., 2015). In a sample of male college students, although 53% of heterosexual men reported questioning their sexual identity, very few of them reported same-sex sexual contact (E. M. Morgan, Steiner, & Thompson, 2010).

Women and gay/lesbian participants are more likely than males and heterosexuals to report discordance among various sexual orientation dimensions (Fu et al., 2018). Copen and colleagues (2016) reported on adults aged 18-44 in the NSFG and found that 12.6% of heterosexual women and 2.8% of heterosexual men reported having had a same-sex partner at some point in their lives. In a study in the Southeastern US, 37% of gay-identified and 52% of lesbian-identified participants reported sexual contact with both males and females (Maguen et al., 2002). The prevalence of identity-behavior

discordance was higher among gay/lesbian (31.9%) than heterosexual (3.3%) students in the 2015 national YRBS (Annor et al., 2018).

Although small percentages of heterosexuals report same-sex behavior, heterosexual-identified participants account for a large proportion of those reporting same-sex behaviors across survey datasets. In 2002-2013 NSFG data, 22% of men 15-24 years who reported same-sex behavior identified as heterosexual (Fasula et al., 2016). In a study of college students whose last hook-up was with a same-sex partner, 12% of men and 25% of women identified as heterosexual (Kuperberg & Walker, 2018). Hoy and London (2018) found that 65.2% of women who reported ever having same-sex contact in the NSFG identified as heterosexual, compared to 43.4% of men. In an analysis of the 2007 Massachusetts YRBS, 46.8% of females with both-sex contact identified as heterosexual (White et al., 2016). Some researchers suggest that incongruence among sexual identity, attractions, and behavior is part of normative sexual orientation development (K. L. Brewster & Tillman, 2012; Ott, Corliss, & Austin, 2011; Priebe & Svedin, 2013). Savin-Williams and Vrangalova (2013) suggest that same-sex sexuality increases in adolescence, peaks in the early twenties for men and slightly later for women, and remains relatively high in young adulthood.

Broader sociocultural attitudes towards non-heterosexuality and negative attitudes towards same-sex orientation from family, peers, and religion influence sexual identity development and disclosure (Galupo, Davis, Gryniewicz, & Mitchell, 2014).

Conservative attitudes about child rearing and attitudes about gays and lesbians may influence sexual identification among heterosexual-identified men who are attracted to or have had two or more male sexual partners (Silva & Whaley, 2018). Straight-identified

rural White MSM report participation in traditional marriage and family formations as a reason for continuing to identify as straight (Silva, 2017a). In the rural Midwest, normative masculinity based on rigid gender role expectations is critical for social acceptance and identifying as gay or bisexual could lead to devastating social and relational consequences among straight-identified MSM in that region (Silva, 2017a).

There are many reasons why the identity that someone indicates on a survey may differ from what would be expected based on reported sexual behavior. Although internalized heterosexism/homophobia undoubtedly influence sexual orientation discordance for some people, other reasons for apparent discordance among sexual orientation dimensions include sexual desires, curiosity, interpretations of sexual identity labels, or may be a by-product of current methods of measuring sexual orientation (Diamond, 2000; Frost & Meyer, 2009; Saewyc, 2011; Savin-Williams & Vrangalova, 2013; van Anders, 2015; Wolff, Wells, Ventura-DiPersia, Renson, & Grov, 2017). For example, sexual orientation fluidity involves changes in sexual identity over time which can make behavior related to a past identity or one that is in transition appear to be discordant. Some HSM participants may claim a heterosexual identity as a way to conceal the stigma of their sexual orientation, while others report that some same-sex contact is acceptable and does not threaten their sexual identity. Among these, some HSM participants might choose to identify with a modified label such as mostly heterosexual if it is offered as a response option on surveys. These possibilities are discussed below.

Sexual Orientation Fluidity

Cross-sectional surveys capture information about broad swaths of the population at a single moment in time but are unable to capture how sexual identity might be solidified or changed in response to new sexual experiences. Sexual fluidity describes changes in sexual identity that sometimes accompany changes in sexual attractions and behaviors and may account for some of the variability in identity-behavior discordance (Diamond, 2000). The gender/sex of one's recent relationship partners can influence changes in how one labels their sexual identity. For instance, in Diamond's (2008) longitudinal study of 79 sexual minority women, having a relationship in the prior period influenced label changes in the following period. Women in that study explained that although they changed their sexual identity label, their underlying sexual orientation had not changed (Diamond, 2008). Awareness of attraction to multiple genders may develop in the context of monogamous relationships or after adopting a monosexual label (Bilodeau & Renn, 2005).

Women's sexuality is often considered to be more fluid and flexible than men's (Bauermeister et al., 2010; Diamond, 2003; Katz-Wise, 2015; Katz-Wise, Reisner, Hughto, & Keo-Meier, 2016). For example, in a study of Swedish high school seniors, females had three times higher odds of reporting both-sex sexual contact compared with males and were more likely than males to report bisexual identity or bisexual emotional or sexual attraction (Priebe & Svedin, 2013). However, sexual fluidity is not limited to women. In a sample of young adults, Katz-Wise (2015) found that 64% of women and 52% of men reported sexual fluidity in attractions, and 49% of women and 36% of men reported fluidity in sexual identity based on changes in attraction. In that study, fluidity in

attractions was unrelated to the timing of identity development but was associated with having past sexual experiences with same- or other-sex persons (Katz-Wise, 2015).

Those with non-exclusive sexual identities may experience more fluidity than those with identities oriented toward one sex. For example, a study using the Add Health Dataset found that three-quarters of bisexual participants reported a different sexual identity in a subsequent wave (Savin-Williams, Joyner, & Rieger, 2012). In that study, participants who identified as “100% homosexual” or “100% heterosexual” at the first time point were more stable in their identity across waves and did not differ from each other in their level of identity stability (Savin-Williams et al., 2012).

Sexual Desire versus Romantic Attraction

Researchers may overlook the distinction between sexual desire and romantic attraction in considering same-sex sexuality among heterosexuals. Sexual desire is a subjective motivational drive or urges to seek out sexual targets and engage in sexual activities with them (Regan & Berscheid, 1995, 1996). Romantic attraction involves feelings of infatuation or attachment that are usually associated with committed relationships (Diamond, 2003). Participants who identify as asexual exemplify sexual-romantic attraction discordance and use terms such as *homoromantic* or *biromantic* to indicate the direction of their romantic attraction in the absence of sexual attraction (Brotto, Knudson, Inskip, Rhodes, & Erskine, 2010; Lund & Johnson, 2014). Asexuals may experience feelings of inconsistency and confusion about their sexual identity until they can distinguish between sexual and romantic attraction (DeLuzio Chasin, 2011), and it is not unreasonable to assume that sexual-romantic attraction discordance could underlie and contribute to confusion or distress among HSM participants. In a sample of

American adults, 10% of participants reported sexual-romantic attraction discordance, and the researchers found that sexual attraction to both males and females with romantic attraction to only one sex was the most common type of sexual-romantic attraction discordance in that sample (Lund et al., 2016).

Some men understand gay or bisexual identities to involve emotional attachments to other men and because they cannot imagine becoming romantically involved with another man, they do not believe the bisexual label applies to them (Carrillo & Hoffman, 2016, 2018; Duffin, 2016; Silva, 2017b, 2017a). In a study of Swedish high school students, Priebe and Svedin (2013) reported a strong association between sexual behavior and romantic attraction in females and sexual identity and romantic attraction in males; the weakest association for females and males was between emotional/sexual attraction and sexual behavior (Priebe & Svedin, 2013). In that sample males and females reported emotional/sexual attraction to both sexes three times more often than they endorsed bisexual identity (Priebe & Svedin, 2013).

Heterosexual-Identified Sexual Minorities

Straight/heterosexual identity is socially encouraged and rewarded, and despite decades of LGB activism, it is still considered a better option by many than a sexual minority identity (Dean, 2014; Silva, 2018b). Dean (2014) argues that increased visibility of the LGB community has made room for heterosexual men and women to perceive and perform their sexual and gender identity differently than in the past. Krueger and Upchurch (2019) suggest that HSM women and men represent a significant sexual minority population based on the large proportion of heterosexual-identified persons among those who report same-sex contact.

HSM participants may differ from their exclusively heterosexual peers on psychosocial and demographic characteristics. For instance, in a sample of heterosexual women from the 2006-2010 NSFG, those who reported a past-year same-sex partner had had more lifetime and past-year sexual partners (male and female), reported earlier sexual debut, and were younger and had more education than heterosexual women who had not had a past-year same-sex partner (Nield et al., 2015). In Wave II of the National Epidemiological Study of Alcohol and Related Conditions (NESARC), discordant heterosexual men and women had similar marriage rates as concordant heterosexual men and women, but discordant heterosexual and LGB participants were younger and better educated than concordant heterosexuals (Gattis et al., 2012). Compared with LGB participants in the NESARC, concordant heterosexual and discordant heterosexual participants were more likely to attend church (Gattis et al., 2012) and report that religion is very important to them (Krueger & Upchurch, 2019). In a sample of college students in the US Deep South, identity-behavior discordance was associated with having less traditional men's gender role attitudes, less prejudicial attitudes towards gays and lesbians, and more contact with the LGB community (Baunach & Burgess, 2013).

The Down Low and Perceptions of HSM Men of Color

The US media describes the “down low” as a unique subculture of hypermasculinized, closeted, gay or bisexual Black men who engage in secretive sex with other men, often while involved in heterosexual relationships (Boykin, 2005; Carrillo & Hoffman, 2016; Denizet-Lewis, 2003; Duffin, 2016; Pettaway, Bryant, Keane, & Craig, 2014; Ward, 2008). Black non-gay-identified MSM have been primarily researched in their capacity to act as a bridge population to transmit HIV and other sexually transmitted

infections to the exclusively heterosexual population (Barnshaw & Letukas, 2010; Bauer, Jairam, & Baidoobonso, 2010; Pettaway et al., 2014; Sandfort & Dodge, 2008; Ward, 2008). Media discourse about Black and Latino MSM reinforces stereotypes about Black male sexuality as dangerous, predatory, and homophobic, and Latino men as trapped in rigid gender roles and family structures that require them to remain closeted (Boykin, 2005; Denizet-Lewis, 2003; J. King, 2004; Robinson & Vidal-Ortiz, 2013; Ward, 2008).

When used within the Black community, down low is a term and label that embodies hypermasculinity and gendered sexual scripts; the perception of secrecy is a primary characteristic that enhances the eroticism of the down low label among men (Truong, Perez-Brumer, Burton, Gipson, & Hickson, 2016). A recent study of African-American MSM found that about 10% identified as down low, 8% identified as straight, and the remaining identified as gay or bisexual (Rutledge, Jemmott, O'Leary, & Icard, 2018). However, desire for secretive sexual encounters is not exclusive to men of color: straight White men also report enjoying secret sexual encounters with other men (Carrillo & Hoffman, 2018; Reynolds, 2015; Robinson & Vidal-Ortiz, 2013; Ward, 2008). Silva and Whaley (2018) found no association between straight identification and race/ethnicity among MSM in their analysis of NSFG data. Carrillo & Hoffman (2016, 2018) interviewed 100 men aged 18 to 70 who identified as straight but were seeking sex with men online and reported that their sample was predominately White and married or in long-term relationships with women.

Further, several studies have reported that a larger proportion of POC participants identified as gay/lesbian or bisexual than White participants. For example, a national probability sample of self-identified lesbian, gay, and bisexual adults found that

participants were less likely to be non-Hispanic White (NHW) compared with the rest of the population (Herek, Norton, Allen, & Sims, 2010). In an analysis of pooled YRBS data, sexually active Black and Hispanic youths were more likely to identify as gay or lesbian than White youths (Mustanski et al., 2014). In Wave III of the NESARC, larger proportions of bisexual-identified women were Black than White or Hispanic/Latino, but there were no race/ethnicity differences among HSM men (Krueger & Upchurch, 2019). An analysis of 2006-2010 NSFG data reported no differences in identity-behavior discordance across race/ethnicity, urbanicity, or income for concordant and discordant heterosexual women (Nield et al., 2015). Vrangalova and Savin-Williams (2010) found no race/ethnicity differences between heterosexual-identified college students who reported exclusively other-sex attractions and those who reported some same-sex attractions or fantasies. Others have also failed to find race/ethnicity differences in the association between sexual contacts and sexual identity (Cochran, Mays, Alegria, Ortega, & Takeuchi, 2007).

HSM Females

Straight-identified women report a variety of reasons for engaging in same-sex contact, including perceptions of enhanced intimacy with female partners or because they consider women to have special skills that lend themselves to easier orgasm and a more physically pleasurable sexual experience (Walker, 2014b). Some women engage in threesomes with their male relationship partners as a way to act on their same-sex desires without destabilizing their relationship (Budnick, 2016), although unfortunately some women are pressured into threesomes by their boyfriends (Fahs, 2009). Lower- and working-class straight-identifying women who have sex with women may not view

occasional same-sex contact as incongruent with heterosexuality or may believe that early motherhood and relationships with men preclude them from adopting an LGB label (Budnick, 2016).

Women who engage in same-sex activities may continue to find meaning in a heterosexual identity and some may expand their heterosexuality by describing themselves as "freaks" with high sex drives and occasional interest in sex with other women (Walker, 2014a). In Budnick's (2016) interviews with straight-identified women with same-sex contacts, many identified as heterosexual in response to a closed-ended survey item but in response to open-ended items, explained that heterosexuality did not adequately describe their sexual desires and experiences. Baldwin and colleagues (2017) also found that women who have sex with men and women fluctuated in the sexual identity they indicated in response to open-ended versus fixed-response items.

Women's same-sex sexuality is sometimes viewed as performative and is encouraged in some settings (Kuperberg & Walker, 2018): college women sometimes use public same-sex activity to signal their openness to sexual activity and availability to men (Yost & McCarthy, 2012). Yost and McCarthy (2012) found that nearly 70% of college students reported seeing straight girls kissing at parties and 33% of college women report having kissed other women in that context. Public same-sex activity among women is more likely to be dismissed or attributed to alcohol consumption than private same-sex activity, which is more likely to be interpreted as indicative of a non-heterosexual identity (Rupp & Taylor, 2010; Yost & McCarthy, 2012).

HSM Males

Whereas public same-sex contact among women is tolerated and even encouraged (Kuperberg & Walker, 2018; Yost & McCarthy, 2012), England (2015) argues that men risk a more severe loss of status if outed as gay or bisexual because men and masculinity are valued more highly than women and femininity. Mize and Manago (2018) suggest that men's heterosexuality is more "precarious" than women's in that a single same-sex encounter leads observers to question the heterosexuality of a male target more than that of a heterosexual female target in a similar situation, controlling for the emotional intimacy of the scenario. The "one-act rule of homosexuality" describes the belief held by straight and gay people that same-sex encounters reveal innate, undisclosed, homosexuality regardless of that person's stated sexual identity (Schilt & Westbrook, 2009, p. 456). In contrast, a single same-sex sexual encounter may be dismissed as experimentation particularly in contexts such as under the influence of drugs or alcohol, in sex-segregated situations such as prison, or during adolescence (Herek, 2004).

Some researchers suggest that the one-act rule of men's sexuality is in decline. Anderson (2013b) argues that *homohysteria*—a term that conceptualizes the contexts when homophobia is used to police gendered behaviors in heterosexual men—peaked in the 1980s, but has decreased since the turn of the 21st century. Anderson (2013a) suggests homophobia itself has become stigmatized, resulting in relaxed inhibitions among heterosexual males towards same-sex activity and increased acceptance of the propensity for same-sex attractions in themselves (Anderson & Adams, 2011). A recent study of heterosexual college males found support for the acceptability of engaging in sexual threesomes that involve a male and a female, which the authors suggest is indicative of

greater acceptance of same-sex sexual activity among young men (Scoats, Joseph, & Anderson, 2017).

Nevertheless, straight-identified rural White men report unwillingness to live a gay “lifestyle” Silva (2017b, p. 79). Straight-identified men who were seeking sex with men online cited awareness of the social stigma associated with bisexuality as part of an active choice to keep their same-sex encounters private and separate to protect other parts of their lives (Carrillo & Hoffman, 2016, 2018). Further, Carrillo and Hoffman (2016) and Savin-Williams and Cohen (2015) suggest that the social disparities between straight and LGB are still so apparent that any man who can legitimately claim to be sexually and romantically attracted to women is assumed to qualify as straight.

Undoubtedly, internalized homophobia and masculine gender-role norms affect the decision to identify as heterosexual among some men who report same-sex contact or attraction (Baunach & Burgess, 2013; Reback & Larkins, 2010; Rutledge et al., 2018; Schrimshaw et al., 2013). Internalized homonegativity is associated with difficulty developing a sexual minority identity and the refusal to acknowledge a sexual minority identity (Dubé, 2000; Horowitz & Newcomb, 2004; Peplau & Garnets, 2003; Rowen & Malcolm, 2003). Experiences with stigma and sensitivity to rejection increase the desire to conceal one’s sexual identity (Hatzenbuehler & Pachankis, 2016), which may be protective in some settings (Pachankis & Bränström, 2018), but also precludes the positive benefits associated with membership in a stigmatized group (Crocker & Major, 1989; Nouvilas-Pallejà et al., 2018).

In contrast, researchers in sociology and Critical Heterosexuality challenge the internalized homophobia framework and advocate for more inclusive conceptions of

masculinity and heterosexuality (Anderson, 2009). For example, Ward's (2008) content analysis of White MSM in the Los Angeles area concluded that same-sex encounters among straight White men reinforce their heterosexuality and masculinity through rejection of queer cultural norms. Other content analyses of the men-for-men casual encounters section on Craigslist suggest that straight-identified MSM fetishize straightness, masculinity, and secretive same-sex encounters (Reynolds, 2015; Robinson & Vidal-Ortiz, 2013; Ward, 2008). Similarly, Silva (2017a, 2017b) conducted interviews with rural, straight-identified White American MSM and concluded that although internalized bi/homophobia played a part in their decision to identify as straight, many of the men in his sample experienced sex with men as a way of reinforcing their straight identity and masculinity (Silva, 2017b, 2017a).

Although some men may choose to conceal their identity due to internalized stigma, straight identity among MSM is influenced by attractions, desires, and complex interpretations of sexual practices (Carrillo & Hoffman, 2016, 2018; Silva, 2017a, 2017b; Ward, 2015). Silva (2018a) challenges the utility of assuming that nondisclosure of same-sex activity or non-heterosexual identity is caused by internalized homophobia because it denies the centrality of personal interpretation to sexual identity. Silva and Whaley (2018a) identify two populations of straight-identified MSM: those who are gay or bisexual but conceal their identity to others by identifying as straight, and those who identify as straight and have a more elastic understanding of heterosexuality.

Straight-identified men report a variety of motives for seeking out and engaging in sexual activities with other men. For example, some men describe their drive for sex with other men as a specific craving for men or urges—sometimes undesired—that need

to be resolved (Silva, 2017b). Others reported that sex with men threatened their marriages less than an extramarital affair with a woman, partly couched in the reasoning that other straight-identified men had the incentive to keep their encounters secret (Silva, 2017a, 2017b). Black MSM have also described sex with other men as easier, requiring less social and emotional investment, and less socially risky than extra-partner sexual liaisons with women (Dodge et al., 2008). Straight-identified men seeking sex with men online expressed enjoying sex with men because of its secrecy, transgressiveness, and departure from male gender role norms (Carrillo & Hoffman, 2018).

Straight-identified men employ a variety of justifications to align their same-sex activities with their heterosexual identity. For example, some straight-identified MSM cite the relative infrequency of their same-sex encounters as justification for continuing to identify as straight rather than bisexual, while others emphasize their attraction to women and consider their same-sex activities to be of lesser importance compared to those with women (Carrillo & Hoffman, 2016; Silva, 2017b). A 2010 qualitative study of 21 straight-identified MSM found that many participants considered their same-sex behaviors to be infrequent, recreational, engaged in for economic necessity, accidental, or discrete events they attributed to outside influences, which shaped their view that these activities were not incongruent with their heterosexual identity (Reback & Larkins, 2010). Heterosexual men may try to limit their range of activities during same-sex encounters to prevent emotional intimacy before and after sex (Reback & Larkins, 2010; Silva, 2017a).

Moreover, straight-identified men may interpret same-sex behaviors in ways that differ from mainstream understandings of heterosexuality. For example, Carrillo &

Hoffman (2018) concluded that men in their study had a more elastic interpretation of heterosexuality that allowed them to act on same-sex desires without threatening their straight identity. In a study of American soccer players, participants indicated that although their same-sex behavior would technically qualify them as bisexual to others, they believed that some degree of same-sex behavior did not automatically preclude someone from identifying as heterosexual (Anderson & Adams, 2011). Silva (2017b) and Ward (2008) suggest that when straight White men engage in sexual acts with each other it is not interpreted or labeled as sexual or intimate but is understood instead as a form of male bonding. Silva (2017a) found that his White, rural, straight-identified MSM participants were able to reinforce their straight masculinity by engaging in what he calls “bud-sex” by choosing partners who were also White, masculine, and either straight or secretly bisexual.

Silva (2017a, 2017b), gleaned from his interviews with White rural straight-identified men that although heterosexism had some influence on their identification as straight rather than bisexual, they used more expansive interpretations of heterosexuality that were not dependent on precluding same-sex behavior. Carrillo and Hoffman (2018) identified the use of secondary labels among men in their sample as implying an understanding of heterosexuality that was elastic and inclusive of same-sex attraction and behavior. Ward (2008) suggests that engagement in same-sex behavior among straight-identified White men is a way of reinforcing their heterosexuality. Those authors concluded that the men in their studies are not secretly gay or bisexual, nor are they in denial of their behavior. They provide evidence that individuals understand

heterosexuality in a variety of ways, and they reinforce the notion that identity and behavior are separate constructs.

Mostly Heterosexuals

Some women and men identify as heterosexual despite same-sex attractions or behavior because they are not aware of other labels they might use to identify themselves if lesbian, gay, or bisexual do not feel right (Budnick, 2016; Carrillo & Hoffman, 2018; Silva & Whaley, 2018; Walker, 2014a). Indeed, Katz-Wise (2015) suggests that increased sexual fluidity in men may be related to the greater availability of labels to describe their sexual identity compared with previous periods. While half of the men in Carrillo and Hoffman's sample felt that straight or heterosexual fully described them, the other half endorsed the use of secondary labels such as *heteroflexible*, *bi-curious*, and *mostly heterosexual* to describe themselves (Carrillo & Hoffman, 2016, 2018); mostly heterosexual is the most well-researched label among these in the social sciences.

Thompson and Morgan (2008) suggested that women who identify as mostly straight are a behaviorally distinct group in that they report less same-sex behavior than bisexual women but more than those who are exclusively heterosexual. To explore this further, Vrangalova and Savin-Williams (2012) recruited a sample of adult Facebook users and reported that mostly heterosexual men and women are indeed behaviorally distinct from their heterosexual and bisexual peers. In that study they found that mostly heterosexual men and women reported about equal other-sex attraction, more other-sex partners, more same-sex attraction, higher likelihood of reporting at least one same-sex partner, and more same-sex partners overall compared with heterosexuals (Vrangalova & Savin-Williams, 2012). Compared with bisexuals, mostly heterosexual men and women

reported more other-sex and less same-sex attraction (Vrangalova & Savin-Williams, 2012). Compared with bisexual women, a smaller percentage of mostly heterosexual women reported having at least one same-sex partner but did not differ on the number of lifetime same-sex partners; bisexual and mostly heterosexual men were as likely to report at least one same-sex partner, but mostly heterosexual men reported fewer lifetime same-sex partners than bisexual men (Vrangalova & Savin-Williams, 2012).

In addition to having distinct behavioral patterns, mostly heterosexual was the most frequently chosen non-heterosexual label and was chosen by significantly more women than men, although men and women did not differ in the percentage selecting mostly gay/lesbian, the least chosen option in the Facebook study (Vrangalova & Savin-Williams, 2012). In Add Health Waves III and IV, mostly heterosexuals were a larger percentage of the sample than all other non-heterosexual identities combined (Savin-Williams et al., 2012). Using longitudinal latent class analysis in the GUTS dataset, females had higher odds than males of belonging to the mostly heterosexual class relative to the completely heterosexual class (Calzo et al., 2017).

Providing mostly heterosexual and mostly gay/lesbian as response options on surveys does not eliminate sexual orientation discordance: Vrangalova and Savin-Williams (2012) found that a majority of gays/lesbians reported some opposite-sex behavior or attractions and a significant minority of heterosexuals reported some same-sex behavior or attractions. Those who identify as mostly heterosexual in surveys that give that option overwhelmingly identify as heterosexual when limited to a choice of heterosexual, bisexual, or gay/lesbian (McCabe, Hughes, Bostwick, Morales, & Boyd, 2012; Mosher, Chandra, & Jones, 2005).

The evidence reviewed above suggests that although some HSM participants who may feel in conflict about their sexual identity, others have a more expansive understanding of heterosexuality and heterosexual behavior. As Silva (2017b, p. 81) writes, “unconventional sexual identity construction may reflect alternative interpretations of sexual identity, not necessarily just internalized bi/homophobia.” Importantly, Carrillo and Hoffman (2016, 2018) Ward (2008, 2015), and Silva (2017a, 2017b) present evidence that, at least for some men, same-sex contact is not incongruent with their straight identity. The next section reviews the literature about suicidality to situate HSM adolescents with their other sexual minority peers, as well as highlight other sexual minority subgroups who are at increased risk for suicidality.

Suicidal Thoughts and Behaviors in Sexual Minority Youth

A robust body of literature supports the assertion that sexual minorities are at higher risk for suicidality than their heterosexual peers (e.g., Haas et al., 2011; Marshal et al., 2011; Miranda-Mendizábal et al., 2017). However, there are gaps in the literature with regard to how risks for suicidality vary between subgroups of sexual minorities. Few studies have explored STBs at the intersections of race/ethnicity and sexual orientation. This section includes studies from general populations to compensate for the lack of available literature and to help distill general patterns in suicidality by participant sex and race/ethnicity.

Suicidal behavior generally proceeds from suicidal ideation (seriously considering suicide or possessing the intention to commit suicide), to suicide planning (making a specific plan of action for how one intends to attempt suicide), and attempting suicide (serious self-harming actions with the expectation that one would die; D. Li, Bao, Li, &

Wang, 2016; Van Orden et al., 2010). However, only about 60% of first suicide attempts are planned, and girls who experience suicidal ideation have significantly higher odds of making an unplanned suicide attempt compared with boys (Nock et al., 2013).

Unfortunately, available research is too sparse in some areas to effectively evaluate suicidal ideation, planning, and attempts separately here. As such, this literature review considers these constructs under the umbrella term suicidal thoughts and behaviors (STBs) in order to include as much relevant literature as possible.

In the US, suicide is the tenth leading cause of death overall but is the second leading cause of death among 15- to 24-year-olds (CDC, 2018). Past estimates suggested that up to one-third of adolescent deaths due to suicide occurred among sexual minorities (Feinleib, 1989), although a more recent study estimated that 24% of adolescent suicide deaths occur in sexual minorities (Ream, 2019). However, suicide attempts in sexual minorities tend to occur after awareness of same-sex attraction but before identity disclosure, suggesting that suicide deaths among sexual minorities may be underreported (D'Augelli, Hershberger, & Pilkington, 2003).

Rates for STBs far outstrip those for completed suicide. In 2016, 9.8 million American adults seriously considered suicide, 2.8 million made a plan to attempt suicide, and 1.3 million made a suicide attempt (CDC, 2018). An estimated one in five sexual minority adults reported at least one lifetime suicide attempt (Hottes et al., 2016), and another study found that by age 18, nearly 20% of sexual minority adults reported having had a suicide attempt in the previous five years compared with 5% of heterosexual adults (Fish, Rice, Lanza, & Russell, 2018). In adolescents, rates of past 12-month suicide attempt among heterosexuals are around 8% while sexual minority adolescents range

from 26% to 37% (Eisenberg & Resnick, 2006; Kann, Kinchen, et al., 2016; Kann et al., 2011; Peter et al., 2017). A review of nearly three decades of research found that the odds of attempting suicide for lesbians, gay males, and bisexual women and men were 2 to 7 times higher than their heterosexual peers (Haas et al., 2011).

The most considerable risk for STBs and suicide death is concentrated in the period from adolescence to young adulthood (Blosnich et al., 2016; de Araújo Veras, Ximenes, de Vasconcelos, & Sougey, 2016; Fish et al., 2018; Haas et al., 2011; Marshal et al., 2013; Paul et al., 2002; Russell & Toomey, 2012). The lifetime prevalence of suicide ideation increases slowly from age 10 to 12 then more rapidly from 12 to 17 years, and 88% of adolescent transitions from suicide plan to suicide attempt occur within one year of onset of suicidal ideation (Nock et al., 2013). Further, adolescents are 12 times more likely to attempt suicide if they engage in suicidal ideation by age 15 (Reinherz, Tanner, Berger, Beardslee, & Fitzmaurice, 2006). In the California Quality of Life Surveys, sexual minority women reported younger age of first suicide attempt (15.9 years) compared with heterosexual women (19.6 years; Blosnich et al., 2016).

As previously discussed, developmental trajectories among sexual minorities are associated with increased risk of adverse outcomes, including suicidality. Earlier awareness of non-heterosexual orientation may lead to more confusion, distress, and attempts at identity concealment (D'Augelli & Hershberger, 1993). In a study of sexual minority youth, compared to those who had not attempted suicide, those who had attempted suicide reported earlier awareness of their sexual minority status, more identity disclosure, and that they had lost more friends due to this disclosure (D'Augelli & Hershberger, 1993).

Differences in Risk for Suicidality by Participant Sex

There are significant sex differences for adolescent STBs and these differences are relatively stable across sexual and racial/ethnic minority populations (Consolacion, Russell, & Sue, 2004). While males are more likely to die by suicide, females report STBs more frequently than their male peers (Bostwick, Meyer, et al., 2014; Cash & Bridge, 2009; CDC, 2017a, 2018c; Gould, Greenberg, Velting, & Shaffer, 2003; Nock et al., 2013; Reinherz et al., 2006; Swahn et al., 2012). A trend analysis of national YRBS datasets found that the prevalence of suicidal ideation and attempts significantly increased for females—but not males—from 2009 to 2015 (Harper, Steiner, et al., 2018).

Saewyc and colleagues (2007) analyzed data from nine population-based survey datasets of students in the US and Canada and reported that the prevalence of lesbian and bisexual girls who reported suicidal ideation was higher than gay and bisexual boys in half of the surveys examined. In six of the nine surveys, they found that the prevalence of suicidal ideation was higher in bisexual girls than bisexual boys (Saewyc et al., 2007). In a study of sexual minority youth in Chicago, compared to boys, girls had 1.6 times higher odds of suicidal ideation, 1.5 times higher odds of making a plan to attempt suicide, and 2.9 times higher odds of a past-year suicide attempt (Mustanski et al., 2010).

Differences in Risk for Suicidality by Race/ethnicity

The risk for suicidality varies by race/ethnicity in that it occurs disproportionately among White adults compared with Black and Hispanic/Latino adults (CDC, 2015; Goldsmith, Pellmar, Kleinman, & Bunney, 2002). However, this pattern may differ in younger age groups. For example, Black children are at disproportionately higher risk of suicide death from ages five to twelve compared with White children, but from ages

thirteen to seventeen, Black adolescents have about half the risk of suicide death compared with White adolescents (Bridge et al., 2018). In contrast, an analysis of adolescents in the Profiles of Student Life: Attitudes and Behaviors Survey found that heterosexual Black/African-American, Hispanic/Latino, and Other race/ethnicity participants had higher risk of suicidal behavior compared with White youths (Toomey, Syvertsen, & Flores, 2019).

Although suicide deaths among Hispanic/Latino populations have generally been lower than among NHW populations, there is evidence that Hispanic/Latino adolescents, particularly females, are more likely to report STBs than their Black and NHW peers (Kann, Kinchen, et al., 2016; Kann et al., 2014, 2018). For example, a study of high-risk urban youth in the US found that Hispanic youths had higher rates of suicide attempt than NHW youths (Swahn et al., 2012). In the 2009 New York City YRBS, Hispanic students had higher unadjusted odds of past-year suicide attempt compared with non-Hispanic students (LeVasseur, Kelvin, & Grosskopf, 2013). In a sample of 879 African American, Latino, and mixed or other race/ethnicity urban adolescents in the Reach for Health study, Hispanic/Latinos were more likely than African Americans to report past-year suicidal ideation and attempts and the risk was further elevated in Hispanic/Latina females (L. O'Donnell, O'Donnell, Wardlaw, & Stueve, 2004). However, an analysis of 2009 Arizona YRBS data found that Hispanic adolescents were most likely to report depression compared to their Black, White, and Mixed Hispanic peers, but no differences were found by race/ethnicity for suicidality (Bauman, Toomey, & Walker, 2013).

There are fewer studies available that explored STBs among sexual minority participants of color. One study compared sexual minority students of color with their

white heterosexual peers (Mueller, James, Abrutyn, & Levin, 2015). Mueller and colleagues (2015) examined pooled 2009 and 2011 YRBS data and reported that, compared with White heterosexual males, Black and Hispanic heterosexual males had significantly lower odds of suicidal ideation, and White, Black, and Hispanic gay and bisexual males had significantly higher odds of suicidal ideation. Compared with White heterosexual females, Hispanic heterosexual and White, Black, and Hispanic lesbian and bisexual females had significantly higher odds of suicidal ideation, but Black heterosexual females did not significantly differ. Surely, it is unsurprising that LGB participants of any race/ethnicity would be at higher risk for suicidal ideation compared with White heterosexuals, which highlights the importance of making comparisons within the same race/ethnicity or sexual minority status. For example, in a convenience sample of college students, LGB students of color were more likely than their heterosexual peers of color to be at high risk for suicide but were not at higher risk than their White LGB peers (Shadick, Dagirmanjian, & Barbot, 2015).

Indeed, other studies have also found that POC sexual minority participants are more likely to report STBs compared with their heterosexual peers of the same race/ethnicity (Lytle, De Luca, & Blosnich, 2014; Lytle, Luca, Blosnich, & Brownson, 2015). For example, in the National College Health Assessment, non-Hispanic White (NHW), Black, Asian, Latino, Multiracial, and Other race/ethnicity LGB participants were more likely to report 12-month depression, self-harm, suicidal ideation, and suicide attempt compared with their same race/ethnicity heterosexual peers (Lytle et al., 2014). In another study, compared with same race/ethnicity heterosexual peers, Black, White, Latino, Asian, and Other race/ethnicity LGBQ college students were more likely to report

passive suicidal ideation and lifetime active suicidal ideation; all but Black LGBTQ students were more likely to report 12-month active suicidal ideation in the 2006 National Research Consortium sample (Lytle et al., 2015). In a national probability sample of Latino and Asian-American adults, gay and bisexual men were more likely to report a recent suicide attempt than heterosexual men (Cochran et al., 2007). In an analysis of Add Health data, compared with their other-sex attracted peers, same-sex romantic attraction was associated with increased depression among Hispanic/Latino participants and with increased suicidal ideation and depression in African-American and White participants and (Consolacion et al., 2004).

Comparisons made between White and POC sexual minority participants for STBs have yielded less consistent results. For example, among sexual minorities in a pooled sample of 2005-2007 YRBS data, Black females had significantly lower odds of suicidal ideation, making suicide plans, suicide attempts, and past-year sadness, and Hispanic/Latinas had higher odds of suicide attempts but did not significantly differ from their White peers for sadness, ideation, or planning (Bostwick, Meyer, et al., 2014). In that sample, Black sexual minority males had significantly lower odds of past-year sadness, suicidal ideation, and suicide planning, and Hispanic/Latino males had significantly higher odds of past-year sadness, but did not differ from their White sexual minority male peers for suicidal ideation, planning, or attempts (Bostwick, Meyer, et al., 2014). In a sample of LGBT youth aged 16-20 years in Chicago, compared with White LGBT youth, Black and Latino LGBT youth had lower prevalence of major depression, but racial/ethnic minority participants did not significantly differ in their odds of 12-month STBs or lifetime suicide attempts (Mustanski et al., 2010). In the National

Research Consortium's 2006 survey, White, Black, and Asian LGBQ college students did not differ in their odds of lifetime or past-year passive or active suicidal ideation, but Latino LGBQ students had lower odds of lifetime passive and active suicidal ideation, and LGBQ students of Other racial/ethnic minority groups had higher odds of lifetime active suicidal ideation compared with White LGBQ college students (Lytle et al., 2015).

Controlling for depression may help to clarify comparisons between POC and White sexual minority participants. For example, in a sample of LGB adults in New York City, Black LGB adults reported lower prevalence of major depressive disorder than White LGB adults but did not differ significantly in their odds of reporting a medically serious suicide attempt (Meyer, Dietrich, & Schwartz, 2008). In that study, Latino LGB adults also reported lower prevalence of major depressive disorder but were significantly more likely than White LGB adults to report a medically serious suicide attempt (Meyer, Dietrich, et al., 2008). Later analysis of the same data showed that, among those reporting major depressive disorder, Black and Latino LGB adults were as likely as White LGB adults to report suicide attempts (S. O'Donnell, Meyer, & Schwartz, 2011). In the 2008-2009 National College Health Assessment, adjusting for age, participant gender, and past 12-month diagnosis of depression among LGB participants, Black and Multiracial LGB participants had higher odds of suicide attempts compared with White LGB participants (Lytle et al., 2014).

Differences in Risk for Suicidality by Sexual Orientation Subgroup

Bisexual Participants

Across a range of samples, bisexuals have been reported to have higher risk for depression and suicidality compared with their heterosexual peers (Bostwick, Boyd,

Hughes, & McCabe, 2010; Caputi, Smith, & Ayers, 2017; Kerr, Santurri, & Peters, 2013; Saewyc et al., 2007; Salway et al., 2018; Zhao et al., 2010), with odds of suicide attempts up to six times higher for bisexual women compared with heterosexual women (Blosnich et al., 2016; Bolton & Sareen, 2011). Although some studies failed to find significant differences between bisexual participants and their other sexual minority peers (Balsam, Beauchaine, Mickey, & Rothblum, 2005; Ryan, Russell, Huebner, Diaz, & Sanchez, 2010; Warner et al., 2004), other authors report that bisexuals are at higher risk for STBs compared with their gay and lesbian peers (Hatzenbuehler, 2011; Hershberger, Pilkington, & D'Augelli, 1997; Marshal et al., 2013; Peter et al., 2017; Plöderl & Tremblay, 2015; Pompili et al., 2014; Saewyc et al., 2007; Taliaferro & Muehlenkamp, 2017). An analysis of pooled 2001-2008 Massachusetts Behavioral Risk Factor Surveillance System (BRFSS) data for 67,359 adults showed that bisexual men and women more often reported past-year serious suicidal ideation (18.5%) than gay/lesbian (4.2%) and heterosexual (3.0%) adults (Conron, Mimiaga, & Landers, 2010). In a meta-analysis, bisexual participants had 1.22-1.52 higher odds for lifetime and 12-month suicidal ideation or attempt compared with their gay/lesbian peers (Salway et al., 2018).

In their analysis of nine North American datasets, Saewyc and colleagues (2007) found that bisexual boys had significantly higher age-adjusted odds of suicidal ideation compared with heterosexual and mostly heterosexual boys, but results were mixed in when comparing bisexual boys with gay boys (Saewyc et al., 2007). However, bisexual girls had higher age-adjusted odds of suicidal ideation compared to mostly heterosexual girls and similar or lower odds compared to lesbians (Saewyc et al., 2007). In a pooled analysis of 2001-2009 YRBS data from seven states and six large urban school districts,

bisexual students reported higher prevalence of 12-month suicidal ideation (40.3% vs 29.6%) and suicide planning (35.7% vs 21.2%) but were similar for past-year suicide attempts (28% vs 25.8%) compared with their gay/lesbian peers (Kann et al., 2011).

Questioning/unsure participants

Few studies have included participants who report that they are unsure of or are questioning their sexual identity and when they are included, it is often as part of a single LGBQ category. Nevertheless, there is some evidence that participants who are unsure of their sexual identity have higher risk for suicidality compared with their heterosexual peers (Bolton & Sareen, 2011; Matthews et al., 2014; Stone et al., 2014; Taliaferro & Muehlenkamp, 2017; Woodward, Pantalone, & Bradford, 2013; Ybarra, Mitchell, Kosciw, & Korchmaros, 2015; Zhao et al., 2010).

Questioning participants may also differ significantly from their LGB-identified peers. For example, in the 2013 NYC YRBS, a larger percentage of girls who were unsure of their sexual identity reported suicidal ideation than their lesbian, bisexual, and heterosexual female peers (Coble et al., 2017). In a study of high school students in a large Midwestern county, students who were questioning their sexual identity reported more drug use, teasing, depression, and suicidal ideation than their heterosexual, gay/lesbian, and bisexual peers (Espelage et al., 2008). Another study of high school students in the same large Midwestern county found that participants who were questioning their sexual identity reported higher levels of depressed/suicidal thoughts compared with heterosexual, gay, and bisexual participants, except among racial minorities where questioning girls did not differ significantly from lesbian or bisexual girls (Poteat et al., 2009). In a longitudinal study of self-identified sexual minority youth

in Chicago, questioning participants were at highest risk for depression and suicidal ideation followed by bisexual participants (Birkett, Newcomb, & Mustanski, 2015).

Adolescent Sexual Contacts and Suicidality

Sexually active adolescents are at higher risk for adverse outcomes compared with their peers who report no sexual contact (Matthews et al., 2014; McCabe, Hughes, Bostwick, West, & Boyd, 2009). In an analysis of 2007-2009 YRBS data from five large US cities, not having sexual contact was protective of most STBs among females and of medically serious suicide attempts among males (Stone et al., 2014). In that study, both-sex contact was associated with suicide attempts in males and suicide planning in females, but same-sex-only contact was associated with higher odds of suicide attempts in females but not males (Stone et al., 2014). In the 2013 NYC YRBS, suicide attempts were reported by 26% of females who reported both-sex sexual contact, 15% of females who reported same-sex-only contact, and 6.7% of females who reported opposite-only contact, but females with same-only contact had significantly lower rates of suicidal ideation compared with their both-sex and opposite-sex only peers (Coble et al., 2017). Earlier sexual debut is also associated with increased risk for poor outcomes. For example, initiation of sexual activity before age thirteen was associated with increased risk of substance use, sexual risk taking, violent victimization, and suicidal thoughts/attempts in the 2015 national YRBS, regardless of heterosexual or LGB identity (Lowry, Dunville, Robin, & Kann, 2017).

Sexual Orientation Discordance and Suicidality

Although most studies that have evaluated outcomes for HSM participants have focused on disparities directly related to sexual activity, a few studies have explored the effects of identity-behavior discordance on suicidality and other behaviors that are associated with increased risk for suicidality, including mental health problems and the use of alcohol, tobacco, and other substances. For example, compared with their concordant heterosexual peers, discordant heterosexual women had higher odds of mental health and substance use problems, and discordant heterosexual males had the same or decreased odds of mental health and substance use disorders in Wave II of the NESARC (Gattis et al., 2012). Heterosexual women with past-year same-sex contact were significantly more likely to report the use of tobacco, marijuana, and cocaine, and to report binge drinking compared with exclusively heterosexual women in the 2002 NSFG (Bauer et al., 2010).

Krueger and Upchurch (2019) investigated whether sociodemographic, lifestyle, and psychosocial characteristics accounted for mental health disparities between heterosexual and sexual minority adults in the NESARC. They found that mental health disparities between HSM and heterosexual men in the NESARC were smaller than those for gay and heterosexual men, and that inclusion of sociodemographic, lifestyle, and psychosocial characteristics in their regression model fully attenuated the mental health disparities between HSM and heterosexual men, but not between gay and heterosexual men. The disparities between bisexual and heterosexual women and between HSM and heterosexual women were not fully attenuated by any combination of factors, suggesting

notable sex differences in the experiences of HSM men and women (Krueger & Upchurch, 2019).

Two recent studies using the 2015 national YRBS dataset explored associations between identity-behavior discordance and health risk behaviors. Annor and colleagues (2018) examined the association between identity-behavior discordance for heterosexual and gay/lesbian students (bisexual and unsure participants were excluded) and high or low risk for suicidality and found that discordant students were 70% more likely to be at high risk for STBs compared to their concordant peers. Harper and colleagues (2018) found that discordant heterosexual students differed from their concordant heterosexual peers, but not their LGB peers, for marijuana use, prescription drug misuse, use of alcohol or drugs before last sex, and inconsistent condom use (Harper, Clayton, Andrzejewski, & Johns, 2018). In that study, the prevalence of discordant heterosexuals was lower than their gay/lesbian peers for missing school due to safety concerns, and lower than bisexuals for being bullied at school and 12-month suicidal ideation (Harper, Clayton, et al., 2018).

Risk Factors for Suicidal Thoughts and Behaviors

Numerous factors increase risk for STBs among adolescents including low socioeconomic status, poor quality parental relationships, low sleep quality/sleep disorders, smoking, substance use, childhood sexual abuse, early sexual initiation, dating violence, feeling unsafe at school, inadequate social support, and having a friend who died by suicide (Bearman & Moody, 2004; Decamp & Bakken, 2016; Fried, Williams, Cabral, & Hacker, 2013; Hawton, Comabella, & Haw, 2013; Im, Oh, & Suk, 2017; M. King et al., 2008; Lowry, Crosby, Brener, & Kann, 2014; Stone et al., 2017; Twenge,

Joiner, Rogers, & Martin, 2018). Risk factors for adolescent suicide attempts change as students advance in high school: illicit drug use and depression tend to increase in prevalence, but violent behaviors tend to decrease in prevalence with age (Reed, Nugent, & Cooper, 2015).

Sexual orientation itself is not a cause of suicidality, but sexual minorities are disproportionately more likely to experience risk factors such as bullying victimization that increase risk for suicidality (Savin-Williams & Ream, 2006). For example, in the 2011 Chicago YRBS sexual orientation was not directly related to suicidal ideation and behaviors but was associated with increased risk of suicidality indirectly through being threatened or injured with a weapon at school and through sexual orientation-based harassment (Bouris, Everett, Heath, Elsaesser, & Neilands, 2016). In a sample of urban Hispanic high school students, sexual minority identity predicted school-based bullying, which indirectly affected depressive symptoms and suicidal ideation (Lardier, Bermea, Pinto, Garcia-Reid, & Reid, 2017).

Suicidality in LGB(Q) adolescents is associated with both general and LGB(Q)-specific risk factors (Liu & Mustanski, 2012; Mustanski & Liu, 2013). Minority stressors associated with STBs include experiences of family rejection, sexual orientation-based harassment, and childhood gender nonconformity (Friedman, Koeske, Silvestre, Korr, & Sites, 2006; Liu & Mustanski, 2012; Mustanski, Andrews, & Puckett, 2016; Mustanski & Liu, 2013; Russell & Joyner, 2001; Ryan et al., 2010).

Depression and Other Mental Health Problems

Prior suicide attempts and refractory or recurrent depression are the strongest predictors for future suicide attempts and completed suicide (Liu & Mustanski, 2012;

Mustanski & Liu, 2013; Oquendo, Currier, & Mann, 2006; Owens, Wood, Greenwood, Hughes, & Dennis, 2005). Suicide attempts are associated with over ten times higher odds of another suicide attempt in the year following an initial attempt (Mustanski & Liu, 2013). Although depression is the most common psychiatric disorder in people who die by suicide (Hawton et al., 2013), only about 25% of those with major depressive disorder report a suicide attempt in their lifetime (Van Orden et al., 2010). Adolescents with major depressive disorder or dysthymia have significantly higher odds of suicidal ideation, planning, and attempts (Langille, Asbridge, Cragg, & Rasic, 2015; Nock et al., 2013). In a sample of students aged 10-17 years in Brazil, depressive symptoms were associated with 3.4 times higher risk of suicide (de Araújo Veras et al., 2016).

Bisexuals are at disproportional risk for mental health disparities compared with their other sexual minority peers. Compared with heterosexual men in the NESARC, bisexual men had higher prevalence of anxiety disorders and suicide attempts and gay men had higher odds of mood and anxiety disorders (Bolton & Sareen, 2011). In that study, bisexual women had higher odds of anxiety disorders, substance use disorders, and suicide attempts, and lesbians had increased odds of substance use disorders compared with heterosexual women (Bolton & Sareen, 2011). Bisexual women had lower mental health scores and more past-year stressful life experiences than lesbian, HSM, and heterosexual women, and gay and bisexual men reported more prior-year stressful life experiences than exclusively heterosexual or HSM men in Wave III of the NESARC (Krueger & Upchurch, 2019). Bisexual high school students had higher rates of depression and lower self-esteem compared with their gay and lesbian peers but did not differ from their questioning peers in the 2015 and 2017 National School Climate

Surveys (Kosciw et al., 2016, 2018). In a systematic analysis, bisexually identified participants had higher prevalence of depression compared with their heterosexual and gay- or lesbian-identified peers (L. E. Ross et al., 2018).

Others with a non-exclusive sexual identity may also be at increased risk for mental health problems. For example, in Waves III and IV of the Add Health, mostly heterosexual and bisexual young adults both reported significantly higher prevalence of depression compared with heterosexuals (G. Li, Pollitt, & Russell, 2016). Among women aged 24-32 years in Wave IV of Add Health, those who were bisexual, mostly straight, or mostly gay had more depressive symptoms and perceived stress compared with their exclusively straight peers (Lindley et al., 2012). In a sample of Dutch young adults, mostly heterosexuals reported higher levels of psychological distress, suicidality, smoking, and drug use compared to their gay and lesbian peers (Kuyper & Bos, 2016). In a review of 22 samples from five Western countries, Vrangalova and Savin-Williams (2014) reported that mostly heterosexual participants were slightly to moderately more depressed than heterosexuals but less depressed than bisexually identified participants during short- and long-term assessments.

There is some evidence that HSM females and males are at higher risk for mental health problems compared with their concordant heterosexual peers. For example, discordant heterosexual college men had significantly higher prevalence of depression compared with concordant heterosexual men using data from 2007–2011 College Student Health Surveys (Przedworski et al., 2015). In Wave II of the NESARC discordant heterosexual females and males had rates of lifetime depressive episode that were higher than concordant heterosexual and lower than their LGB peers (Gattis et al., 2012). In Add

Health Wave IV data (2008-2009), compared with their same-gender peers, all sexual minority women and men (LGB, discordant heterosexual, and mostly heterosexual) had significantly higher perceived stress than their concordant heterosexual peers and perceived stress partially mediated the relationship between sexual orientation and depressive symptoms for all sexual minority women and mostly heterosexual men (Krueger, Meyer, & Upchurch, 2018).

Bullying Victimization

Bullying is a pervasive problem among adolescents: in 2017, 20% of students aged 12-18 years reported being bullied at school, and 15% reported electronic bullying victimization during the school year (Musu-Gillette et al., 2018). In 2013 and 2015, 33% of those students who reported being bullied at school and 27% of those who reported electronic bullying victimization in the previous year reported that this occurred at least once or twice a month (Zhang, Musu-Gillette, & Oudekerk, 2016). Bullied students often report both traditional school-based bullying and electronic bullying victimization (Birkett, Russell, & Corliss, 2014; Joshi, Overton, & Cole, 2018; Kahle, 2017; Kowalski & Limber, 2013; Romero, Bauman, Ritter, & Anand, 2017; Schneider, O'Donnell, Stueve, & Coulter, 2012; Van Geel, Vedder, & Tanilon, 2014; Waasdorp & Bradshaw, 2015; Ybarra, Diener-West, & Leaf, 2007). As discussed in the section on proximal minority stressors, discrimination often manifests as bullying in children and adolescents (Nansel et al., 2003).

In a sample of sexual minority boys, the age range for onset of general (e.g., not bias-based) bullying was 5-15 years old and the range of onset for sexual orientation bullying victimization was 6-17 years, with most students reporting onset of one or both

types of bullying victimization by age 11 (Sterzing, Gibbs, Gartner, & Goldbach, 2017). School-based bullying, electronic bullying, and bullying based on sexual orientation tend to decrease as students advance in grades, with more substantial decreases in school-based bullying (Kahle, 2017; Patrick et al., 2013; Schneider et al., 2012). However, in the 2009 National YRBS 12th-grade students were the most likely to be involved in electronic bullying (Bauman et al., 2013), and in their study with sexual minority boys, Sterzing and colleagues (2017) did not find an age-related decline in sexual orientation-based bullying victimization.

Sex Differences in Bullying Victimization

There is evidence that adolescent girls experience more bullying victimization than boys. For example, in 2015, 21% of students aged 12-17 years reported being bullied at school, with a larger percentage of females (23%) than males (19%) reporting such victimization in the Indicators of School Crime and Safety report (Zhang et al., 2016). In the 2011 National YRBS, girls were more likely than boys to be bullied, with a larger disparity for electronic bullying than school-based bullying (Messias, Kindrick, & Castro, 2014). In the 2013 National YRBS, girls were more likely to report traditional school-based bullying and electronic bullying compared with boys (Kahle, 2017; Kann et al., 2014). This sex difference was also reported in the 2015 and 2017 national YRBS (Kann, Kinchen, et al., 2016; Kann et al., 2018).

Race/ethnicity Differences in Bullying Victimization

Some studies suggest that Black and Latinx students report lower rates of school-based and electronic bullying victimization compared with White students. For example, in a nationally representative sample of students in 6th to 10th grade, Black students had

significantly lower prevalence of bullying victimization compared with their White and Hispanic/Latino peers (Spriggs, Iannotti, Nansel, & Haynie, 2007). However, in the 2009 New York City YRBS, Hispanic students had higher odds of bullying victimization compared with non-Hispanic students (LeVasseur et al., 2013). In a sample of low-income Texas schools, Black students reported more verbal and physical bullying victimization than Hispanic/Latino students (Peskin, Tortolero, & Markham, 2006).

It is less clear whether LGBTQ POC are at higher risk for bullying victimization than their White LGBTQ peers. In an analysis of pooled 2009-2011 YRBS data, Black LGBTQ-identified youth did not differ significantly in their risk of bullying victimization compared with their White heterosexual peers; White LGBTQ females and males, Hispanic gay and bisexual males, and Hispanic bisexual females reported more bullying victimization compared with their White heterosexual peers (Mueller et al., 2015). However, it is unsurprising that gay and bisexual participants of any race/ethnicity are bullied at higher rates than White heterosexuals. In contrast, Ash-Houchen and Lo (2018) found that Black and Hispanic males and females had significantly lower odds of bullying victimization regardless of heterosexual or sexual minority status in a sample of pooled 2011-2013 state YRBS data. Sexual orientation-based victimization did not differ by race/ethnicity in a community-based sample of self-identified sexual minorities (Baams et al., 2015).

Sexual Orientation Subgroup Differences in Bullying Victimization

There are also differences in bullying victimization based on sexual identity. For example, in GLSEN's 2015 and 2017 National School Climate Surveys, bisexual students reported less orientation-based and gender-based peer victimization compared

with their gay/lesbian peers, and controlling for levels of identity disclosure narrowed but did not eliminate the gap (Kosciw et al., 2016, 2018). An analysis of 2003-2007 Delaware YRBS data found that youth who were unsure of their sexual identity were more likely to be victimized compared to bisexual youth but no differences emerged between bisexual and gay or lesbian students (Button, O'Connell, & Gealt, 2012). In a study of 7th and 8th grade students in the Midwestern US, students who were questioning their sexual identity reported significantly higher levels of homophobic teasing, bullying, general peer victimization, and more drug use, truancy, depression, and suicidality compared with their LGB peers (Birkett, Espelage, & Koenig, 2009).

In the 2015 national YRBS, the prevalence of school-based bullying was lower for discordant heterosexuals compared with bisexuals, and discordant heterosexuals were less likely to miss school due to safety concerns compared with their gay or lesbian peers (Harper, Clayton, et al., 2018). Mostly heterosexual females and males, lesbians and gay males, and bisexual females were more likely to report bullying victimization in the 2001 cycle of the GUTS study (Berlan, Corliss, Field, Goodman, & Austin, 2010). Based on the results of a systematic review, Vrangalova and Savin-Williams (2014) concluded that mostly heterosexuals experienced moderately more victimization than heterosexuals but less than bisexuals.

Bullying Victimization and Risk for Suicidality

Victims of bullying are more likely to report depression, low self-esteem, poor school performance, lower quality of life scores, higher levels of alcohol and drug use and increased odds STBs compared to their peers who have not experienced bullying or harassment (Bearman & Moody, 2004; Duong & Bradshaw, 2014; Hall-Lande,

Eisenberg, Christenson, & Neumark-Sztainer, 2007; Hatzenbuehler, 2011; Hepburn, Azrael, Molnar, & Miller, 2012; Patrick et al., 2013; Reed et al., 2015; Schneider et al., 2012; Shields, Whitaker, Glassman, Franks, & Howard, 2012). A meta-analysis of studies examining bullying and suicidality among adolescents found that students who were bullied had 2.34 higher odds of suicidal ideation and 2.94 greater odds of suicide attempts compared with those who were not bullied (Holt et al., 2015). Further, Reed and colleagues (2015) provided evidence of spontaneous, unplanned adolescent suicide attempts through their development of a path model with direct and indirect paths between school-based and electronic bullying victimization, independent of depression, suicidal ideation, and suicide planning.

Both school-based and electronic bullying victimization are associated with suicidality, and co-occurrence of both types of bullying further increases this risk (Kahle, 2017; Messias et al., 2014; Schneider et al., 2012). In the 2011 Arizona YRBS, the likelihood of suicide planning was 1.55 times higher among school-based bullying victims and 1.89 times higher among electronic bullying victims compared with those who were not bullied (Romero et al., 2017). A 2014 meta-analysis of peer victimization concluded that both school-based bullying and electronic bullying increased the odds of suicidal ideation and suicide attempts in children and adolescents, but the association with suicidal ideation was stronger for electronic bullying (Van Geel et al., 2014).

Among students who are bullied, sexual minority youth experience higher risk for suicidality compared with their heterosexual peers. For example, in 1995 YRBS data from Massachusetts and Vermont, among those who reported high levels of at-school victimization, LGB-identified youth were more likely than their heterosexual peers to

report higher levels of substance use and suicidality but those LGB students who reported low levels of at-school harassment were similar to their heterosexual peers with low levels of harassment (Bontempo & D'Augelli, 2002). In 2009-2013 Rhode Island YRBS data, among students who were bullied, LGBQ boys had nearly twice the odds and LGBQ girls had 3.34 times higher odds of suicidal ideation compared with their heterosexual peers (Dunn et al., 2017). Non-heterosexual-identified students who reported bullying victimization were four times as likely to report suicidal ideation and nearly three times as likely to report suicide attempts compared with heterosexual peers, but heterosexual-identified students with same-sex attraction or behavior did not significantly differ from their other heterosexual peers in a sample of Quebec high school students (Montoro, Igartua, & Thombs, 2016).

When non-heterosexual identity is disaggregated into sexual identity subgroups, bisexual bullying victims report poorer outcomes than their other sexual minority peers. For example, among those who reported bullying victimization in the Teen Health and Technology study, bisexual students had significantly higher odds of suicidal ideation, but participants in the other sexual identity categories (gay/lesbian/queer and questioning/unsure/other) did not differ significantly from heterosexual students (Ybarra et al., 2015). Among sexual minorities aged 22-30 years in the GUTS dataset, more frequent bullying victimization was associated with increased past-week depressive symptoms in bisexual women and increased past-week anxiety symptoms in mostly heterosexual women (Katz-Wise et al., 2017). Bullying victimization and depressive symptoms were associated with increased risk of suicidal ideation and attempts for bisexual and questioning ninth- and eleventh-grade students in the 2013 Minnesota

Student Survey (Taliaferro & Muehlenkamp, 2017). Depressive symptoms, but not bullying victimization was associated with increased odds of suicidal ideation and attempts in gay/lesbian participants in that study (Taliaferro & Muehlenkamp, 2017).

Several studies have found that depression mediates the relationship between bullying victimization and suicidality. For example, major depressive disorder and feelings of hopelessness mediated the association between LGBT-based victimization and lifetime suicide attempts in a sample of LGBT adolescents and young adults (Mustanski & Liu, 2013). In a sample of adolescents aged 10-18 in a New Jersey suburban community, depression fully mediated the relationship between bullying victimization and suicidal ideation (Lardier, Barrios, Garcia-Reid, & Reid, 2016). In the 2009 Arizona YRBS, depression mediated the association between school-based bullying victimization and suicide attempts for males and females, but only mediated the association with electronic bullying victimization among females (Bauman et al., 2013).

In sum, although sexual orientation does not cause suicidality, sexual minorities are at increased risk for bullying victimization, depressive symptoms, and for the development of maladaptive forms of coping such as substance use, rejection sensitivity, and rumination that increase the risk for STBs. Some subgroups of sexual minorities, particularly bisexuals, are at higher risk than others for STBs and the risk factors that contribute to them. Differences by race/ethnicity are less clear, but Hispanic/Latina females are at higher risk for suicidality than their NHW and Black female peers and their male Hispanic/Latino peers. HSM females and males may be at higher risk for some risk factors than their heterosexual peers, but less than their LGBQ-identified peers.

Summary

Medical and legal authorities pathologized and criminalized same-sex behavior and ostracized suspected homosexuals, leading to the oppression and marginalization of non-heterosexuals during much of the 20th century (Cochran et al., 2014; Conrad & Angell, 2004; Drescher, 2015a; Herek, 2004, 2010; Kane, 2003). For the last 50 years, gays and lesbians have been visibly fighting for and winning legal rights in the US (Armstrong & Crage, 2006; Liptak, 2015; Supreme Court of the United States, 2015).

Despite increased visibility and recognition of legal rights, sexual minorities are the targets of stigma that increases risk for health disparities through chronic stress exposure (Meyer, 2003). Stressful experiences from distal and proximal sources are mediated by general psychological processes that influence the degree to which health disparities are expressed at the individual level (Hatzenbuehler, 2009).

Additional minority stressors are at play for some groups of people. For instance, those who become aware of their sexual identity earlier in life are more likely to experience rejection from family members, anti-gay harassment, bullying victimization, and low levels of social support (Almeida et al., 2009; D'Augelli et al., 2005; Mustanski & Liu, 2013). Those who are more open about their sexual identity experience more discrimination (Baams et al., 2015; Chesir-Teran & Hughes, 2009), but gay males and lesbians report more sexual orientation-based harassment than bisexuals, even after controlling for levels of identity disclosure (Kosciw et al., 2016, 2018).

In addition to heterosexism, sexual stigma, and sexual prejudice (Herek, 2004), bisexuals face monosexism, biphobia (Bostwick & Hequembourg, 2013; Flanders et al., 2017; L. E. Ross et al., 2010), and microaggressions that suggest they are confused,

deviant, disloyal, untrustworthy, or in denial of a gay or lesbian identity (M. E. Brewster & Moradi, 2010; Israel & Mohr, 2004; Kaufman et al., 2017). Bisexuals report feeling pressured to prove their bisexual identity by modifying their relationships or sexual behaviors to conform to societal and LGBTQ community expectations (Flanders et al., 2017), and report more internal conflict about their sexual identity and lower willingness to disclose their identity to others, compared with their gay and lesbian peers (Lewis et al., 2009; Wandrey et al., 2015).

Sexual identity development is a central task in adolescence and is more complex among sexual minorities than their heterosexual peers, in part due to the challenges of overcoming heterosexist socialization and the effects of observing stigma towards other non-heterosexual people (D'Augelli et al., 2005; Rosario et al., 2006; Rust, 1992). Awareness of same-sex attractions, development of a sexual identity label, and disclosing that label to others are important milestones for sexual minorities, but may lead to confusion, distress, rejection by friends and family members, and bullying victimization (Ballard, Jameson, & Martz, 2017; Manning, 2015; Savin-Williams & Diamond, 2000a).

Individuals have many sources of information that influence their adoption of a sexual identity label, including sexual and romantic desires, behavioral experiences, acceptance or rejection of mainstream norms, religion, gender role norms, traditional family structures, and cultural climate (Baunach & Burgess, 2013; Gordon & Silva, 2015; Lund et al., 2016; Mustanski et al., 2014; Silva, 2017a). Previous experiences of discrimination can increase sensitivity to rejection (Hatzenbuehler & Pachankis, 2016; Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak, 2002) and concealing one's sexual identity can further increase sensitivity to rejection (Pachankis, 2007). However, identity

concealment partially mediates the relationship between the effect of living in a country with higher levels of structural stigma and life satisfaction by reducing discrimination and victimization (Pachankis & Bränström, 2018).

Women's same-sex sexuality is sometimes treated as performative (Budnick, 2016; Kuperberg & Walker, 2018; Yost & McCarthy, 2012), but women's sexuality is generally considered to be more fluid or flexible than men's (Bauermeister et al., 2010; Diamond, 2003; Katz-Wise, 2015; Katz-Wise et al., 2016). For women, engaging in same-sex behavior in public is considered less threatening to heterosexual identity than engaging in same-sex behavior privately (Rupp & Taylor, 2010; Walker, 2014b; Yost & McCarthy, 2012).

In contrast, men's heterosexuality is more precarious than women's (Mize & Manago, 2018), and a single same-sex sexual act is thought to reveal innate undisclosed homosexuality (Schilt & Westbrook, 2009) with an associated loss of social status (England, 2015). However, some research suggests that as a result of legal and social gains for the LGBTQ community, young men are expressing more acceptance towards homosexuality (Anderson, 2013a; McCormack & Anderson, 2014) and more openness to same-sex attractions and behaviors (Scoats et al., 2017).

HSM participants may choose to identify as heterosexual for several reasons including internalized homophobia, identity concealment to avoid the effects of stigma, or through more elastic understandings of heterosexuality. Some maintain a heterosexual identity through the use of modifiers such as mostly heterosexual or heteroflexible (Carrillo & Hoffman, 2018), by discounting the importance of same-sex encounters (Baldwin et al., 2015; Silva, 2017b), or through holding the belief that some same-sex

contact does not preclude someone from heterosexual identity (Anderson & Adams, 2011). For example, some straight-identified women (Budnick, 2016; Walker, 2014b) and men (Baldwin et al., 2015; Carrillo & Hoffman, 2018; Silva, 2017b) who report same-sex sexual activities do not consider those activities to be incompatible with heterosexuality, particularly if the encounters are infrequent. Given the option, many participants identify as mostly heterosexual on surveys, and those participants exhibit more same-sex attraction and behavior than their exclusively heterosexual peers and more other-sex attraction and behavior than their bisexual peers (Vrangalova & Savin-Williams, 2012).

HSM persons avoid the stigma associated with a bisexual or other non-heterosexual identity, but miss the opportunity to obtain support from a community of similar others (Frable et al., 1998; Nouvilas-Pallejà et al., 2018) and the use of psychological strategies associated with membership in a stigmatized group that provide a protective effect to self-esteem (Crocker & Major, 1989). Despite avoiding the stigma associated with bisexual identity, research suggests that HSM participants and mostly heterosexuals are at increased risk for substance use, depression, and suicidality than their exclusively heterosexual peers (Kuyper & Bos, 2016; G. Li et al., 2016; Lindley et al., 2012; Vrangalova & Savin-Williams, 2014).

Gaps in the Current Literature

Although evidence suggests that HSM females and males comprise a proportion of the population that is as large as or larger than their other sexual minority peers, little research has explored their psychosocial outcomes in contexts outside of sexual health.

Epidemiological studies that use terms such as MSM, MSMW, WSW, behaviorally

bisexual, and similar are essential for identifying health disparities and addressing unmet needs related to sexual health and behavior (Young & Meyer, 2005). Unfortunately, these constructs fail to account for the differential social experiences of those who identify as lesbian, gay, or bisexual among those who report same- or both-sex contact. In studies that base their analyses solely on self-reported sexual identity, HSM participants are categorized with other heterosexuals, which misses differential risk based on same-sex activity. Considering sexual identity and sexual behavior simultaneously when constructing sexual orientation categories for analysis presents the opportunity to analyze HSM participants separately from their other heterosexual peers.

Much of the psychological research that examined HSM participants separately from their other heterosexual peers has classified participants according to how, whether, or the degree to which, the participant's self-reported identity (or another baseline characteristic) is discordant with other reported sexual orientation dimensions.

Researchers using the 2015 national YRBS presented two approaches to operationalizing identity-behavior discordance. Harper and colleagues (2018) compared concordant heterosexual, discordant heterosexual, and a combined group of LGB participants, excluding those who were not sure of their sexual identity. Annor and colleagues (2018) classified heterosexual and gay/lesbian participants as concordant or discordant based on their reported sex of sexual contacts and excluded bisexual and not sure participants because discordance cannot be determined for people who have non-exclusive identities.

Annor and colleagues' (2018) study exemplifies a challenge that arises when conceptualizing identity-behavior configurations in terms of discordance: how does one handle bisexual participants? Caplan (2017) suggests that attempts to assign discordance

to bisexual participants based on the absence of behavior may be misguided. She asserts that a lack of concordant behavior—such as contact with only one sex among bisexual participants—is likely less dissonant than the presence of discordant behavior for someone whose identity suggests orientation towards only one sex (Caplan, 2017). In her analysis of Add Health data, Caplan (2017) classified those who identified as 100% heterosexual or 100% homosexual as concordant or discordant based on past-year and lifetime sexual contact and collapsed sexually active mostly heterosexual, bisexual, and mostly homosexual participants into a single non-exclusive identity group.

An additional limitation of focusing on identity-behavior discordance is uncertainty as to whether to operationalize discordance for gay and lesbian participants. Gattis and colleagues (2012) suggested that identity-behavior discordance in gay and lesbian participants is not surprising, given the heteronormative pressures in American culture. However, Caplan (2017) argues that researchers should not assume that the presence of heteronormative pressure makes opposite-sex behavior among gay and lesbian identified participants less stressful. Nonetheless, perhaps the most substantial barrier to categorizing gay- and lesbian- identified participants who report discordant attraction and/or behavior is that they account for too small of a percentage of participants in most studies to accurately estimate their outcomes (Gattis et al., 2012; Vrangalova & Savin-Williams, 2012).

Finally, focusing on identity-behavior discordance involves implicit or explicit assumptions about conflict among sexual orientation dimensions. However, the sociological and gender studies literature reviewed in the previous section suggests that identity-behavior configurations that a researcher would consider to be in conflict may be

in alignment for the participant. Conceptualizing HSM participants as a sexual minority subgroup presents the opportunity to explore their outcomes without making assumptions about internal conflict or identity concealment.

Two recent studies operationalized sexual orientation in ways that captured subgroup differences among LGBTQ-identified and HSM participants. Using data from the 2007-2011 College Student Health Survey, Przedworski and colleagues (2015) classified participants as heterosexual or discordant heterosexual based on past-year sexual behavior, and classified gay/lesbian, bisexual, and not sure based on their reported identity. Krueger and Upchurch (2019) classified heterosexual and HSM participants based on reported heterosexual identity and the presence or absence of current same-sex attractions or recent same-sex behaviors, and classified gay, lesbian, and bisexual participants based on reported identity and the presence of any sexual activity. In that paper, Krueger and Upchurch (2019) suggested the term HSM as a way to operationally define discordant heterosexuals without the use of disparaging or judgmental language.

Another potential shortcoming in the literature on HSM participants and identity-behavior discordance more generally happens when researchers fail to differentiate between those who report identity-behavior discordance as a result of forced sex and those who engaged in consensual sexual behavior. Both Harper and colleagues (2018) and Annor and colleagues (2018), included participants who reported forced sex in the discordance categories in their analyses of 2015 national YRBS data. Forced sex was reported by 21.6% of discordant heterosexuals and only 8.5% of concordant heterosexuals in that sample (Harper, Clayton, et al., 2018). However, Annor and colleagues (2018) repeated their analysis without participants who indicated a history of

forced sex and reported that excluding them did not eliminate the disparity in risk for suicidality between concordant and discordant participants. Studies are needed that examine outcomes for identity-behavior discordant participants who do not report a history of forced sex.

Other studies that examined outcomes for HSM participants collapsed LGB participants into a single group, a practice that has been common for decades in evaluating risks for sexual minorities in population-based studies. For example, Kaestle and Ivory (2012) randomly sampled articles on human bisexuality at three time points (1987, 1997, and 2007) and found that the percentage of studies reporting data separately for bisexual participants ranged from 12.9- to 17.9% in the periods examined. As reviewed earlier, when bisexual participants are examined separately from their other sexual minority peers, results often show that they are at higher risk for adverse outcomes than their gay and lesbian peers (L. E. Ross et al., 2018; Saewyc et al., 2007).

Moreover, researchers often exclude from their analyses participants who indicate they are not sure of their sexual identity. Justification for excluding these participants is often related to assumptions that the participants did not understand the question and are treated as missing. However, as presented in the previous section, there is evidence that those who indicate they are not sure of their sexuality differ in significant and meaningful ways from their lesbian, gay, and bisexual peers (Birkett et al., 2009; Poteat et al., 2009). Many of the studies reviewed above—including secondary analyses of the YRBS—excluded participants who indicated they were unsure of, not sure of, or questioning their sexual orientation, presenting an unmistakable gap in the literature (Annor et al., 2018; Bontempo & D’Augelli, 2002; Chae & Ayala, 2010; Cochran, Sullivan, & Mays, 2003;

Gattis et al., 2012; Harper, Clayton, et al., 2018; Krueger & Upchurch, 2019; Lowry et al., 2017; Olsen, Vivolo-Kantor, Kann, & Milligan, 2017; Russell & Joyner, 2001; Shields et al., 2012; White et al., 2016).

Sexual orientation is a central part of development at a time when peers exert powerful influence in the lives of adolescents, and concerns about norms play a considerable role in the development of self-concept (Hensel et al., 2011; Lourie & Needham, 2017; O’Sullivan & Thompson, 2014). How then might HSM adolescents fare compared with their gay, lesbian, bisexual, and questioning peers? How will the effects of bullying victimization—a distal stressor—and the effects of persistent sadness—a proximal stressor—affect the probability of reporting suicidal thoughts and behaviors in a probability-based sample of adolescents?

The Current Study

The current study explores the impact of 30-day bullying victimization and 12-month depressive symptoms (hereafter persistent sadness) on the probability of STBs for female and male heterosexual, HSM, gay/lesbian, bisexual, and questioning adolescents. The literature review raised several questions that this study has the opportunity to address:

- 1a: Do the percentages of HSM adolescents differ from their peers for those reporting persistent sadness, bullying victimization, and STBs and is this affected by participant sex or race/ethnicity?
- 1b: Controlling for other risk factors, does the probability of STBs differ for HSM adolescents compared with their peers?

- 2: Will the probability of STBs be higher for bisexuals than their peers when persistent sadness and bullying victimization are considered simultaneously?
- 3: Will the probability of STBs differ for questioning participants compared with their peers when persistent sadness and bullying victimization are considered simultaneously?
- 4: When compared within the same race/ethnicity, is the proportion of sexual minorities who report sadness, bullying, and STBs larger than their heterosexual peers?
- 5: When compared within the same sexual orientation, does the proportion of racial/ethnic minority participants who report sadness, bullying victimization, and STBs differ from their NHW peers?

Based on the research reviewed above, it is expected that LGBQ participants will report more persistent sadness, bullying victimization, and STBs compared with their heterosexual peers. It is expected that more bisexuals than gay/lesbian participants will report sadness, bullying victimization, and STBs but it is unclear whether or in what direction bisexual participants may differ from their questioning peers. It is expected that HSM females and males will fall between their heterosexual and LGBQ-identified peers for suicidality and its risk factors, based on their engagement in sexual behaviors that are associated with increased risk for poor psychosocial outcomes concurrent with an identity that shields them from the consequences of openly identifying as a sexual minority. It is expected that more sexual minorities will report sadness, bullying, and STBs compared with their heterosexual peers of the same race/ethnicity, and that fewer racial/ethnic

minorities will report persistent sadness, bullying victimization, and STBs compared with their NHW peers of the same sexual orientation.

The present study is a secondary analysis of pooled 2013-2017 YRBS data from 21 states that included items assessing sexual identity, sex of sexual contacts, and history of forced sex. Where possible, analyses were examined at the intersections of sex, race/ethnicity, and sexual orientation, but cell sizes among non-White sexual minority participants were too small for some analyses.

Methods

Sampling and Participants

The YRBSS is a national surveillance system conducted by the CDC in partnership with local health and education authorities (Brener et al., 2013). The YRBSS collects cross-sectional data biennially from a representative sample of public, charter, and tribal schools across the US (Brener et al., 2013). These data help researchers to understand health risk behaviors, including suicide attempts, alcohol, tobacco, and other drug use. The CDC conducts the national survey, while local partners oversee state, district, tribal, and territorial surveillance (Brener et al., 2013). The national survey is a separate set of data from the state and district datasets.

The 2015 YRBSS cycle was the first to include items to assess sexual identity and sex of sexual contacts on both the National High School Questionnaire and the Standard High School Questionnaire, which is used and adapted by states and districts (Kann, Olsen, et al., 2016). Before 2015, the sexual identity and sex of sexual contacts items were provided to states and districts on the Optional Question List for the Standard High School Questionnaire, and sites chose whether to include them (CDC 2019; Wolff, Wells, Ventura-DiPersia, Renson, & Grov, 2017). In 2015 and 2017, some states and districts opted to exclude the sexual identity or sexual contacts items from their surveys despite their inclusion on the national questionnaire (CDC, 2018d).

This study uses data extracted from the 2017 combined state dataset. The combined state dataset is an aggregation of state YRBS surveys from 1991 to 2017 that have been cross-walked to ensure consistency across survey items (CDC, 2017b). The combined state dataset offers valuable increases in sample size compared with the

national dataset, but the generalizability of the results is limited because the state samples are designed to be representative only of that state in that survey cycle.

As of 2018, 38 states and 14 cycles of survey data (1991 to 2017) were available in the combined state dataset. Maine has included the sexual contacts items since 1997 and Delaware has included the sexual identity item since 2003. The percentage of states included in the dataset that assessed both sexual identity and sexual contacts was 3.9% in 2011, 3.2% in 2013, 9.7% in 2007, 8.8% in 2009, 17.6% in 2011, 29.4% in 2013, 54.8% in 2015, and 63.6% in 2017. Initially, the intention was to analyze data for 2015 and 2017, as those were the years that the sexual orientation items were included on the national questionnaire. Due to small cell sizes among non-White sexual minority males, data for 2013 were evaluated and determined to be reasonably similar to 2015 and 2017 for the major risk factors and for STBs. In an effort to balance the need for adequate power to detect differences with the desire for a sample that is reasonably represents the state of affairs for participants in those states, the decision was made to limit analyses to data collected from 2013-2017.

States that released their weighted data to the CDC to be shared in the combined dataset 2013, 2015 and/or 2017, had both of the sexual orientation items, and an item assessing history of forced sexual intercourse were included in this study. Delaware, Florida, Hawaii, Illinois, Maine, Michigan, North Carolina, and Rhode Island contributed data for all three years. For 2015 and 2017, Arkansas, California, Kentucky, Nevada, Oklahoma, Pennsylvania, and West Virginia were included. Wyoming was included for 2015 only. Iowa, Nebraska, South Carolina, and Wisconsin were included for 2017 only.

Although New York state assessed sexual identity and contacts, those surveys were excluded because they did not assess forced sexual intercourse.

All states included in this study used an independent, cross-sectional, two-stage cluster sampling design (Brener et al., 2013). The state YRBS samples are designed to be representative of students in grades 9-12 in their state for the year data were collected. In the first stage, schools were selected with probability proportional to school enrollment size. In the second stage, intact classes from a required subject or required class period were sampled randomly; all students in the selected classes were eligible to participate (Brener et al., 2013). The YRBSS oversamples Black and Hispanic/Latino participants by selecting twice as many classes in schools with high minority enrollment to ensure sample sizes that are large enough for analysis of those populations (Brener et al., 2013).

Instrumentation and Operationalization of Constructs

Participant sex was marked by participants as either male or female during data collection. Males were the reference category for sex in analyses. *Age* was determined by self-report using the options of *A) 12 years or younger, B) 13 years old, C) 14 years old, D) 15 years old, E) 16 years old, F) 17 years old, and G) 18 years old or older*. Data for this study were limited to participants aged 14 and older due to small numbers of 12- and 13-year-olds who reported sexual activity and because sexual debut before age 13 is associated with increased risk of a host of adverse outcomes (Lowry et al., 2017). Participants aged 18 and over served as the reference category for age.

Race/Ethnicity was determined with two questions: “Are you Hispanic or Latino?” (*A) Yes, B) No*), and “What is your race?” Students were given the opportunity to select one or more of the following responses: *A) American Indian or Alaska Native,*

B) Asian, C) Black or African American, D) Native Hawaiian or Other Pacific Islander, and E) White. In this study, participants who selected White and indicated that they were not Hispanic or Latino were coded as Non-Hispanic White (NHW), those who selected Black or African American and were not Hispanic or Latino were coded as Black, those who indicated they were Hispanic or Latino and did not select another race category were coded as Latinx (the gender-neutral form of Latino/Latina), and all other participants who had non-missing values for ethnicity or race were coded as Other POC. When making comparisons across race/ethnicity, NHW served as the reference group; when comparing within race/ethnicity, heterosexual participants served as the reference group for sexual minorities of the same race/ethnicity.

Sexual Orientation. The YRBS uses two items to assess sexual orientation based on how students self-identify and the sex of their reported sexual contacts. *Sexual identity* was assessed with the item “Which of the following best describes you?” with response options *A) Heterosexual (straight), B) Gay or lesbian, C) Bisexual, and D) Not sure.* *Sex of sexual contacts* was assessed with the item “During your life, with whom have you had sexual contact?” with response options *A) I have never had sexual contact, B) Females, C) Males, and D) Females and males.* The CDC does not provide respondents with a definition of sexual contact (Brener et al., 2013; CDC, 2018e). As the focus of this study is sexually active students, participants who indicated they had never had sexual contact were excluded from analyses.

The sexual orientation variable for this study was calculated as follows: participants who identified as heterosexual and reported opposite-only contact were coded as heterosexual and served as the reference group. Participants who identified as

heterosexual and reported same-sex or both-sex contact were coded as HSM. Participants who identified as gay or lesbian, bisexual, or not sure and reported any sexual contact were coded as gay/lesbian, bisexual, or questioning, respectively.

Forced sex was assessed with the item “Have you ever been physically forced to have sexual intercourse when you did not want to?” Participants who indicated that they had experienced forced sex were excluded from analyses.

Suicidal Thoughts and Behaviors. In the 2013, 2015, and 2017 Standard High School Questionnaires, items regarding STBs were preceded by the following passage:

“The next 5 questions ask about sad feelings and attempted suicide. Sometimes people feel so depressed about the future that they may consider attempting suicide, that is, taking some action to end their own life.”

Suicidal ideation was assessed with the item “During the past 12 months, did you ever **seriously** consider attempting suicide?” [emphasis in original] with response options *A) Yes* and *B) No*. *Suicide planning* was assessed with the item “During the past 12 months, did you make a plan about how you would attempt suicide?” with response options *A) Yes* and *B) No*. *Suicide attempts* were assessed with the item “During the past 12 months, how many times did you actually attempt suicide?” with response options *A) 0 times*, *B) 1 time*, *C) 2 or 3 times*, *D) 4 or 5 times*, and *E) 6 or more times*. Affirmative answers for any of the three items were coded as reporting STBs. May and Klonsky (2011) examined the validity of the YRBS suicide items in a sample of students from a Long Island high school and found all items to have good convergent and discriminant validity.

Bullying Victimization. The YRBS includes two items that directly assessed school-based bullying and electronic bullying. The bullying items were preceded by the passage:

The next 2 questions ask about bullying. Bullying is when 1 or more students tease, threaten, spread rumors about, hit, shove, or hurt another student over and over again. It is not bullying when 2 students of about the same strength or power argue or fight or tease each other in a friendly way.

School-based bullying was assessed by the item “During the past 12 months, have you ever been bullied on school property?” *A) Yes, and B) No.* *Electronic bullying* was assessed with the item “During the past 12 months, have you ever been electronically bullied? *A) Yes, and B) No.* In 2013 and 2015 the clarification of “Include being bullied through e-mail, chat rooms, instant messaging, websites, or texting” was included. In 2017 this clarification was stated as “Count being bullied through texting, Instagram, Facebook, or other social media.” A single bullying variable was created and coded as one for those who indicated yes to school bullying, electronic bullying, or both. This operationalization is consistent with other research (Dunn et al., 2017; Mueller et al., 2015; Pontes, Ayres, & Pontes, 2018). Sexual orientation-based bullying victimization was not assessed because very few states in the combined dataset included that item on their state survey in 2013, 2015, or 2017.

Current tobacco use was assessed by combining positive responses to items that assessed 30-day use of cigarettes, cigars or cigarillos, electronic vapor product use, and smokeless tobacco product use. These four items had response options *A) 0 days, B) 1 or 2 days, C) 3 to 5 days, D) 6 to 9 days, E) 10 to 19 days, F) 20 to 29 days, and G) All 30*

days. The YRBSS provides a dichotomized version of these that indicates no for zero days and yes for one or more days. *Current cigarette use* was assessed with the item “During the past 30 days, on how many days did you smoke cigarettes?” In 2013 and 2015, *smokeless tobacco products* were assessed with the item:

“During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen?”

In 2017, smokeless tobacco products were assessed with the item:

During the past 30 days, on how many days did you use chewing tobacco, snuff, dip, snus, or dissolvable tobacco products, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, Copenhagen, Camel Snus, Marlboro Snus, General Snus, Ariva, Stonewall, or Camel Orbs? (Do not count any electronic vapor products.).

Cigar and cigarillo use were assessed with the item “During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?” *Electronic vapor product use* was assessed with the item “During the past 30 days, on how many days did you use an electronic vapor product?”

Current alcohol use. Alcohol use was assessed with the item “During the past 30 days, on how many days did you have at least one drink of alcohol?” with response options *A) 0 days, B) 1 or 2 days, C) 3 to 5 days, D) 6 to 9 days, E) 10 to 19 days, F) 20 to 29 days, and G) All 30 days*. The YRBSS provides a binary variable indicating an affirmative response to alcohol use in the 30 days prior to the survey.

Current marijuana use. Current use of marijuana was assessed with the item “During the past 30 days, how many times did you use marijuana?” with response

options *A) 0 times, B) 1 or 2 times, C) 3 to 9 times, D) 10 to 19 times, E) 20 to 39 times,* and *F) 40 or more times*. The YRBSS provides a binary variable if the participant indicated any use of marijuana in the 30 days before the survey.

Lifetime hard drug use. Lifetime measures of substance use were used because they had higher prevalence and less missing data in this sample. Synthetic marijuana use was included in this variable rather than with marijuana use because it has differential associations with other risk behaviors compared with non-synthetic marijuana use (Clayton, Lowry, Ashley, Wolkin, & Grant, 2017). *Cocaine use* was assessed with the item “During your life, how many times have you used any form of cocaine, including powder, crack, or freebase?” *Inhalant use* was assessed with the item “During your life, how many times have you sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?” *Heroin use* was assessed with the item “During your life, how many times have you used heroin (also called smack, junk, or China White)?” *Methamphetamine use* was assessed with the item “During your life, how many times have you used methamphetamines (also called speed, crystal, crank, or ice)?” *Ecstasy use* was assessed with the item “During your life, how many times have you used ecstasy (also called MDMA)?” *Synthetic marijuana use* was assessed with the item “During your life, how many times have you used synthetic marijuana (also called K2, Spice, fake weed, King Kong, Yucatan Fire, Skunk, or Moon Rocks)?” *Non-prescription use of steroids* was assessed with the item “During your life, how many times have you taken steroid pills or shots without a doctor's prescription?” *Illicit use of prescription drugs* was assessed with the item “During your life, how many times have you taken a prescription drug (such as OxyContin, Percocet, Vicodin, codeine, Adderall, Ritalin, or

Xanax) without a doctor's prescription?" *Injection drug use* was assessed with the item "During your life, how many times have you used a needle to inject any illegal drug into your body?" The lifetime drug use items had the response options *A) 0 times, B) 1 or 2 times, C) 3 to 9 times, D) 10 to 19 times, E) 20 to 39 times, and F) 40 or more times*. A variable for lifetime history of hard drug use was coded 1 if participants indicated the use of any of the hard drugs items and 0 if participants selected *0 times* for all non-missing responses.

Persistent sadness was assessed with the item "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?" with response options *A) Yes and B) No*.

Data reliability and validity

The CDC has conducted two test-retest reliability studies of the national YRBS questionnaire (Brener et al., 2013). In 1992, a convenience sample of 1,679 students in grades 7-12 were given the 1991 questionnaire and tested again two weeks later (Brener, Collins, Kann, Warren, & Williams, 1995) and in 2000 a convenience sample of 4,619 high school students completed the 1999 national questionnaire two weeks apart (Brener et al., 2002). Items with questionable reliability were revised or deleted from future questionnaires (Brener et al., 2013).

Ethics Statement

YRBS surveys are limited to 99 items and do not use skip patterns to help guard participant anonymity by ensuring that the survey takes each student approximately the same amount of time and can be completed in a single class period (Brener et al., 2013).

Students are encouraged to use an extra sheet of paper to cover their responses and at most sites, students seal their answers in an envelope before placing them in a collection box (Brener et al., 2013). Parent permissions for each state YRBS were obtained in accordance with local regulations. The national YRBS was reviewed and approved by CDC's Institutional Review Board and state YRBS surveys are approved by the local authorities.

Data used in this dissertation are from de-identified public-use data files. Human participants were not directly involved in the research reported here, therefore no institutional review board approval was sought. The combined state datasets are available to download free of charge from (<https://www.cdc.gov/healthyyouth/data/yrbs/data.htm>).

Statistical Analyses

Complex survey sampling, such as the two-stage cluster design used by states in the YRBSS, violates the assumption that the data are independent and identically distributed (i.i.d.), which renders model-based approaches that are reliant on simple random sampling inaccurate. Analysis of complex samples survey data generally focuses on design-based approaches that are adapted for the unique features of probability-based sampling such as clustering, stratification, and the application of weights to account for the probability of selection and other influences on the representativeness of the sample (Heeringa, West, & Berglund, 2017).

PSUs, Clusters, & Stratification

Primary sampling units (PSUs) are the highest-level grouping of sample observations in a complex sampling framework and generally represent single counties or

groups of neighboring counties (Heeringa et al., 2017). A minimum of two PSUs per stratum are needed to estimate sampling variances (Heeringa et al., 2017). The non-independence of observations within sample clusters (PSUs) yields results that are correlated; failing to account for the clustered nature of a sample such as the YRBSS can lead to inflated standard errors and widened confidence intervals (Heeringa et al., 2017; StataCorp, 2017b).

Stratification is another fundamental element of the sampling strategy for the YRBSS. Strata are homogenous non-overlapping groups in the population formed by the survey designer before selecting the probability sample for the study (Heeringa et al., 2017). Stratification allows the survey designer to oversample specific subpopulations to ensure sufficient sample sizes for analysis, such as oversampling Black and Hispanic students by the YRBSS (Brener et al., 2013; Heeringa et al., 2017). Stratification eliminates the between-stratum variance component and reduces the overall sampling variance and ignoring stratification tends to result in more conservative standard errors (Heeringa et al., 2017; StataCorp, 2017b).

Examination of the PSU and stratum variables prior to analysis revealed that states had overlapping values for these variables. Given that states collect their data independently of one another, these values should not overlap. The PSUs and strata were renumbered prior to analysis using `egen group (year state)`, which yielded 4,614 PSUs and 1,220 sampling strata with no overlapping values between states. Degrees of freedom in complex sampling survey analysis are dependent on the number of PSUs in the dataset, so recoding these variables prior to analysis was important for more accurate variance estimation (Heeringa et al., 2017; StataCorp, 2017b).

Survey Weights

Complex sampling for survey data collection makes use of probability sampling rather than simple random sampling. Under probability sampling, each member of the population is assigned a nonzero probability of being included in the sample; using the inverse probability of selection yields nearly unbiased estimates of population statistics (Heeringa et al., 2017). Base weights calculated from the inverse probability of selection are then adjusted for other factors to ensure an unbiased representation of the survey population, yielding final survey weights (Heeringa et al., 2017). Examination of the survey weight variable provides information about the size of the population that each participant is expected to represent (Heeringa et al., 2017; Williams, 2019).

The YRBS combined state dataset contains a single weighting variable with a value for each participant that was created by the survey manager to account for unequal probability of selection, participant nonresponse, and oversampling of Black and Hispanic/Latino students (Brener et al., 2013; CDC, 2018a). The survey manager scales the weights so that the weighted counts are equal to the total sample size for that state, and the weighted proportions of students in each grade match the population projections for that survey cycle in that state (Brener et al., 2013). The CDC provides additional documentation for the use of the Combined National, State, and District datasets that directs the data analyst to adjust the provided weight by dividing the weight value for each participant by the number of years a state is included in the dataset (CDC, 2018a).

Sample Variance & Variance Estimation

Sample variance describes the degree of dispersion of sample estimates around the mean. The degrees of freedom for variance estimation affect the precision of the

estimates of the true variance in the population; having fewer degrees of freedom reduces precision (Heeringa et al., 2017). Stata commands used with the `svy` prefix yield t statistics with $n - L$ degrees of freedom where n is the total number of PSUs and L is the number of first-stage sampling strata (StataCorp, 2017b).

The CDC instructs data analysts to use Taylor Series Linearization (TSL) for variance estimation when analyzing YRBS data (CDC, 2018b). TSL is also known as the delta method or the Huber/White/sandwich estimator of variance, used within Stata for calculating robust variances (StataCorp, 2017b). The TSL approximates the parameter estimate as a linear function of weighted sample totals before computing the variance of that approximation (West & McCabe, 2012). Use of TSL was specified in the `svyset` statement and by using the `svy, linearized:` syntax for analyses

Sub-setting data by deleting observations invalidates the weights provided by the survey designer. Therefore, special steps must be taken for subpopulation estimates in complex survey data analysis avoid invalidating the survey weights. Subpopulation analysis requires unconditional methods of variance estimation that account for the full complex design of the sample (West, Berglund, & Heeringa, 2008). Using an `if` statement to exclude participants creates a conditional approach to variance estimation by restricting the analysis to only those sample cases that are in the subpopulation. This creates a problem because subpopulation sizes vary within PSUs and strata and this variance needs to be taken into account for accurate variance estimation (StataCorp, 2017b; West et al., 2008).

The variable degrees of freedom for subpopulation analyses are the total number of clusters that have at least one subpopulation member minus the number of strata with

at least one subpopulation member (Heeringa et al., 2017; Korn & Graubard, 1999). Using an `if` statement can reduce the effective degrees of freedom, but using the `subpop` option instructs Stata to use the correct degrees of freedom calculation (Heeringa et al., 2017; StataCorp, 2017b). Analyses used the `subpop` option to correctly specify the subpopulation while preserving the effective degrees of freedom.

Analyses were conducted in Stata 15.1 (StataCorp, 2017c; Stata Statistical Software: Release 15.1 College Station, TX: StataCorp LLC). Stata provides design-adjusted statistics that adjust degrees of freedom and standard errors to account for the design features of complex survey samples. Stata's `svyset` command was used to declare the survey design for these analyses using the following syntax:

```
svyset npsu [pweight=adjweight], strata(nstratum) ///  
vce(linearized) singleunit(centered)
```

where `npsu` is the renumbered PSU variable, `nstratum` is the renumbered stratum variable, `vce(linearized)` indicates that the TSL method be used for variance estimation, and `singleunit(centered)` indicates that singleton strata should be centered at the grand mean rather than the stratum mean, per CDC guidance (CDC, 2018b; StataCorp, 2017b). Analyses used the `svy:` prefix to indicate that Stata should use survey data adjustments that account for clustering and weights, use the TSL method for standard errors and 95% confidence intervals, and use the appropriate survey-adjusted degrees of freedom to provide the adjusted statistics using the appropriate corrections (StataCorp, 2017b).

Missing Values Analysis

Missing data were excluded listwise and participants with missing data were retained in the dataset to preserve the weighting variables and variance estimation. A common misstep in data analysis is the use of different samples, usually due to missing responses on variables, in the same study (Heeringa et al., 2017; Jann, 2007b; Long & Freese, 2014)). To ensure that the same sample of participants was used for each analysis, the Stata commands `mark` and `markout` were used to create the variable `nomiss` to indicate the subpopulation of participants with complete data (Jann, 2007b). Participants reporting experiences of forced sex and those reporting no sexual contact were also excluded from the analyses using the `markout` command. The syntax `subpop(nomiss)` was to ensure that all analyses are comparable within this study. Excluding those with missing data yielded 4527 PSUs, 1215 sampling strata, and a sample of 63,194 participants. Missing values were not imputed.

A missing values analysis was conducted using the user-written command `mdesc` (Medeiros & Blanchette, 2011) and the Stata commands `misstable` and `misstable nested`. Dummy variables were created to evaluate differences between participants missing sex, sexual identity, or sex of sexual contacts using simple logistic regression.

Bivariate Analyses

Contingency tables were created to examine bivariate associations. The traditional tests of independence used for data collected under simple random sampling cannot be used because the clustered nature of the sample design violates the independence assumption. Rao and Scott (1984) adapted the Pearson χ^2 for use in complex sampling

(StataCorp, 2017b, 2017a). This corrected statistic performs well for sparse and non-sparse tables, has power similar to the likelihood ratio statistic and is more powerful than the adjusted Wald statistic for larger contingency tables (StataCorp, 2017b). The degrees of freedom are adapted for the survey design by converting the Pearson χ^2 to a Pearson F statistic by dividing it by its degrees of freedom to adjust for the effects of the sample design, per Rao and Thomas (1989). Stata does this by default when the `svy` prefix is specified (StataCorp, 2017b).

The user-written program `tabout` was used to help in the creation of tables for bivariate statistics for females and males and cross-tabulations by sexual identity and sexual contacts (Watson, 2016). `Tabout` creates publication quality tables and uses the appropriate adjustments for complex survey data (Watson, 2019).

The `test` command was used with the `svy : proportion` command to test for significant differences between groups at the intersections of participant sex, race/ethnicity, and sexual orientation. Stata's `test` command computes a survey-adjusted Wald test with standard errors, adjusted F -statistics, p -values and 95% confidence intervals for linear combinations of coefficients after an estimation command (StataCorp, 2017b). Due to concerns about small cell sizes among non-White participants affecting power to detect effects, no corrections were made to adjust for multiple comparisons. In addition, where cell sizes were small, p -values $< .10$ were flagged to indicate significance at a less conservative alpha value. The CDC (2018b) recommends that cell sizes should be larger than 30 when analyzing data for sexual minorities.

Bivariate logistic regressions were used to estimate the strength of the associations between suicidality risk factors and STBs. These were estimated for the total

sample and again for females and males separately in order to best ascertain the unadjusted odds ratios for each suicidality risk factor. Odds ratios are a multiplicative statistic: odds under 1.0 indicate a negative relationship or protective effect, while odds over 1.0 indicate a positive effect, with larger numbers indicating a stronger relationship.

Multivariate Analyses

Survey-adjusted logistic regression models were used to examine the associations of participant sex, sexual orientation, bullying victimization, and persistent sadness on the odds of reporting suicidal thoughts and behaviors. Initial model testing proceeded through the steps advised by Hosmer, Lemeshow, and Sturdivant (2013) and decisions to include variables were based on their overall contribution to model fit, initial examinations of marginal effects (explained below), and percentage of missing data for each variable. Hosmer-Lemeshow tests of goodness of fit were used to assess the fit of each model. Higher *p*-values on the Hosmer-Lemeshow test indicate a better fit; a significant value for this statistic indicates poor model fit (Archer & Lemeshow, 2006).

Results for logistic regressions are presented as adjusted odds ratios with 95% confidence intervals and the *p*-value for the corresponding survey-adjusted *t*-statistic. All multivariate logistic regressions included age, race/ethnicity, current tobacco use, current alcohol use, current marijuana use, lifetime use of hard drugs, survey state, and survey year. Males were the reference level for sex, 18 years or older for age, NHW was the reference level for race/ethnicity, and heterosexual was the reference level for sexual orientation. Delaware had the smallest proportion of participants who reported STBs, so it was used as the reference level for state and 2013 was the reference level for year.

The `fitstat` command from the `SPost13` command suite (Long & Freese, 2014) was used to calculate the AIC, BIC, and adjusted McFadden's R^2 for each model. The commands were adapted for survey data analysis by estimating weighted logistic regression models using `pweights` and specifying clustering based on the PSU variable. The user-written program `estout` was used to export regression coefficients to a Rich Text File to assist in making tables (Jann, 2007a).

Post-hoc analyses were conducted to better understand the logistic regression results. The Stata `testparm` command was used to calculate the survey-adjusted Wald F -statistics for the parameters in each regression model. The survey adjustment uses an approximate F -statistic $(d - k + 1)W/(kd)$, where W is the Wald test statistic, k is the dimension of the hypothesis test, d = the total number of sampled PSUs minus the total number of strata, and the F distribution has k numerator degrees of freedom and $d - k + 1$ denominator degrees of freedom (StataCorp, 2017a). For one-dimensional tests, the adjusted and unadjusted F statistics are identical, but they differ for higher-dimensional tests (StataCorp, 2017b).

Adjusted Predictions and Marginal Effects

Odds ratios from logistic regressions are useful for detecting the presence and direction of effects but do not provide information about the magnitude of an effect (Buis, 2010; Williams, 2012). The default Wald tests indicate only if the regression coefficients are equal across all levels and do not provide information as to how coefficients vary between levels (Chow, 1960).

There has been considerable debate across fields to determine the best approaches for group comparisons in nonlinear models. Allison (1999) argued that traditional tests

for comparing regression coefficients across groups are invalidated by unobserved heterogeneity and developed tests to account for this. Others have developed methods to compare correlations between the latent outcome and each regressor across groups (Breen, Holm, & Karlson, 2014) but these are primarily relevant when the researcher is interested in the latent outcome (Kuha & Mills, 2017). Group comparisons based on the odds ratios and regression coefficients of the outcome are also affected by unobserved heterogeneity (Mood, 2010), and regression coefficients for interaction terms in logistic regression models can provide misleading results, given the multiplicative nature of nonlinear analyses (Landerman, Mustillo, & Land, 2011).

Several researchers suggest examining the marginal effects of regressors on the probability of an outcome because they are substantively more informative and are not limited by the effects of unobserved heterogeneity when comparing across groups (Bornmann & Williams, 2013; Buis, 2010; Long & Freese, 2014; Long & Mustillo, 2018; Mize, 2019; Mood, 2010; Williams, 2012). Marginal effects, while more complex to interpret, yield more useful insights into the variables in question (Long & Mustillo, 2018). The conclusions drawn from marginal effects and the size of those effects depend on the value of a regressor where the effect is computed as well as the values of the other variables in the model (Long, 1997; Long & Mustillo, 2018).

Marginal analyses are based on a fitted model with independent variables fixed on the mean or at a specified level. Predicted probabilities, sometimes called adjusted predictions, show how outcomes differ under specified conditions (Williams, 2012). Marginal effects demonstrate the change in probability for the move from one level of a dummy variable to the next, controlling for other variables in the model (Bornmann &

Williams, 2013; Long & Mustillo, 2018; StataCorp, 2017a). This demonstrates the difference in the adjusted predictions between groups. Second-differences are calculated to determine if the marginal effects differ between groups (Long & Mustillo, 2018; Mize, 2019). Group differences are discrete changes with respect to the group (e.g., sex) and can be calculated by setting the levels of the other variables at fixed values (e.g., levels of sexual orientation and bullying victimization) and testing whether the predictions are equal (Long & Mustillo, 2018).

The Stata `margins` command was used to calculate adjusted predictions and marginal effects after fitting the final logistic regression model. Because the variables in this study are categorical, the `margins` command computed discrete changes for the change from one level of a variable to the next (StataCorp, 2017a). When there is an interaction in the regression model, `margins` accounts for the direct (e.g., sex) and indirect effects (e.g., sex x bullying) (StataCorp, 2017a).

Marginal effects were calculated for the sex x sexual orientation x bullying x sadness interaction using `margins dydx` to compute base-level contrasts for one variable while using `at ()` to specify at what levels of the other variables these effects should be computed. The `at ()` specification creates a temporary virtual dataset where it sets all variables to the level specified; that is, if comparing the effects of sexual orientation at sex, Stata will calculate the effect as though everyone is female and as though everyone is male and report the difference (Bornmann & Williams, 2013; StataCorp, 2017a; Williams, 2012).

The `lincom` command was used to calculate second-differences for females versus males, for each level of the sexual orientation variable compared with

heterosexuals, and adjacent contrasts were used to compare each level of the sexual orientation variable with the previous level (Long & Mustillo, 2018; Mize, 2019). The `vce(unconditional)` option was specified to account for the survey design in each of the `margins` commands, which instructs Stata to use standard-error calculations developed by Korn and Graubard (1999; StataCorp, 2017b). The `estout` command was used with `margins` to assist with making tables (Jann, 2007a; Jann & Long, 2010).

Results

Missing Values Analysis

Data were cleaned and missing values were evaluated before estimating bivariate statistics. After excluding states that did not assess sexual identity, sex of sexual contacts, and the item assessing forced sex, the sample size was 165,394. Participants under age 14 ($n = 1126$), and those who indicated they had never had sex ($n = 68,686$) were excluded from the analysis. The percentage of missing values ranged from 0.7% for bullying victimization to 9.95% for sexual contacts, owing partly to the ~1% missing data for participant sex for whom sex of sexual contacts could not be defined.

Dummy variables were used in bivariate logistic regressions to estimate the odds associated with missing values for sexual identity and sexual contacts. Males had higher odds than females of missing data for sexual identity, $OR = 1.35$ 95% CI [1.28, 1.43], $p < .001$. Compared to those with opposite-sex-only contacts, those with same-sex-only or both-sex contact had higher odds of missing values for sexual identity (same-sex-only $OR = 3.93$ 95% CI [3.15, 4.90], $p < .001$; both-sex $OR = 3.49$ 95% CI [2.90, 4.21], $p < .001$). Compared with NHW participants, Black ($OR = 2.55$ 95% CI [2.36, 2.75], $p < .001$), Latinx ($OR = 2.17$ 95% CI [2.02, 2.33], $p < .001$), and Other POC participants ($OR = 1.74$ 95% CI [1.61, 1.88], $p < .001$) all had higher odds of missing data for sexual identity compared with NHW participants. Compared with heterosexual participants, those who identified as gay/lesbian $OR = 2.97$ 95% CI [2.73, 3.22], $p < .001$, bisexual $OR = 1.33$ 95% CI [1.24, 1.43], $p < .001$, and questioning $OR = 2.38$ 95% CI [2.21, 2.56], $p < .001$ had higher odds of missing values for sex of sexual contacts.

Race/ethnicity was also associated with higher odds of missing values for sexual contacts

for Black OR = 2.18 95% CI [2.08, 2.29], $p < .001$, Latinx OR = 1.72 95% CI [1.65, 1.80], $p < .001$, and Other POC participants OR = 1.60 95% CI [1.52, 1.67], $p < .001$, compared with NHW participants.

After excluding participants missing data for age, sex, race/ethnicity, sexual identity, sexual contacts, bullying victimization, persistent sadness, STBs, current tobacco, alcohol, marijuana, and lifetime hard drug use, the sample was 71,659, of whom 8,465 had experienced forced sex. In this sample, 17.1% of females ($N = 6336$) and 6% of males ($N = 2129$) reported forced sex; of those reporting forced sex 73% were female and 27.1% were male. A series of bivariate logistic regressions were estimated to evaluate whether participants who reported forced sex differed from their peers.

Participants who reported forced sex had higher odds of persistent sadness OR = 3.31 95% CI [2.94, 3.71], $p < .001$, bullying victimization OR = 3.39 95% CI [3.06, 3.76], $p < .001$, and STBs OR = 4.29 95% CI [3.83, 4.79], $p < .001$. For females, odds of forced sex were higher for HSM OR = 1.55 95% [1.22, 1.99], $p < .001$, lesbian OR 1.78 95% CI [1.31, 2.42], $p < .001$, bisexual OR = 2.41 95% CI [2.10, 2.76], $p < .001$, and questioning OR = 2.34 95% CI [1.67, 3.29], $p < .001$, compared with heterosexuals. Among males, odds of forced sex were higher for HSM OR = 5.92 95% CI [3.76, 9.32], $p < .001$, gay OR = 5.51 95% CI [3.28, 9.25], $p < .001$, bisexual OR = 4.84 95% CI [3.25, 7.21], $p < .001$, and questioning OR = 6.83 95% CI [3.94, 11.84], $p < .001$, compared with heterosexuals. Compared with females with opposite-sex-only contact, the odds of forced sex were higher for females with both-sex contact OR = 2.53 95% CI [2.21, 2.89], $p < .001$, but not same-sex-only contact OR = 0.89 95% CI [0.66, 1.18], $p = 0.41$. The odds of forced sex were higher for males with same-sex-only contact OR = 4.00 95% CI [2.54,

6.29], $p < .001$, and both-sex contact OR = 7.87 95% CI [5.99, 10.34], $p < .001$, compared to males with opposite-sex-only contact. The sample size was 63,194 after excluding participants who reported forced sex.

Finally, to ensure that data were comparable across years of the YRBS dataset, year of data collection was used to predict the unadjusted odds of persistent sadness, bullying victimization, and STBs. Odds of persistent sadness were higher in 2015 OR = 1.20 95% CI [1.11, 1.29], $p < .001$ and 2017 OR = 1.31 95% CI [1.19, 1.44], $p < .001$, compared with 2013. Year was associated with bullying victimization with higher odds in 2017 OR = 1.12 95% CI [1.01, 1.24], $p = .04$, but the difference between 2013 and 2015 was not significant OR = 0.95 95% CI [0.85, 1.07], $p = .41$. Year was associated with STBs: compared with 2013, the odds of STBs were higher in 2017 OR = 1.13 95% CI [1.03, 1.25], $p = .01$, but did not differ from 2015 OR = 1.09 95% CI [0.97, 1.22], $p = 0.17$. Year was included in the multivariate regression models to control for its effects.

Bivariate Analyses

Sexual Identity and Sexual Contacts

Cross-tabulations for sexual identity and sex of sexual contacts were calculated for females and males to evaluate the percentages of those reporting opposite-sex-only, same-sex-only, and both-sex contact for each sexual identity; results are presented in

Table 1. Most individuals who identified as heterosexual reported opposite-sex-only contact, however, 6.4% of heterosexual females and 1.7% of heterosexual males reported same- or both-sex contact. Most participants who identified as gay or lesbian reported same-sex-only contact, but 30.5% of lesbians and 19.1% of gay males reported opposite-

Table 1. *Cross-Tabulations of Sexual Identity and Sexual Contacts*

	Opposite-Only			Same-Only			Both		
	%	SE	N	%	SE	N	%	SE	N
Females									
Heterosexual	93.6	(0.4)	23,568	2.2	(0.2)	617	4.2	(0.3)	969
Gay/Lesbian	5.9	(1.4)	52	69.5	(3.2)	557	24.6	(3.4)	167
Bisexual	33.6	(2.1)	1264	11.4	(1.5)	371	55.0	(2.3)	1833
Questioning	61.3	(3.9)	514	10.0	(2.7)	79	28.7	(3.1)	311
$F(5.20, 17595.38) = 488.70^{***}$									
Males									
Heterosexual	98.3	(0.2)	29,960	1.0	(0.1)	438	0.65	(0.1)	267
Gay/Lesbian	10.3	(2.0)	97	80.9	(2.7)	489	8.8	(1.6)	85
Bisexual	36.3	(4.0)	378	14.5	(2.7)	128	49.2	(4.2)	416
Questioning	66.6	(3.6)	421	11.3	(2.8)	55	22.0	(3.0)	158
$F(5.4, 18273.92) = 978.4^{***}$									

Note: Weighted percentages, linearized standard errors, unweighted counts. Design-based *F*-statistic calculated using the second-order Rao-Scott correction (Rao & Scott, 1984)

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

sex-only or both-sex sexual contact. Most questioning participants reported opposite-only contact and most female and male bisexual participants reported both-sex sexual contact.

Conversely, most females who reported same-sex-only contact were heterosexual (36.1%), 31.8% were lesbian, 26.3% were bisexual, and 5.8% were questioning. Most females who reported both-sex contact were bisexual (56.7%), followed by heterosexual (30.9%), questioning (7.4%), and lesbian (5%). Most males who reported same-sex-only contact were gay (51.4%), 30.5% were heterosexual, 12.1% were bisexual, and 6.1% were questioning. Most males who reported both-sex contact, were bisexual (52.7%) followed by heterosexual (25.1%), questioning (15.1%), and gay (7.2%). The proportions of those who reported same- or both-sex contact are presented in Figure 1 for females and Figure 2 for males.

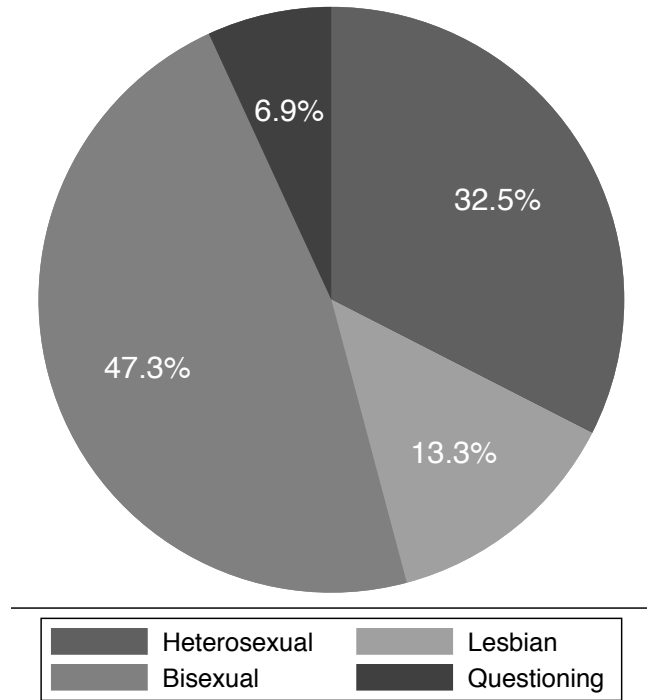


Figure 1. *Females reporting same- or both-sex contact.*

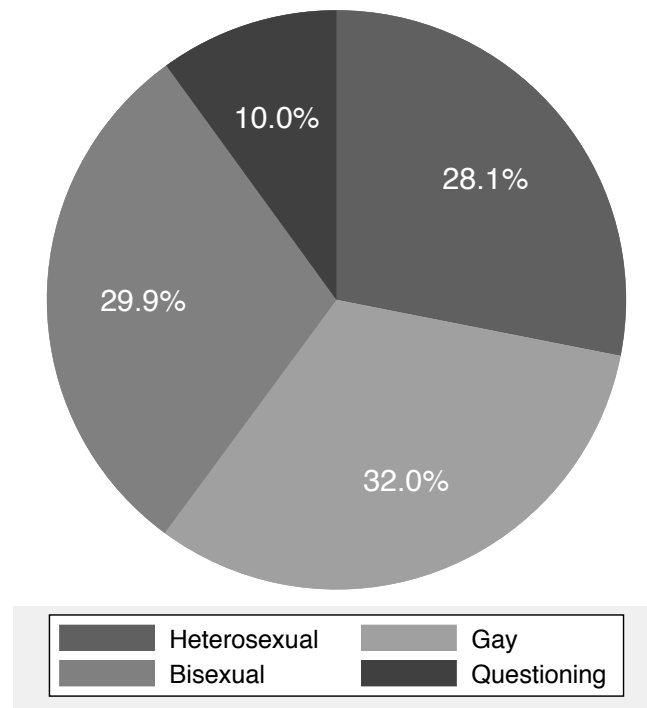


Figure 2. *Males reporting same- or both-sex contact.*

Sex Differences for Suicidality Risk Factors

To evaluate the presence of sex differences at the bivariate level, two-way tabulations with tests of independence were calculated for participant sex and the suicidality risk factors. Weighted percentages, standard errors, and unweighted counts are presented in

Table 2. Just over half of the sample was NHW, about one-quarter was Latinx, and the proportion of NHW females was slightly larger than the proportion of NHW males. The relationship between participant sex and sexual orientation was significant: over four times as many females identified as bisexual and over three times as many were categorized as HSM compared with males. Approximately 2% of females and males identified as gay or lesbian in this sample. The relationships between participant sex and age, current marijuana use, and lifetime hard drug use were not significant, but more males than females reported current use of tobacco and alcohol. More females than males reported 30-day bullying victimization and 12-month STBs. Nearly half of females and almost one-quarter of males reported experiencing persistent sadness in the 12 months before the survey.

Sexual Orientation Differences for Suicidality Risk Factors

To evaluate whether there were significant associations between sexual orientation and suicide risk factors, two-way tabulations with tests of independence were calculated separately for females and males and are presented in Table 3. The sample was restricted to females or males only using the `subpop` option; differences in the degrees of freedom are the result of some sampling strata having only females or only males. Race/ethnicity was associated with sexual orientation for females: 19% of NHW, 29% of

Table 2. *Descriptive Statistics for Females and Males: State YRBS Data 2013-2017*

	Females		Males		Total	
	% (SE)	N	% (SE)	N	% (SE)	N
<i>Age</i>						
14 years old	6.6 (0.4)	2215	6.3 (0.4)	2304	6.4 (0.3)	4,519
15 years old	19.8 (0.7)	6519	19.5 (0.9)	6915	19.6 (0.7)	13,434
16 years old	26.8 (0.9)	8553	26.2 (0.9)	8989	26.5 (0.8)	17,542
17 years old	29.8 (0.7)	8873	28.8 (0.8)	9294	29.3 (0.6)	18,167
18 or older	17.1 (0.9)	4142	19.2 (0.8)	5390	18.3 (0.8)	9,532
	$F(3.9, 13120.9) = 1.95$					
<i>Race</i>						
NHW	55.8 (1.3)	17285	52.4 (1.4)	18149	54.0 (1.2)	35,434
Black	13.5 (0.7)	3409	14.8 (0.7)	4156	14.2 (0.7)	7,565
Latinx	22.4 (1.0)	5264	25.1 (1.6)	5838	23.9 (1.2)	11,102
Other POC	8.3 (0.6)	4344	7.7 (0.5)	4749	8.0 (0.5)	9,093
	$F(2.2, 7341.5) = 4.69^{**}$					
<i>Orientation</i>						
Heterosexual	77.7 (0.6)	23568	92.2 (0.4)	29960	85.6 (0.4)	53,528
HSM	5.4 (0.3)	1586	1.6 (0.2)	705	3.3 (0.2)	2,291
Gay/Lesbian	2.3 (0.2)	776	2.0 (0.2)	671	2.1 (0.2)	1,447
Bisexual	11.7 (0.4)	3486	2.6 (0.2)	922	6.8 (0.2)	4,390
Questioning	2.9 (0.3)	904	1.7 (0.1)	634	2.2 (0.2)	1,538
	$F(3.8, 12840.6) = 138.46^{***}$					
Tobacco Use	2.7 (0.2)	911	7.5 (0.4)	2431	5.3 (0.2)	3,342
	$F(1, 3389) = 192.47^{***}$					
Alcohol Use	16.0 (0.6)	4747	22.2 (0.7)	7093	19.4 (0.5)	11,840
	$F(1, 3389) = 55.1^{***}$					
Marijuana	30.8 (0.8)	9069	31.8 (0.8)	10578	31.4 (0.7)	19,647
	$F(1, 3389) = 1.21$					
Hard Drugs	20.7 (0.7)	4732	21.4 (0.5)	5860	21.1 (0.4)	10,592
	$F(1, 3389) = 0.84$					
Sadness	44.6 (0.6)	12778	23.4 (0.6)	7419	33.0 (0.5)	20,197
	$F(1, 3389) = 737.36^{***}$					
Bullied	32.1 (0.6)	9869	18.3 (0.6)	6339	24.6 (0.5)	16,208
	$F(1, 3389) = 269.27^{***}$					
STBs	28.3 (0.6)	8127	16.3 (0.5)	5540	21.8 (0.5)	13,667
	$F(1, 3389) = 239.94^{***}$					
Observations	30,302		32,892		63,194	

Note: Weighted percentages, linearized standard errors, unweighted counts. Design-based F -statistic calculated using second-order Rao-Scott correction (Rao & Scott, 1984)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Black, 25% of Latinx, and 25% of Other POC females were as sexual minorities.

Larger proportions of HSM, lesbian, and bisexual females reported current use of alcohol, marijuana, and lifetime hard drug use compared with their heterosexual peers. Two- to three times as many HSM, bisexual, and questioning females reported current tobacco use compared with heterosexual females. Larger percentages of LGBQ-identified females reported bullying victimization, persistent sadness, and STBs compared with their heterosexual peers. Heterosexual and HSM females were similar for persistent sadness and bullying victimization, but the percentage of HSM females who reported STBs fell between their heterosexual and LGBQ-identified peers.

For males, sexual orientation was not significantly associated with age, race/ethnicity, current tobacco use, or current marijuana use. Similar proportions of gay and heterosexual males reported current alcohol use and lifetime hard drug use, but more HSM, bisexual, and questioning males reported current use of alcohol and lifetime hard drug use compared with heterosexual males. Larger proportions of HSM and LGBQ-identified males reported persistent sadness, bullying victimization, and STBs compared with their heterosexual peers. Nearly half of bisexual and gay males reported persistent sadness. Gay males had the largest proportion of those reporting bullying victimization, followed by bisexual and HSM males. Nearly half of bisexual males reported STBs, followed by their gay, questioning, and HSM peers.

Race/ethnicity Differences for Suicide Risk Factors

Stata's `svy : proportion` and `test` commands were used to evaluate whether the proportions of participants reporting persistent sadness, bullying

Table 3. Cross-tabulations for Sexual Orientation and Suicide Risk Factors

Females	Heterosexual		HSM		Gay/Lesbian		Bisexual		Questioning	
	% (SE)	N	% (SE)	N	% (SE)	N	% (SE)	N	% (SE)	N
Age [†]										
14 years old	69.3 (2.7)	1620	8.6 (2.3)	132	2.9 (0.9)	51	16.7 (1.9)	328	2.5 (0.5)	84
15 years old	76.0 (1.0)	4890	5.9 (0.8)	361	2.6 (0.4)	181	11.8 (0.8)	859	3.8 (0.6)	228
16 years old	77.9 (1.2)	6643	4.7 (0.5)	414	2.4 (0.4)	218	12.3 (0.9)	1019	2.6 (0.3)	259
17 years old	79.1 (1.0)	7087	5.2 (0.6)	466	2.3 (0.4)	217	10.7 (0.7)	874	2.6 (0.4)	229
18 or older	80.1 (1.3)	3328	1.7 (0.3)	213	1.7 (0.3)	109	10.6 (1.1)	388	3.0 (0.7)	104
										<i>F</i> (9.98, 33738.7) = 2.01*
Race/Ethnicity [‡]										
NHW	80.8 (0.7)	13,924	4.6 (0.3)	835	1.8 (0.2)	353	10.2 (0.5)	1,729	2.7 (0.3)	444
Black	71.0 (1.6)	2,434	6.3 (1.0)	212	4.3 (0.7)	147	15.0 (1.1)	495	3.4 (0.6)	121
Latinx	75.1 (1.1)	3,932	6.1 (0.7)	283	2.6 (0.5)	164	13.9 (1.3)	707	2.4 (0.4)	178
Other POC	75.1 (2.4)	3,278	6.8 (1.9)	256	1.9 (0.4)	112	11.0 (1.5)	537	5.2 (0.9)	161
										<i>F</i> (7.6, 25674.6) = 5.23***
Tobacco \pm	2.1 (0.2)	553	4.9 (0.9)	101	2.5 (0.7)	41	5.3 (0.7)	170	6.0 (2.2)	46
										<i>F</i> (3.2, 10756.7) = 13.7***
Alcohol \pm	13.3 (0.5)	3164	25.3 (3.1)	373	27.8 (5.5)	181	25.9 (2.1)	816	20.7 (2.9)	213
										<i>F</i> (3.1, 10613.3) = 20.1***
Marijuana \pm	28.0 (0.9)	6386	37.6 (2.7)	636	36.5 (4.2)	310	43.5 (2.2)	1409	37.4 (3.7)	328
										<i>F</i> (3.7, 12432.1) = 18.7***
Hard Drugs \pm	16.9 (0.7)	2944	35.3 (2.7)	434	27.4 (4.4)	177	35.8 (1.8)	935	27.9 (2.6)	242
										<i>F</i> (3.5, 11775.8) = 47.6***
Sadness \pm	39.7 (0.7)	8846	44.0 (3.4)	654	55.4 (4.4)	446	70.7 (1.7)	2279	61.8 (3.4)	553
										<i>F</i> (3.6, 12012.2) = 58.8***
Bullied \pm	30.4 (0.7)	7179	29.9 (2.4)	550	35.0 (3.8)	273	42.2 (2.1)	1518	38.8 (2.8)	349
										<i>F</i> (3.7, 12382.9) = 12.6***
STBs \pm	23.0 (0.7)	5083	31.6 (2.8)	493	45.4 (3.1)	351	53.6 (2.0)	1776	50.1 (3.2)	424
										<i>F</i> (3.5, 11952.9) = 95.2***
Total		23,568		1,586		776		3,468		904

Males	Heterosexual		HSM		Gay/Lesbian		Bisexual		Questioning	
	% (SE)	N	% (SE)	N	% (SE)	N	% (SE)	N	% (SE)	N
Age [†]										
14 years old	91.8 (1.4)	2,087	1.6 (0.4)	55	1.6 (0.7)	41	3.2 (1.0)	69	1.9 (0.5)	52
15 years old	92.4 (0.6)	6,301	1.6 (0.4)	148	1.6 (0.3)	137	2.7 (0.3)	195	1.6 (0.3)	134
16 years old	91.8 (0.7)	8,150	1.7 (0.4)	194	1.9 (0.3)	194	2.8 (0.4)	284	1.7 (0.3)	167
17 years old	92.6 (0.7)	8,516	1.4 (0.2)	195	2.0 (0.3)	185	2.4 (0.5)	227	1.6 (0.3)	171
18 or older	92.1 (0.8)	4,906	1.5 (0.4)	113	2.5 (0.5)	114	2.3 (0.3)	147	1.6 (0.3)	110
										<i>F</i> (12.3, 41674.7) = 0.39
Race [†]										
NHW	92.0 (0.5)	16,588	1.5 (0.2)	368	1.8 (0.3)	335	3.1 (0.3)	538	1.6 (0.2)	320
Black	92.1 (0.8)	3,844	2.0 (0.4)	84	1.9 (0.4)	77	2.1 (0.4)	79	1.8 (0.3)	72
Latinx	93.0 (1.0)	5,312	1.2 (0.4)	108	2.2 (0.5)	136	1.0 (0.4)	153	1.7 (0.4)	129
Other POC	91.4 (1.0)	4,216	2.3 (0.7)	145	2.3 (0.7)	123	2.3 (0.3)	152	1.6 (0.3)	113
										<i>F</i> (8.7, 29371.7) = 0.98
Tobacco \pm	7.4 (0.4)	2,175	7.9 (4.2)	47	7.4 (2.4)	40	8.6 (1.6)	81	12.9 (2.9)	88
Alcohol \pm	21.8 (0.7)	6,310	32.1 (5.2)	192	18.3 (3.4)	134	27.8 (3.5)	250	30.0 (4.0)	207
										<i>F</i> (3.8, 12680.1) = 3.38*
Marijuana \pm	31.6 (0.8)	9,599	38.6 (5.2)	237	30.4 (4.5)	209	34.9 (4.3)	319	35.0 (4.4)	214
										<i>F</i> (3.6, 12288.5) = 0.79
Hard Drugs \pm	20.6 (0.6)	5,083	35.6 (4.9)	190	21.3 (3.2)	137	31.9 (4.2)	242	36.5 (3.7)	208
										<i>F</i> (3.4, 11622.3) = 10.02***
Sadness \pm	21.7 (0.6)	6,187	35.6 (5.3)	236	45.4 (4.8)	285	48.9 (3.7)	476	37.7 (4.3)	235
										<i>F</i> (3.7, 12481.7) = 31.4***
Bullied \pm	16.7 (0.6)	5,248	36.7 (5.3)	214	42.2 (4.3)	291	37.8 (3.8)	377	29.7 (3.5)	209
										<i>F</i> (3.7, 12639.7) = 35.49***
STBs \pm	14.3 (0.5)	4,438	33.8 (4.4)	209	35.4 (4.3)	232	48.4 (3.3)	437	34.9 (3.5)	224
										<i>F</i> (3.7, 12579.9) = 69.53***
Total		29,960		705		671		922		634

Note: ** Row % \pm Column % Weighted %, linearized SE, Unweighted N Design-based *F*-statistic calculated using second-order Rao-Scott correction (Rao & Thomas, 1989). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

victimization, and STBs varied at the intersections of sex, race/ethnicity, and sexual orientation. Results for females and males are reported in Table 4. Within each race/ethnicity category, sexual minorities were compared with their heterosexual peers, and within each sexual orientation category, participants were compared with their NHW peers using survey-adjusted *F*-tests. Unfortunately, in several instances cell sizes were smaller than 30 for Black sexual minority males and should be evaluated with caution. Due to concerns about small cell sizes limiting power to detect significant effects, no corrections were made for multiple comparisons and the alpha level was set to $p = 0.10$ to indicate significance.

Compared with their heterosexual peers, significantly more NHW lesbian, bisexual, and questioning females, and more Black, Latinx, and Other POC bisexual and questioning females reported persistent sadness. HSM females did not differ from their heterosexual peers for persistent sadness for any race/ethnicity. Compared with NHW females, significantly fewer Black, Latinx, and Other POC lesbians and Black HSM and bisexual females reported persistent sadness compared with their NHW counterparts. Persistent sadness was reported by significantly more Latinx heterosexual females than NHW heterosexual females.

Significantly more bisexual females reported bullying victimization across all race/ethnicity categories compared with their heterosexual peers. Bullying victimization was also reported by more Black and Other POC questioning females compared with their heterosexual peers. Significantly more NHW lesbians reported bullying victimization compared with their heterosexual peers. Significantly fewer Black and Latinx heterosexual, lesbian, and bisexual females and Black HSM females reported

Table 4. *Weighted Percentages for Reporting Bullying, Sadness, and STBs*

	Persistent Sadness			Bullying Victimization			STBs					
	%	(SE)	N	vs. NHW	%	(SE)	N	vs. NHW	%	(SE)	N	vs. NHW
Females												
NHW x H	38.4	(0.8)	4938	$F = 5.30^{***}$	35.2	(0.9)	4824	$F = 43.46^{***}$	22.7	(0.9)	2738	$F = 1.95$
NHW x HSM	43.4	(3.8)	354	$F = 2.14^{\dagger}$	35.7	(3.6)	336	$F = 3.20^*$	33.0**	(3.5)	267	$F = 2.35^{\dagger}$
NHW x GL	67.3***	(4.6)	223	$F = 3.23^*$	49.5**	(5.5)	155	$F = 5.11^{***}$	54.5***	(5.1)	164	$F = 3.20^*$
NHW x B	72.2***	(2.7)	1185	$F = 7.71^{***}$	50.5***	(3.3)	863	$F = 12.24^{***}$	56.7***	(2.9)	922	$F = 8.00^{***}$
NHW x Q	59.9***	(5.6)	282	$F = 1.42$	37.1	(5.4)	171	$F = 1.72$	47.7***	(5.3)	201	$F = 8.09^{***}$
vs. NHW x H	$F(4, 3386) = 44.50^{***}$			$F(4, 3386) = 6.85^{***}$			$F(4, 3386) = 52.99^{***}$					
Black x H	35.9	(1.6)	849		17.3	(1.3)	414	***	20.2	(1.2)	519	
Black x HSM	29.4	(6.5)	67	\dagger	20.2	(4.8)	52	*	21.6	(5.6)	68	
Black x GL	45.0	(7.4)	62	**	24.4	(5.8)	33	**	48.1**	(8.2)	56	
Black x B	55.1***	(3.7)	273	***	30.9***	(3.1)	148	***	37.2***	(3.6)	192	***
Black x Q	49.4 \dagger	(8.6)	59		40.3**	(8.3)	44		39.1**	(7.5)	58	
vs. Black x H	$F(4, 3386) = 6.18^{***}$			$F(4, 3386) = 6.43^{***}$			$F(4, 3386) = 8.22^{***}$					
Latinx x H	45.9	(2.0)	1747	***	24.3	(1.4)	968	***	24.4	(1.4)	970	
Latinx x HSM	53.7	(7.7)	126		25.0	(7.0)	81		40.4*	(7.1)	85	
Latinx x GL	47.2	(9.2)	93	\dagger	19.1	(7.4)	39	***	31.6	(8.1)	77	*
Latinx x B	78.2***	(3.6)	486		32.0*	(3.9)	263	***	57.0***	(4.6)	357	
Latinx x Q	67.3***	(6.6)	115		29.0	(6.0)	64		43.2**	(7.1)	80	
vs. Latinx x H	$F(4, 3386) = 16.03^{***}$			$F(4, 3386) = 1.44$			$F(4, 3386) = 13.04^{***}$					
Other POC x H	38.2	(2.8)	1312		31.5	(2.7)	973		25.1	(2.9)	856	
O. POC x HSM	45.1	(10.5)	107		29.9	(7.5)	81		19.2	(7.0)	73	\dagger
Other POC x GL	47.8	(9.1)	68	\dagger	40.2	(9.2)	46		28.6	(6.9)	54	**
Other POC x B	70.3***	(5.0)	335		50.6**	(6.2)	244		59.4***	(3.8)	305	
Other POC x Q	75.2***	(8.2)	97		55.1 \dagger	(12.3)	70		78.7***	(4.9)	85	***
vs. O. POC x H	$F(4, 3386) = 10.36^{***}$			$F(4, 3386) = 2.73^*$			$F(4, 3386) = 31.4^{***}$					

	Persistent Sadness			Bullying Victimization			STBs					
	%	(SE)	N	vs. NHW	%	(SE)	N	vs. NHW	%	(SE)	N	vs. NHW
Males												
NHW x H	21.7	(0.7)	3336	$F = 5.20$	19.8	(0.8)	3281	$F = 39.79^{***}$	14.9	(0.6)	2467	$F = 2.36^\dagger$
NHW x HSM	34.8*	(7.4)	122	$F = 0.03$	35.8*	(7.2)	125	$F = 0.56$	29.0*	(5.7)	109	$F = 0.82$
NHW x GL	43.0***	(6.3)	158	$F = 0.94$	48.7***	(6.7)	166	$F = 5.51^{**}$	36.5***	(5.7)	118	$F = 0.40$
NHW x B	55.2***	(4.2)	282	$F = 5.14^{**}$	40.2***	(5.2)	223	$F = 0.88$	55.3***	(4.2)	262	$F = 2.81^*$
NHW x Q	41.2***	(4.8)	125	$F = 3.64^*$	38.0***	(4.9)	112	$F = 3.22^*$	36.9***	(4.5)	120	$F = 2.28$
vs NHW x H	$F(4, 3386) = 27.65^{***}$				$F(4, 3386) = 11.49^{***}$				$F(4, 3386) = 33.63^{***}$			
Black x H	18.0	(1.0)	663	**	8.7	(0.8)	396	***	12.1	(0.9)	473	**
Black x HSM	36.3 [†]	(11.6)	22		40.5**	(11.5)	18	*	35.2 [†]	(11.8)	24	
Black x GL	55.8**	(10.7)	28		22.6 [†]	(7.3)	26	*	26.8 [†]	(8.0)	25	
Black x B	28.3	(8.2)	28	**	32.7**	(9.3)	25	**	31.4*	(8.3)	30	*
Black x Q	17.9	(5.9)	21	*	17.4	(5.8)	20	**	21.1	(6.8)	19	*
vs Black x H	$F(4, 3386) = 4.19^{**}$				$F(4, 3386) = 5.05^{***}$				$F(4, 3386) = 3.63^{**}$			
Latinx x H	23.4	(1.3)	1213		13.8	(1.3)	755	***	14.1	(1.1)	774	
Latinx x HSM	35.8	(14.4)	40		29.1	(13.9)	30		36.4	(14.5)	37	
Latinx x GL	48.9***	(6.9)	52		31.2*	(8.7)	50	†	39.0*	(9.7)	48	
Latinx x B	37.8 [†]	(7.8)	81	*	30.8*	(6.8)	63	*	36.4**	(8.1)	69	*
Latinx x Q	43.3 [†]	(11.9)	49		19.3	(6.7)	37	*	35.4*	(8.4)	39	
vs Latinx x H	$F(4, 3386) = 4.65^{***}$				$F(4, 3386) = 2.78^*$				$F(4, 3386) = 4.41^{***}$			
Other POC x H	23.0	(2.1)	975		19.9	(2.0)	816		14.9	(1.7)	724	
O. POC x HSM	38.1 [†]	(9.6)	52		46.9*	(11.2)	41		47.9**	(12.9)	39	
Other POC x GL	31.6	(12.9)	47		72.0***	(10.2)	49	*	32.7	(15.6)	41	
Other POC x B	59.7***	(6.4)	85		45.1***	(7.0)	66		49.8***	(7.1)	76	
Other POC x Q	38.0	(9.9)	40		37.6 [†]	(9.1)	40		49.8***	(9.7)	46	
vs O. POC x H	$F(4, 3386) = 8.35^{***}$				$F(4, 3386) = 12.31^{***}$				$F(4, 3386) = 9.91^{***}$			

Note. H = Heterosexual HSM = Heterosexual-Identified Sexual Minority GL = Gay/lesbian B = Bisexual Q = Questioning
 Weighted %, linearized SE, Unweighted N. Design-based F calculated using second-order Rao-Scott correction (Rao & Thomas, 1989). [†] $p < 0.10$ * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

bullying victimization compared with their NHW peers.

Compared with their heterosexual peers, significantly more bisexual and questioning females reported STBs, regardless of race/ethnicity. Among NHW and Latinx females, significantly more HSM females than heterosexuals reported STBs. More lesbians than heterosexuals reported STBs among NHW and Black females. Compared with NHW females, significantly fewer Other POC HSM and lesbians, Black bisexuals, and Latinx lesbians reported STBs. Significantly more Other POC questioning females reported STBs compared with their NHW counterparts.

More NHW HSM and LGBQ males, Black HSM and gay males, Latinx gay, bisexual, and questioning males, and Other POC HSM and bisexual males reported persistent sadness compared with their heterosexual peers. Persistent sadness was reported by significantly fewer Black heterosexual and Black and Latinx bisexual males compared with their NHW counterparts.

More HSM, gay, and bisexual males reported bullying victimization across race-ethnicity, but the differences was not significant for Latinx males. Significantly more NHW and Other POC questioning males reported bullying victimization compared with their heterosexual peers. Compared with NHW males, significantly fewer Black and Latinx heterosexual, gay, and questioning males, and more Other POC gay males reported bullying victimization.

More HSM, gay, bisexual, and questioning males reported STBs compared with their heterosexual peers across race/ethnicity but differences were not significant for Black questioning males, Latinx HSM males, or Other POC gay males. Compared with

NHW males, significantly fewer Black heterosexual, bisexual, and questioning males and Latinx bisexual males reported STBs.

Unadjusted Odds Ratios

To evaluate the strength of the associations between the suicidality risk factors and STBs, unadjusted odds ratios were calculated using survey-adjusted bivariate logistic regressions; results for females, males, and the total sample are presented in Table 5. Females had significantly higher odds of STBs compared with males OR = 2.04, 95% CI [1.86, 2.23], $p < .001$. Age was significantly associated with STBs for the total sample and among females: compared with 18-year-olds, all younger participants had significantly higher odds of STBs, and the odds were highest among younger students. For both females and males, all categories of sexual orientation had increased odds of STBs relative to their heterosexual peers. Odds appeared highest among bisexual participants, particularly among males.

Current use of tobacco, alcohol, marijuana, and lifetime hard drug use were all significantly associated with increased odds of STBs for both females and males. Tobacco use was associated with about twice the odds, alcohol was associated with 75-96% higher odds, and marijuana use was associated with 47-55% higher odds of STBs. Lifetime hard drug use was associated with over twice the odds of STBs in both males and females. Persistent sadness increased the odds of STBs by over 8 times for females and over 9 times for males. Bullying victimization increased the odds of STBs by 3 times for females and 3.5 times for males compared with those who did not report bullying victimization.

Table 5. *Unadjusted Odds Ratios for STBs*

Variables	Females		Males		Total	
	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]
Age						
14 years old	3.13***	[2.42, 4.06]	1.38*	[1.05, 1.80]	2.18***	[1.79, 2.65]
15 years old	2.21***	[1.78, 2.73]	1.29*	[1.05, 1.59]	1.74***	[1.49, 2.03]
16 years old	1.62***	[1.32, 2.00]	1.13	[0.93, 1.38]	1.39***	[1.19, 1.62]
17 years old	1.27*	[1.03, 1.56]	1.06	[0.85, 1.32]	1.18*	[1.01, 1.39]
18 or older	ref	-	ref	-		
	$F(4, 3379) = 25.82^{***}$		$F(4, 3380) = 2.05$		$F(4, 3386) = 22.10^{***}$	
Race/Ethnicity						
NHW	ref	-	ref	-	ref	-
Black	0.85*	[0.73, 0.98]	0.75**	[0.62, 0.90]	0.78***	[0.69, 0.89]
Latinx	1.14*	[1.01, 1.29]	0.90	[0.75, 1.09]	0.99	[0.88, 1.12]
Other POC	1.18	[0.92, 1.51]	1.03	[0.81, 1.30]	1.11	[0.94, 1.30]
	$F(3, 3380) = 4.32^{**}$		$F(3, 3381) = 3.46^*$		$F(3, 3387) = 7.20^{***}$	
Orientation						
Heterosexual	ref	-	ref	-	ref	-
HSM	1.55**	[1.18, 2.04]	3.05***	[2.06, 4.54]	2.18***	[1.75, 2.71]
Gay/Lesbian	2.79***	[2.19, 3.55]	3.29***	[2.23, 4.85]	3.11***	[2.48, 3.89]
Bisexual	3.89***	[3.25, 4.65]	5.62***	[4.32, 7.31]	5.08***	[4.33, 5.98]
Questioning	3.37***	[2.58, 4.39]	3.22***	[2.35, 4.40]	3.60***	[2.91, 4.45]
	$F(4, 3379) = 74.90^{***}$		$F(4, 3380) = 59.77^{***}$		$F(4, 3379) = 129.16^{***}$	
Tobacco	2.01***	[1.53, 2.63]	1.94***	[1.64, 2.29]	1.60***	[1.40, 1.84]
Alcohol	1.96***	[1.70, 2.26]	1.75***	[1.46, 2.09]	1.69***	[1.48, 1.92]
Marijuana	1.47***	[1.32, 1.64]	1.55***	[1.36, 1.76]	1.48***	[1.36, 1.61]
Hard Drugs	2.79***	[2.40, 3.26]	2.30***	[2.00, 2.64]	2.46***	[2.22, 2.74]
Sadness	8.44***	[7.29, 9.77]	9.66***	[8.44, 11.05]	9.57***	[8.66, 10.69]
Bullied	3.02***	[2.70, 3.38]	3.53***	[2.99, 4.17]	3.52***	[3.20, 3.86]
Observations	30,302		32,892		63,194	

Note: Odds ratios from survey-adjusted linearized logistic regressions. Adjusted Wald F -statistic.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Multivariate Analyses

Adjusted Odds Ratios

Survey-adjusted multivariate logistic regressions were used to estimate adjusted odds ratios with 95% confidence intervals and Rao-Scott adjusted F -statistics and are presented in Table 6. Hosmer-Lemeshow goodness of fit tests, adjusted McFadden's R^2 statistics, and AIC and BIC values are also reported in Table 6. Due to small cell sizes among sexual minority males, race/ethnicity was not included in interactions in the final logistic regression model, but race/ethnicity was retained in all models as a predictor.

All regressions in Table 6 included age, race/ethnicity, current tobacco use, current alcohol use, current marijuana use, lifetime use of hard drugs, survey state, and survey year. The first column of Table 6 presents the baseline confounders-only model, the second column presents the full model which added sex, sexual orientation, persistent sadness, and bullying victimization, and the third column presents the interaction model which included all of the confounders and the four-way interaction of sex x sexual orientation x sadness x bullying with all lower order interactions.

In the final multivariate logistic regression model, age was significantly associated with STBs: younger participants had higher odds of STBs but 17-year-olds did not significantly differ from 18-year-olds. Race/ethnicity and current marijuana use were significantly associated with STBs in the baseline model, but failed to achieve significance once the other risk factors were included in the model. In the final model, current tobacco use was associated with 38% increased odds of STBs, current alcohol use was associated with 20% increased odds, and hard drug use was associated with 70% increased odds of STBs. Controlling for all other variables in the model, female

Table 6. *Adjusted Odds Ratios for Suicidal Thoughts and Behaviors*

Variable	Baseline		Full Model		Interaction	
	AOR	95% CI	AOR	95% CI	AOR	95% CI
Age						
14 years old	2.16***	[1.74, 2.69]	1.60***	[1.27, 2.03]	1.63***	[1.28, 2.07]
15 years old	1.79***	[1.51, 2.13]	1.48***	[1.23, 1.78]	1.50***	[1.25, 1.80]
16 years old	1.45***	[1.23, 1.71]	1.27**	[1.06, 1.51]	1.27**	[1.07, 1.51]
17 years old	1.20*	[1.02, 1.41]	1.11	[0.92, 1.33]	1.12	[0.93, 1.34]
18 or older	ref	-	ref	-	ref	-
	$F(4, 3386) = 18.53^{***}$		$F(4, 3386) = 7.72^{***}$		$F(4, 3386) = 8.05^{***}$	
Tobacco	1.18*	[1.01, 1.38]	1.36***	[1.14, 1.62]	1.38***	[1.16, 1.65]
Alcohol	1.29***	[1.115, 1.483]	1.19*	[1.04, 1.37]	1.20**	[1.04, 1.37]
Marijuana	1.18***	[1.077, 1.29]	1.01	[0.91, 1.13]	1.02	[0.92, 1.13]
Hard Drugs	2.13***	[1.885, 2.412]	1.70***	[1.47, 1.97]	1.70***	[1.47, 1.96]
NHW						
Black	0.82**	[0.72, 0.93]	0.98	[0.86, 1.12]	0.98	[0.86, 1.12]
Latinx	0.93	[0.79, 1.08]	0.98	[0.83, 1.15]	0.98	[0.84, 1.15]
Other POC	1.07	[0.89, 1.30]	1.09	[0.87, 1.35]	1.10	[0.89, 1.36]
	$F(3, 3387) = 4.51^{**}$		$F(3, 3387) = 0.35$		$F(3, 3387) = 0.39$	
Female						
			1.16**	[1.04, 1.29]	1.28*	[1.04, 1.56]
			$F(1, 3389) = 7.54^{**}$		$F(1, 3389) = 5.68^*$	
HSM						
Gay/Lesbian			1.56***	[1.22, 2.00]	2.76**	[1.44, 5.31]
Bisexual			2.27***	[1.69, 3.05]	3.10**	[1.31, 7.32]
Questioning			2.65***	[2.22, 3.17]	3.86***	[2.42, 6.16]
			2.50***	[1.95, 3.19]	2.12*	[1.12, 4.01]
			$F(4, 3386) = 46.41^{***}$		$F(4, 3386) = 11.80^{***}$	
Persistent Sadness						
			6.97***	[6.26, 7.76]	7.84***	[6.45, 9.53]
			$F(1, 3389) = 1320.8^{***}$		$F(1, 3389) = 428.42^{***}$	
Bullying Victim						
			1.98***	[1.77, 2.21]	2.03***	[1.56, 2.65]
			$F(1, 3389) = 148.63^{***}$		$F(1, 3389) = 27.54^{***}$	
Female x Sad						
					0.89	[0.68, 1.17]
					$F(1, 3389) = 0.67$	
Female x Bullied						
					1.14	[0.80, 1.62]
					$F(1, 3389) = 0.52$	
Sad x Bullied						
					1.00	[0.70, 1.43]
					$F(1, 3389) = 0.00$	
Female x HSM						
					0.44	[0.18, 1.10]
Female x Gay/Lesbian						
					1.27	[0.52, 3.10]
Female x Bisexual						
					0.66	[0.34, 1.25]
Female x Questioning						
					2.27	[0.85, 6.06]

				$F(4, 3386) = 2.73^*$
HSM x Sad				0.32 [0.07, 1.57]
Gay/Lesbian x Sad				0.68 [0.24, 1.98]
Bisexual x Sad				1.33 [0.61, 2.86]
Questioning x Sad				1.03 [0.34, 3.16]
				$F(4, 3386) = 0.85$
HSM x Bullied				0.47 [0.14, 1.58]
Gay/Lesbian x Bullied				0.73 [0.18, 2.95]
Bisexual x Bullied				0.80 [0.31, 2.04]
Questioning x Bullied				1.37 [0.51, 3.68]
				$F(4, 3386) = 0.60$
Female x Sad x Bullied				0.82 [0.52, 1.29]
				$F(1, 3389) = 0.75$
Female x HSM x Sad				5.23 [0.91, 30.1]
Female x GL x Sad				0.85 [0.24, 3.04]
Female x B x Sad				0.69 [0.27, 1.76]
Female x Q x Sad				0.39 [0.09, 1.74]
				$F(4, 3386) = 1.95$
Female x HSM x Bullied				1.50 [0.31, 7.13]
Female x GL x Bullied				0.66 [0.12, 3.52]
Female x B x Bullied				1.55 [0.46, 5.26]
Female x Q x Bullied				0.33 [0.07, 1.54]
				$F(4, 3386) = 0.88$
HSM x Bully x Sad				9.65* [1.25, 74.6]
GL x Bully x Sad				0.94 [0.18, 4.98]
B x Bully x Sad				0.67 [0.19, 2.36]
Q x Bully x Sad				0.82 [0.17, 3.92]
				$F(4, 3386) = 1.45$
Female x HSM x Bully x Sad				0.07* [0.01, 0.83]
Female x GL x Bully x Sad				1.57 [0.19, 13.3]
Female x B x Bully x Sad				1.23 [0.24, 6.17]
Female x Q x Bully x Sad				3.76 [0.52, 27.0]
				$F(4, 3386) = 1.81$
Adjusted F	$F(33, 3357) = 30.04^{***}$	$F(40, 3350) = 83.87^{***}$	$F(72, 3318) = 65.99^{***}$	
GOF df	(9, 3304)	(9, 3304)	(9, 3304)	
HL GOF	$F=1.03, p = 0.41$	$F= 0.96, p = 0.47$	$F= 0.69, p = 0.72$	
Adj. R^2	0.040	0.233	0.236	
AIC	2343783	1872325	1865879	
BIC	2344091	1872696	1866540	

Note: Adjusted odds ratios from survey-adjusted linearized logistic regressions. Adjusted Wald F statistics. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ H = Heterosexual, HSM = Heterosexual-identified Sexual Minority, GL = Gay/lesbian, B = Bisexual, Q = Questioning

sex was associated with about 28% higher odds of STBs compared with males.

Compared with their heterosexual peers, HSM, gay/lesbian, bisexual, and questioning participants all had significantly higher odds of STBs. Bullying victimization was associated with about twice the odds of STBs and persistent sadness was associated with nearly 8 times the odds of STBs. Most of the interactions failed to achieve significance but were included in the final model to allow for calculation of the adjusted predicted probabilities and the marginal effects of persistent sadness, bullying victimization, sexual orientation, and participant sex.

Adjusted Predictions and Marginal Effects

As a preliminary step in the evaluation of adjusted predictions and marginal effects, the average adjusted predictions and average marginal effects were estimated for participant sex, sexual orientation, persistent sadness, and bullying victimization and are presented in Table 7. Controlling for all other variables in the model, females had a higher average adjusted prediction than males and the marginal effect, which is the difference between the predictions was 1.6% and was significant. The average marginal effect of sexual orientation was significant for all sexual minorities compared with the heterosexual reference group and ranged from 6.6% increased probability of STBs for HSM participants to 17% for bisexual participants. The marginal effects of persistent sadness and bullying victimization were also significant: persistent sadness increased the probability of STBs by three times as much as bullying victimization.

The adjusted predicted probabilities were calculated for each category of sexual orientation at each level of persistent sadness and bullying victimization for females and males. The adjusted predicted probabilities are presented graphically in Figure 3

Table 7. Average Adjusted Predictions (AAP) and Average Marginal Effects (AME)

	AAP	(SE)	AME	(SE)
Male	.212***	(.006)	ref	-
Female	.228***	(.006)	.016*	(.007)
Heterosexual	.197***	(.005)	ref	-
HSM	.262***	(.022)	.066**	(.022)
Gay/Lesbian	.330***	(.029)	.133***	(.029)
Bisexual	.365***	(.017)	.169***	(.018)
Questioning	.334***	(.021)	.137***	(.022)
Not Sad	.107***	(.004)	ref	-
Sad	.415***	(.010)	.308***	(.010)
Not Bullied	.189***	(.005)	ref	-
Bullied	.283***	(.008)	.094***	(.008)

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

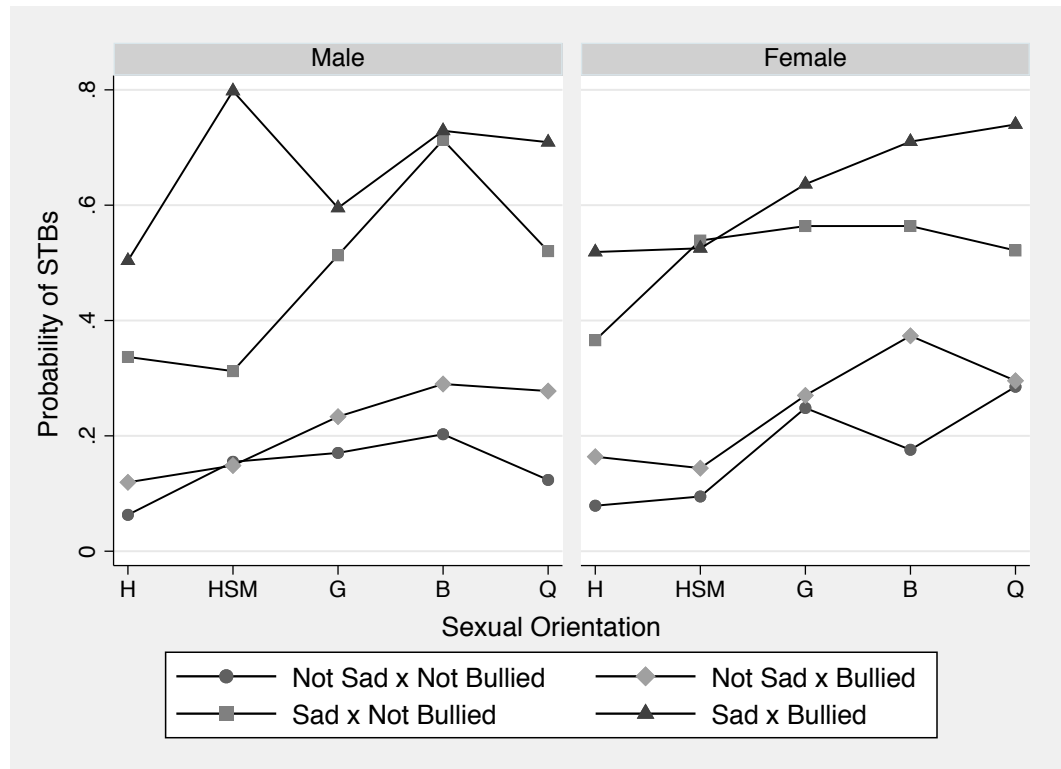


Figure 3. Adjusted Predicted Probability of STBs

Note: H = Heterosexual HSM = Heterosexual-Identified Sexual Minority
G = Gay/Lesbian B = Bisexual Q = Questioning

and numerically in Column 1 of Table 8 as the basis for the marginal effects calculations. The marginal effects of persistent sadness (Column 2), bullying victimization (Column 6), sexual orientation (Columns 10 and 11), and participant sex (Column 13), demonstrate the magnitude of the effect of that variable on the probability of STBs and whether or not the effect is significant.

Second-differences were calculated using the `lincom` command to determine if there were significant differences in the size of the marginal effect between groups for each level of the sexual orientation variable compared with heterosexuals (denoted Δ SO:H), and with the previous level (denoted Δ SO:P), as well as for females compared with males (denoted Δ F:M). Second-differences facilitate the comparison of effects across groups. Because cell sizes were small among sexual minority males, p -values below 0.10 were flagged as significant in the table and p -values between 0.5 and 0.10 are indicated in the text (all other p -values $< .05$).

Marginal Effect of Persistent Sadness

The marginal effect of persistent sadness (Column 2) is the difference in the value of the adjusted predicted probability between those who reported persistent sadness and those who did not, at each level of sex, sexual orientation, and bullying victimization. The marginal effect of sadness was significant for all females regardless of whether or not they reported bullying victimization and for all males except HSM who did not report bullying victimization. That is, among HSM males who were not bullied, the effect of persistent sadness did not significantly increase the probability of STBs. For all other groups, persistent sadness increased the probability of STBs regardless of whether or not they were bullied.

Table 8. Adjusted Predictions (AP), Marginal Effects (ME), and 2nd-Differences (Δ)

Females	1	2	3	4	5	6	7	8	9	10	11	12	13				
	AP	Persistent Sadness			Bullying Victimization			Orientation			Sex						
		ME	Δ	SO:H	Δ	SO:P	Δ	F:M	ME	Δ	SO:P	Δ	F:M	ME	Δ	F:M	ME
Bullied x Sad																	
Heterosexual	.519***	.355***	ref	-	.030	.153***	ref	-	.014	ref	-	-	.015				
HSM	.525***	.381***	.026	-	-.013	-.014	-.167	-	-.029	.006	-	-.288**	-.273**				
Lesbian	.637***	.366***	.011	-.015	.268*	.073	-.080	.086	.499**	.118	.111	.026	.041				
Bisexual	.710***	.337***	-.018	-.030	-.287	.146**	-.007	.074	-.056	.191***	.074	-.034	-.019				
Questioning	.740***	.444***	.089	.108	-.004	.219**	.065	.072	.010	.221***	.030	.016	.031				
Not Bullied x Sad																	
Heterosexual	.366***	.287***	ref	-	.027	ref	-	-	-	ref	-	-	.029				
HSM	.539***	.444***	.157*	-	.102	ref	-	-	-	.173**	-	-.049	.227				
Lesbian	.564***	.315***	.029	-.128	.122	ref	-	-	-	.198**	.025	-.008	.051				
Bisexual	.564***	.388***	.101*	.073	-.013	ref	-	-	-	.198***	.001	-.178*	-.149*				
Questioning	.522***	.236*	-.051	-.152	.160	ref	-	-	-	.156**	-.042	-.026	.001				
Bullied x Not Sad																	
Heterosexual	.164***	ref	-	-	-	.085***	ref	-	.041	ref	-	-	.044*				
HSM	.144***	ref	-	-	-	.049	-.036	-	-.130	-.020	-	.198	-.004				
Lesbian	.270***	ref	-	-	-	.022	-.063	-.027	-.110	.106	.126	.022	.037				
Bisexual	.374***	ref	-	-	-	.198**	.113	.176	-.030	.210**	.103	.039	.084				
Questioning	.296**	ref	-	-	-	.010	-.075	-.187	.144	.132	-.078	-.028	.018				
Not Bullied x Not Sad																	
Heterosexual	.079***	ref	-	-	-	ref	-	-	-	ref	-	-	.016*				
HSM	.095***	ref	-	-	-	ref	-	-	-	.016	-	-.076	-.060				
Lesbian	.248***	ref	-	-	-	ref	-	-	-	.170***	.153**	.062	.078				
Bisexual	.176***	ref	-	-	-	ref	-	-	-	.097**	-.072	-.043	-.027				
Questioning	.285***	ref	-	-	-	ref	-	-	-	.206**	.109	.145 [†]	.162*				

Males	Orientation													Sex	
	1	2	3	4	5	6	7	8	9	10	11	12	13		
	Persistent Sadness			Bullying Victimization			Orientation			Sex					
AP	ME	Δ	SO:H	ΔSO:P	Δ F:M	ME	Δ	SO:H	ΔSO:P	Δ F:M	ME	Δ	ME:P	Δ F:M	ME
Bullied x Sad															
Heterosexual	.504***	.384***	ref	-	-	.167***	ref	-	-	-	ref	-	-	-	ref
HSM	.798***	.650***	.265**	-	-	.486**	.319†	-	-	-	.294***	-	-	-	ref
Gay	.595***	.362**	-.022	-.288	-	.082	-.085	-.404†	-	-	.092	-.203†	-	-	ref
Bisexual	.729***	.439***	.055	.077	-	.016	-.151	-.066	-	-	.225***	.134	-	-	ref
Questioning	.709***	.432***	.047	-.008	-	.189	.022	.173	-	-	.206*	-.020	-	-	ref
Not Bullied x Sad															
Heterosexual	.337***	.274***	ref	-	-	ref	-	-	-	-	ref	-	-	-	ref
HSM	.312*	.157	-.117	-	-	ref	-	-	-	-	-.025	-	-	-	ref
Gay	.513***	.345**	.069	.185	-	ref	-	-	-	-	.176†	.085	-	-	ref
Bisexual	.713***	.510***	.237***	.168	-	ref	-	-	-	-	.376***	.057	-	-	ref
Questioning	.520***	.397***	.123	-.114	-	ref	-	-	-	-	.184†	-.012	-	-	ref
Bullied x Not Sad															
Heterosexual	.120***	ref	-	-	-	.056***	ref	-	-	-	ref	-	-	-	ref
HSM	.149*	ref	-	-	-	-.007	-.063	-	-	-	.029	-	-	-	ref
Gay	.233*	ref	-	-	-	.063	.006	.069	-	-	.114	.201	-	-	ref
Bisexual	.290***	ref	-	-	-	.087	.031	.024	-	-	.171*	.200	-	-	ref
Questioning	.278***	ref	-	-	-	.154	.098	.067	-	-	.158*	-.193	-	-	ref
Not Bullied x Not Sad															
Heterosexual	.063***	ref	-	-	-	ref	-	-	-	-	ref	-	-	-	ref
HSM	.155***	ref	-	-	-	ref	-	-	-	-	.092*	-	-	-	ref
Gay	.171**	ref	-	-	-	ref	-	-	-	-	.107†	.015	-	-	ref
Bisexual	.203***	ref	-	-	-	ref	-	-	-	-	.140***	.032	-	-	ref
Questioning	.124***	ref	-	-	-	ref	-	-	-	-	.061†	-.079	-	-	ref

Note. Δ SO:H = 2nd difference compared with heterosexual ΔSO:P = 2nd difference compared with previous level Δ F:M = 2nd difference comparing females with males †p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

The third and fourth columns present the second differences for the marginal effect of sadness. Each level of the sexual orientation variable was compared with heterosexuals (Column 3) and with the previous level (Column 4) to determine if the strength of the effect of persistent sadness differed significantly from the effect on the reference group. For females, the effect of persistent sadness was significantly larger among HSM and bisexual females than it was for heterosexual females. The marginal effect of persistent sadness was larger for HSM males who were bullied and reported persistent sadness compared with their heterosexual peers and their gay peers ($p = 0.06$). The marginal effect of sadness was larger for bisexual males who were not bullied compared with heterosexual males.

Column 5 provides information to evaluate whether the size of the effect of persistent sadness on STBs differed between males and females at each level of sexual orientation and bullying victimization. For those who reported bullying victimization, the marginal effect of sadness was significantly larger for lesbians compared with gay males.

Marginal Effect of Bullying Victimization

Column 6 of Table 8 presents the marginal effects of bullying victimization on the probability of STBs at each level of persistent sadness. The marginal effect of bullying victimization was significant for heterosexual and bisexual females, whether or not they reported persistent sadness. For questioning females who reported persistent sadness, the marginal effect of bullying victimization was significant, but it was not significant for questioning females who did not report persistent sadness. Among males, bullying victimization significantly increased the probability of STBs for heterosexual males regardless of persistent sadness and for HSM males with persistent sadness, but bullying

victimization did not significantly increase the probability of STBs for gay, bisexual, or questioning males at any level of persistent sadness.

The second differences for the effect of bullying victimization are reported in Column 7 for comparisons with heterosexuals and Column 8 for comparisons with the preceding level of the sexual orientation variable. The marginal effect of bullying victimization did not differ between the levels of sexual orientation for females. For males who reported persistent sadness, the marginal effect of bullying victimization was larger for HSM males compared with heterosexual males ($p < .10$) and gay males ($p < .10$). For males who did not report persistent sadness, the effect of bullying victimization did not significantly differ for any level of sexual orientation.

The second differences for the size of the effect of bullying victimization between females and males are presented in Column 9. The marginal effect of bullying victimization was larger for lesbians than gay males among those who reported persistent sadness, but no other differences were significant.

Marginal Effect of Sexual Orientation

The marginal effect of sexual orientation was evaluated to determine if subgroups of sexual minority participants were at higher risk for STBs than their peers. In column 10, each sexual orientation category was compared with their heterosexual peers and in Column 11 (ME:P) each category was compared with the previous level. Among females who reported both persistent sadness and bullying victimization, bisexual and questioning females were significantly more likely to report STBs compared with their heterosexual peers. For those who reported persistent sadness but not bullying victimization, HSM, lesbian, bisexual, and questioning females were all significantly more likely to report

STBs compared with their heterosexual peers. Among females who reported bullying victimization but not persistent sadness, only bisexual females were significantly more likely to report STBs compared with their heterosexual peers. Finally, among females who reported neither bullying nor sadness, lesbian, bisexual, and questioning females were all significantly more likely to report STBs compared with their heterosexual peers, and lesbians were significantly more likely than their HSM peers to report STBs.

Among males who reported both bullying victimization and persistent sadness, HSM, bisexual, and questioning males all had significantly higher probability of STBs compared with their heterosexual peers and HSM males had higher probability compared with their gay peers ($p = .07$). Among males who reported persistent sadness but not bullying victimization, bisexual, gay ($p = .08$), and questioning ($p = .08$) males had higher probability of STBs compared with their heterosexual peers. Among males who were bullied but did not report persistent sadness, bisexual and questioning males had significantly higher probability of STBs compared with their heterosexual peers. Among males who reported neither bullying victimization nor persistent sadness, HSM, bisexual, gay ($p = .07$) and questioning ($p = .08$) males were more likely to report STBs compared with their heterosexual peers.

The second differences in Column 12 were calculated to determine if the effect of sexual orientation was larger for females than males at each level of persistent sadness and bullying victimization. The marginal effect of sexual orientation was significantly smaller for HSM females who reported persistent sadness and bullying victimization compared with HSM males, smaller for bisexual females who reported persistent sadness

but not bullying victimization, and larger for questioning females who reported neither persistent sadness nor bullying victimization compared with their male peers ($p = .06$).

Marginal Effect of Participant Sex

The marginal effect of participant sex was calculated to determine if there were significant sex differences at each level of sexual orientation, persistent sadness, and bullying victimization; these are presented in Column 13. Among participants who reported bullying victimization and persistent sadness, HSM females had significantly lower probability of STBs compared with their male peers. For those who did not report persistent sadness, heterosexual females were significantly more likely than heterosexual males to report STBs, regardless of bullying victimization. Among those who reported persistent sadness but not bullying, bisexual females had significantly lower probability of STBs compared with their male peers. Finally, among those who reported neither persistent sadness nor bullying victimization, questioning females had significantly higher probability of STBs compared with their male peers.

Results: Summary

This subsection summarizes the results in a format that is better suited to addressing the research questions. Results are summarized for HSM, bisexual, and questioning females and males, followed by differences by sex and race/ethnicity.

HSM Participants

HSM Females

More HSM females reported current tobacco, alcohol, marijuana, and hard drug use than their heterosexual peers. Similar percentages of HSM, lesbian, and bisexual

females reported alcohol use, similar percentages of HSM, lesbian, and questioning females reported marijuana use, which was fewer than their bisexual peers, and similar percentages of HSM and bisexual females reported hard drug use, which was more than their lesbian and questioning peers.

HSM females did not differ from their heterosexual peers in the percentages of those reporting persistent sadness or bullying victimization, regardless of race/ethnicity. When not evaluated at the intersection of sexual orientation and race/ethnicity, more HSM females reported STBs than their heterosexual peers, but fewer than their lesbian, bisexual, and questioning peers. At the intersection of sexual orientation and race/ethnicity, only NHW and Latinx HSM females were significantly more likely to report STBs compared with their heterosexual peers. Fewer Black HSM than NHW HSM females reported persistent sadness and bullying victimization and fewer Other POC than NHW HSM females reported STBs.

Persistent sadness, but not bullying victimization, increased the probability of STBs for HSM females. HSM and heterosexual females did not differ at most levels of persistent sadness and bullying victimization, but HSM females who reported persistent sadness without bullying victimization had higher probability of STBs compared with heterosexual females. HSM females had lower probability of STBs than their lesbian peers among those who reported neither bullying nor persistent sadness. No other significant differences were found between lesbian and HSM females.

HSM Males

Similar percentages of HSM, bisexual, and questioning males reported alcohol or hard drug use which was more than their heterosexual and gay peers. Males did not vary

by sexual orientation for tobacco or marijuana use. For persistent sadness, the percentage of HSM males was between their heterosexual and gay and bisexual male peers. The percentage of HSM males who reported bullying victimization was higher than heterosexual, similar to bisexual, and lower than gay males. For STBs, HSM males were between their heterosexual and bisexual peers and similar to their gay and questioning peers. At the intersection of sexual orientation and participant race/ethnicity, more NHW, Black, and Other POC HSM males reported persistent sadness, bullying victimization, and STBs compared with their heterosexual peers of the same race/ethnicity.

Persistent sadness increased the probability of STBs for HSM males who reported bullying victimization, and the marginal effect was significantly larger for HSM than heterosexual males ($p < .10$). Among HSM males who reported persistent sadness, bullying victimization increased the probability of STBs and the marginal effect of bullying victimization was significantly larger for HSM than heterosexual males ($p < .10$). HSM males who reported both persistent sadness and bullying victimization had significantly higher probability of STBs compared with their heterosexual male peers ($p < .05$) and their gay male peers ($p < .10$). The probability of STBs was higher for HSM than heterosexual males among those who reported neither persistent sadness nor bullying victimization.

Bisexual Participants

Bisexual Females

Compared with their heterosexual peers, more bisexual females reported current use of tobacco, alcohol, marijuana, and lifetime use of hard drugs. More bisexual females reported alcohol use than their questioning peers but were similar to their HSM and

lesbian peers. More bisexual females reported marijuana use than any of their females peers, and more bisexual and HSM females reported lifetime hard drug use than their lesbian and questioning peers.

Larger percentages of bisexual females reported persistent sadness, bullying victimization, and STBs than any of their other female peers. Regardless of race/ethnicity, more bisexuals reported persistent sadness, bullying victimization, and STBs compared with their heterosexual female peers. Compared with NHW bisexual females, fewer Black bisexuals reported persistent sadness, fewer Black and Latinx bisexual females reported bullying victimization, and fewer Black bisexual females reported STBs compared with their NHW peers.

In the marginal analysis, persistent sadness increased the probability of STBs for bisexual females at every level of bullying victimization and bullying increased the probability of STBs at every level of persistent sadness. The marginal effect of sadness was larger for bisexual females who were not bullied than for their heterosexual peers. The probability of STBs was higher for bisexual than heterosexual females at every level of persistent sadness and bullying victimization. Bisexual females did not differ from their lesbian or questioning peers at any level of sadness or bullying victimization. Among those who reported only persistent sadness, the probability of STBs was lower for bisexual females than males.

Bisexual Males

More bisexual males reported alcohol and hard drug use than their heterosexual and gay peers but were similar to HSM and questioning males for alcohol, and fewer bisexual males than HSM and questioning males reported hard drug use but more than

their heterosexual peers. A larger percentage of bisexual males reported persistent sadness compared with their heterosexual, HSM, and questioning peers. More bisexual males reported bullying victimization compared with their heterosexual and questioning peers, but fewer than their gay peers. More bisexual males reported STBs than any of their other male peers.

At the intersection of race/ethnicity and sexual orientation, more bisexual than heterosexual males reported persistent sadness, bullying victimization, and STBs regardless of race/ethnicity, but the difference was not significant for Black bisexual males and persistent sadness. Compared with bisexual NHW males, fewer Black and Latinx males reported persistent sadness and STBs, but NHW bisexual and non-White bisexual males did not differ for bullying victimization.

Persistent sadness, but not bullying victimization, increased the probability of STBs for bisexual males. The marginal effect of sadness was larger for bisexual males than for heterosexual males for those who were not bullied. At every level of persistent sadness and bullying victimization, the probability of STBs was higher for bisexual than heterosexual males, but bisexual males did not differ from their gay or questioning peers in their probability of STBs at any level of persistent sadness or bullying victimization.

Questioning Participants

Questioning Females

Compared with their heterosexual peers, more questioning females reported current use of alcohol, marijuana, and lifetime hard drug use. Fewer questioning than lesbian, HSM, and bisexual females reported current use of alcohol. The percentage of those reporting current marijuana use was similar for lesbians, HSM, and questioning

females, which was smaller than their bisexual peers. Lesbian and questioning females were similar in the percentages reporting lifetime hard drug use, which was less than their HSM and bisexual peers, but more than their heterosexual peers.

Persistent sadness was reported by a larger percentage of questioning females than their heterosexual, HSM, and lesbian peers, but a smaller percentage than their bisexual peers. The percentage of questioning females who reported bullying victimization was similar to their lesbian peers, larger than their heterosexual and HSM peers, and smaller than bisexual females. Similar percentages of questioning and bisexual females reported STBs, which was more than their other female peers. Regardless of race/ethnicity, more questioning females reported persistent sadness and STBs than their heterosexual peers, and more questioning Black and Other POC females reported bullying victimization compared with their heterosexual peers. Compared with their NHW questioning peers, more Other POC questioning females reported STBs.

Persistent sadness increased the probability of STBs for questioning females regardless of bullying victimization, but bullying victimization only increased the probability of STBs among questioning females who also reported persistent sadness. The probability of STBs was higher for questioning than heterosexual females for most levels of sadness and bullying, except among those who reported bullying victimization without persistent sadness. Questioning females did not significantly differ from their bisexual peers at any level of persistent sadness or bullying victimization.

Questioning Males

More questioning males reported alcohol use than their heterosexual and gay peers, and more reported hard drug use than their heterosexual, gay, and bisexual peers.

The percentage of questioning males who reported 12-month persistent sadness was larger than their heterosexual peers but smaller than their gay and bisexual peers. Bullying victimization was reported by more questioning than heterosexual males, but fewer than their HSM, gay, and bisexual peers. More questioning males reported STBs compared with their heterosexual peers, but fewer than their bisexual peers.

Cell sizes were small among non-White questioning males. Compared with their same race/ethnicity heterosexual peers, more questioning males reported persistent sadness among NHW and Latinx males, more reported bullying victimization among NHW and Other POC males, and more reported STBs among NHW, Latinx, and Other POC males. Compared with NHW questioning males, fewer Black questioning males reported persistent sadness, fewer Black and Latinx reported bullying victimization, and fewer Black males reported STBs.

Persistent sadness significantly increased the probability of STBs for all questioning males, regardless of bullying victimization, but bullying victimization did not increase the probability of STBs at any level of persistent sadness. Questioning males who were bullied had higher probability of STBs compared with their heterosexual peers, and those who were not bullied also had higher probability of STBs at $p < .10$. In the marginal analyses, questioning males and bisexual males did not significantly differ in their probability of STBs.

Sex Differences

More males than females reported alcohol and tobacco use, but more females than males reported persistent sadness, bullying victimization, and STBs. The odds of STBs were higher for females than males, and the predicted probability of STBs was slightly,

but significantly, higher for females than males. More HSM than heterosexual males reported persistent sadness, bullying victimization, and STBs, but HSM and heterosexual females differed only for STBs. In the adjusted analyses, female sex increased the odds of STBs by 28% and the probability by 1.6%.

Examination of marginal effects revealed that the probability of STBs differed by participant sex at levels of the sexual orientation by persistent sadness by bullying victimization interaction. In the absence of persistent sadness, heterosexual females had higher probability of STBs than their heterosexual male peers, but in the presence of persistent sadness, females and males did not differ in their probability of STBs. The probability of STBs was higher among gay males than lesbians who reported both bullying victimization and persistent sadness and higher among bisexual males than females for those who reported sadness only. Questioning females had higher probability of STBs than questioning males for those who reported neither persistent sadness nor bullying victimization.

Differences by Race/Ethnicity

Race/ethnicity was associated with sexual orientation for females but not males. Fewer NHW females than Black, Latinx, and Other POC females identified as LGBQ or were categorized as HSM. Race/ethnicity was not significantly associated with odds of STBs after controlling for other risk factors, but in unadjusted analyses Black females and males had significantly lower odds and Latinx females had significantly higher odds of STBs compared with their NHW peers.

Among heterosexual females, more Latinx than NHW participants reported persistent sadness and fewer Black and Latinx than NHW reported bullying

victimization, but heterosexual females did not vary by race/ethnicity in the proportion who reported STBs. Fewer Black HSM females reported persistent sadness and fewer Black and Latinx HSM females reported or bullying victimization compared with their NHW HSM peers. The percentage of Other POC HSM females was smaller than their NHW peers for STBs. Compared with NHW lesbians, fewer Black, Latinx, and Other POC lesbians reported persistent sadness, and fewer Black and Latinx lesbians reported bullying victimization. STBs were reported by fewer Latinx and Other POC lesbians than NHW lesbians. Fewer Black bisexual females reported persistent sadness and STBs and fewer Black and Latinx bisexuals reported bullying victimization compared with NHW bisexual females. Finally, compared with NHW questioning females, more Other POC questioning females reported STBs, but no other significant differences found across race/ethnicity for questioning females.

Compared with NHW heterosexual males, fewer Black heterosexual males reported persistent sadness and STBs, and fewer Black and Latinx heterosexual males reported bullying victimization. Racial/ethnic minority HSM males did not differ significantly from their NHW HSM male peers for persistent sadness, bullying victimization, or STBs. Fewer Black and Latinx gay males, but more Other POC gay males reported bullying victimization compared with their NHW peers. Fewer Black and Latinx bisexual males reported persistent sadness and STBs compared with their NHW peers. For questioning males, fewer Black and Latinx males reported bullying victimization, and fewer Black males reported persistent sadness and STBs compared with NHW questioning males.

Discussion

This study explored the effects of persistent sadness and bullying victimization on the probability of STBs in a sample of heterosexual, HSM, gay/lesbian, bisexual, and questioning adolescents from pooled 2013, 2015, and 2017 state YRBS data. The primary research question raised by the literature review asked how HSM participants might differ with regard to bullying victimization, persistent sadness, and STBs compared with their heterosexual and LGBQ-identified peers. Additional research questions asked how bisexual and questioning participants might differ from their heterosexual and other sexual minority peers at different levels of bullying victimization and persistent sadness, and whether there would be differences by participant sex and race/ethnicity in persistent sadness, bullying victimization, and STBs.

Bivariate analyses were conducted to compare the percentages of participants who reported persistent sadness, bullying victimization, substance use, and STBs. Comparisons within race/ethnicity explored whether more sexual minority than heterosexual participants reported persistent sadness, bullying victimization, and STBs. Within levels of the sexual orientation variable, comparisons were made across race/ethnicity categories to explore whether non-White heterosexual and sexual minorities differed from their NHW peers. Multivariate analyses employed logistic regressions, predicted probabilities, and marginal effects to evaluate the impact of persistent sadness and bullying victimization on STBs and to identify group differences in the probability of STBs.

The remainder of this section will proceed as follows. First, findings for bisexual and questioning participants are discussed, followed by notable differences by participant

sex and race/ethnicity. Next, the impact of bullying victimization and an explanation of the lack of significant marginal effects of bullying are discussed. Finally, results for HSM females and males are addressed and interpreted. A summary is provided before proceeding to the conclusion for the implications of these findings.

Bisexual Participants

One of the research questions for this study asked whether the probability of STBs would be higher for bisexuals than their heterosexual and other sexual minority peers when persistent sadness and bullying victimization were considered simultaneously. Bisexual identity was associated with 3.86 increased odds and 36.5% increased probability of STBs compared with heterosexuals, controlling for suicide risk factors. Bisexual females and males had higher probability of STBs than their heterosexual peers at all levels of persistent sadness and bullying victimization but did not differ significantly from their gay/lesbian or questioning peers. Persistent sadness increased the probability of STBs for bisexual females and males, but bullying victimization increased the probability of STBs for females only.

Nearly half of bisexual males and 70% of bisexual females reported persistent sadness, about 40% of bisexuals reported bullying victimization, and roughly half reported STBs. Larger percentages of bisexual females reported persistent sadness, bullying victimization, and STBs than any of their other female peers. A larger percentage of bisexual males reported persistent sadness compared with their heterosexual, HSM, and questioning peers, but the percentage was similar to their gay male peers. More bisexual males reported bullying victimization compared with their heterosexual and questioning peers, but fewer than their gay peers. More bisexual males

reported STBs than any of their other male peers. At the intersection of race/ethnicity and sexual orientation, more bisexual females and males reported persistent sadness, bullying victimization, and STBs compared with their heterosexual peers regardless of race/ethnicity, but the difference was not significant for Black bisexual males and persistent sadness.

Other studies have found similar results with regard to depressive symptoms in bisexual participants. For example, bisexual students had higher rates of depression and lower self-esteem compared with their gay/lesbian peers but did not differ from their questioning peers in GLSEN's 2015 and 2017 school climate surveys (Kosciw et al., 2016, 2018). Among women aged 24-32 years in Wave IV of Add Health, bisexuals reported more depressive symptoms and perceived stress compared with their straight and gay peers (Lindley et al., 2012). In Wave III of the NESARC, bisexual women and men had more past-year stressful life experiences and lower mental health scores than heterosexual, HSM, and lesbian participants (Krueger & Upchurch, 2019).

Bullying victimization was reported by more bisexual females than lesbians, but by more gay than bisexual males in this sample. Harper and colleagues (2018) did not stratify their results by sex and found that bullying victimization was higher among bisexual participants than gay or lesbian participants. However, in GLSEN's 2013, 2015, and 2017 school climate surveys, gay/lesbian participants reported more sexual orientation-based harassment but bisexuals reported more sexual harassment even after controlling for participant gender (Kosciw et al., 2016; Kosciw, Greytak, Palmer, & Boesen, 2014; Kosciw et al., 2018). Unfortunately, the current study was unable to assess sexual-orientation based bullying because not enough states in the combined dataset

assessed that type of harassment. However, the current study highlights the importance of participant sex in understanding the relationship between sexual orientation and bullying victimization.

Other research supports the finding reported here that bisexual males and females are at higher risk for suicidality than their heterosexual peers (e.g., (Bostwick et al., 2010; Caputi et al., 2017; Kerr et al., 2013; Salway et al., 2018). For example, Saewyc and colleagues (2007) found that bisexual girls and boys had higher age-adjusted odds of suicidal ideation compared with heterosexual and mostly heterosexual girls and boys. In the NESARC, more women and men reported suicide attempts compared with heterosexual women and men (Bolton & Sareen, 2011).

However, this study did not find significant differences between bisexual participants and their gay/lesbian or questioning peers when persistent sadness and bullying victimization were considered simultaneously. Similarly, Saewyc and colleagues (2007), had mixed results when comparing bisexual and gay boys and found that bisexual girls had age-adjusted odds of suicidal ideation that were similar to or lower than lesbians. The use of a combined measure of STBs may have contributed to the lack of significant differences among bisexual, gay/lesbian, and questioning participants in this study. For example, in a pooled sample of 2001-2009 YRBS data, the prevalence of suicidal ideation and planning were higher for bisexual than gay/lesbian participants, but past-year suicide attempts were similar (Kann et al., 2011).

Questioning Participants

Another question raised by the literature review asked whether the probability of STBs would differ for questioning participants compared with their heterosexual and

LGB peers when persistent sadness and bullying victimization were considered simultaneously. Questioning participants were 2.2% of the sample (2.9% of females and 1.7% of males). Cell sizes were small for non-White questioning males who reported persistent sadness, bullying victimization, or STBs. Questioning identity was associated with 2.12 higher odds and 33.4% increased probability of STBs compared with heterosexuals in the final model.

The percentages of questioning females who reported persistent sadness and bullying victimization were between their HSM and bisexual female peers. However, similar percentages of questioning and bisexual females reported STBs, which was more than their other female peers. At the intersection of sexual orientation and race/ethnicity, more questioning females reported persistent sadness and STBs than their heterosexual peers, regardless of race/ethnicity, and more questioning Black and Other POC females reported bullying victimization compared with their heterosexual peers.

The percentage of questioning males who reported persistent sadness was higher than heterosexual males, similar to HSM males, and less than gay and bisexual males. Fewer questioning males reported bullying victimization than HSM, gay, and bisexual males, but more than heterosexual males. Similar percentages of HSM, gay, and questioning males reported STBs, which was more than heterosexual males and fewer than bisexual males. At the intersection of race/ethnicity and sexual orientation, more questioning than heterosexual males reported persistent sadness among NHW and Latinx males, more reported bullying victimization among NHW and Other POC males, and more reported STBs among NHW, Latinx, and Other POC males.

Other studies have found increased depressive symptoms and bullying victimization for questioning participants. For example, in a sample of adolescents in Montréal, Québec, the prevalence of depression was higher for unsure students than their heterosexual peers but lower than their LGB-identified peers (Zhao et al., 2010). Bolton and Sareen (2011) found that the odds of mood disorder were higher for not sure men than heterosexual men, but the difference was not significant for not sure women compared with heterosexual women in Wave II of the NESARC. Button and colleagues (2012) found more bullying victimization among participants who were unsure of their sexual identity compared with their bisexual peers in the Delaware YRBS.

The probability of STBs was higher for questioning than heterosexual females except among those who reported bullying victimization but not persistent sadness. Questioning males had higher probability of reporting STBs compared with their heterosexual peers, regardless of bullying victimization and persistent sadness. When considering persistent sadness and bullying victimization simultaneously, questioning females and males did not significantly differ from their bisexual peers.

Other studies have reported increased risk for suicidality among questioning students compared with their heterosexual peers, and Matthews and colleagues (2014) found that the disparity in suicide planning was larger for questioning males than females. Zhao and colleagues (2010) found that participants who were unsure of their sexual identity had significantly higher odds of suicidal ideation compared with their heterosexual peers in a sample of adolescents in Montréal, Québec. Button and colleagues (2012) also found that the prevalence of unsure students who reported STBs was significantly higher than heterosexual participants, but did not differ from bisexual

participants. Taliaferro and Muehlenkamp (2017) found that the prevalence of depressive symptoms, bullying victimization, and suicidal ideation or attempts for unsure participants was higher than their heterosexual but lower than their gay/lesbian and bisexual peers in the 2013 Minnesota Student Survey. In a pooled sample of 2001-2009 YRBS surveys from five jurisdictions, unsure males but not females had significantly higher odds of suicidal ideation than their heterosexual peers (Stone et al., 2014).

Additional Findings

Bullying Victimization

In this study, 24.6% of students (32.1% of females and 18.3% of males) reported bullying victimization. Among females and males alike, significantly more LGBTQ-identified participants reported bullying victimization. For males but not females, more HSM than heterosexual participants reported bullying victimization. In unadjusted analysis, bullying victimization was associated with over three times higher odds of STBs in females and males and twice the odds in adjusted analyses. On average, bullying victimization increased the probability of reporting STBs by 9.4%.

The percentage of students in this study who reported bullying victimization was higher than the national YRBS. Specifically, in the national YRBS, school-based bullying victimization was reported by 19.6% of participants in 2013, 20.2% in 2015, and 19% in 2017 (Kann, Kinchen, et al., 2016; Kann et al., 2014, 2018). Electronic bullying victimization was reported by 14.8% of participants in 2013, 15.5% in 2015, and 15% in 2017 (Kann, Kinchen, et al., 2016; Kann et al., 2014, 2018). In the 2013, 2015, and 2017 GLSEN school climate surveys, nearly half of LGBTQ and transgender students nationally reported electronic bullying victimization (Kosciw et al., 2016, 2014, 2018). The

discrepancy in bullying victimization may be due to restricting the sample for the present study to sexually experienced students only and the use of a combined measure of bullying victimization. Sexually active students are at higher risk for bullying victimization than their non-sexually active peers (Lowry et al., 2017; Stone et al., 2014) and this may be particularly true of heterosexual females compared with heterosexual males (Dunn et al., 2017).

In this sample, the marginal effect of bullying victimization was significant for heterosexual females and males and bisexual females regardless of persistent sadness, and for questioning females and HSM males who reported persistent sadness. Other studies have found somewhat mixed results concerning sexual minority subgroup differences in the relationship between bullying victimization and suicidality. For example, Shields and colleagues (2012) examined 2009 San Francisco YRBS data and found that violence victimization increased the odds of suicide for heterosexual students but not sexual minority students. In the Teen Health and Technology study, bisexual students who were bullied had significantly higher odds of suicidal ideation, but their other sexual minority peers did not significantly differ from their heterosexual peers (Ybarra et al., 2015). In the 2013 Minnesota Student Survey, bullying victimization and depressive symptoms increased the risk for STBs for both bisexual and questioning students (Taliaferro & Muehlenkamp, 2017).

It was somewhat surprising that bullying victimization did not affect the probability of STBs for more participants. However, several studies have found that including depressive symptoms in the model attenuates the relationship between bullying victimization and suicidality, which would explain why the marginal effect of bullying

victimization did not reach significance for many of those who reported persistent sadness. For example, in a sample of LGBT adolescents and young adults in the Chicago area, depressive symptoms and feelings of hopelessness mediated the association between LGBT-based victimization and lifetime suicide attempts (Mustanski & Liu, 2013). In a sample of 10-18-year-olds in a New Jersey suburb, depression fully mediated the association between bullying victimization and suicidal ideation (Lardier et al., 2016). However, in the 2008 Arizona YRBS, depression mediated the association between school-based bullying and suicide attempts for both males and females, but the association between electronic bullying victimization and suicide attempts was mediated for females but not males (Bauman et al., 2013).

Race/Ethnicity

The CDC recommends cell sizes over 100 for most analyses but suggests a minimum cell size of 30 for subgroup analyses of sexual minorities (CDC, 2018b). Many of the race/ethnicity and sexual orientation intersections for those who reported suicidality risk factors were between 30 and 100 for females but were under 30 in several instances for non-White sexual minority males. Consequently, power was too low to detect significant differences for some groups of non-White sexual minorities and caution is warranted in interpreting the results.

Although some comparisons lacked power to detect differences, HSM and heterosexual females did not differ from heterosexuals for persistent sadness or bullying victimization, regardless of race/ethnicity, and more HSM than heterosexual females reported STBs among NHW and Latinx but not Black and Other POC HSM females. With the exception of Latinx lesbians who were similar to their heterosexual peers for

sadness and bullying, more lesbian, bisexual, and questioning females reported persistent sadness, bullying victimization, and STBs compared with their heterosexual peers when comparisons were made within the same race/ethnicity. For males, larger percentages of HSM and LGBQ-identified males reported persistent sadness, bullying victimization, and STBs compared with heterosexual males of the same race/ethnicity.

Other studies have found that LGBQ youth are at higher risk for suicidality than their heterosexual peers of the same race/ethnicity. For example, LGB-identified college students were more likely to report 12-month depression, suicidal ideation, and suicide attempt compared with their same race/ethnicity heterosexual peers for NHW, Black, Asian, Latino, Multiracial, and Other race/ethnicity participants in the National College Health Assessment (Lytle et al., 2014). Button and colleagues (2012) likewise reported that LGBQ youth were significantly more likely than their heterosexual peers to be victimized, independent of gender, race, and age in the Delaware YRBS. In a convenience sample of college students, LGB students of color were more likely to be at high risk for suicide than their heterosexual peers of color but were not at higher risk than their White LGB peers (Shadick et al., 2015).

Comparisons made within sexual orientation showed that more NHW females reported persistent sadness, bullying victimization, and STBs than their non-White peers where significant differences could be identified. Within the same sexual orientation, more NHW males than racial/ethnic minority males reported bullying victimization, persistent sadness, and STBs. Other studies have also found that smaller proportions Black and Latinx sexual minority males reported depressive symptoms compared with NHW sexual minority males (Baams et al., 2015). In a sample of LGB adults in New

York City, Meyer and colleagues (2008) found that Black LGB adults had lower prevalence of depressive disorder than White LGB adults. In pooled 2011-2013 state YRBS data, Black and Hispanic participants had significantly lower odds of bullying victimization compared with their White peers, regardless of heterosexual or sexual minority status (Ash-Houchen & Lo, 2018). In a community-based sample of self-identified sexual minorities, sexual orientation-based bullying did not differ by race/ethnicity (Baams et al., 2015).

In this sample, Latinx females had 1.14 higher odds of STBs compared with NHW females in unadjusted analysis, and Black females and males had significantly lower odds of STBs compared with NHW females and males. When age and substance use variables were added to the model, the differences between Latinx and NHW participants were no longer significant, but Black participants had lower odds of STBs compared with NHW participants. However, once sex, sexual orientation, sadness, and bullying victimization were added to the model, race/ethnicity was no longer significantly associated with STBs. The nonsignificant association between race and STBs when controlling for confounders has been reported by other researchers as well (Arango, Opperman, Gipson, & King, 2016; Button et al., 2012; Lowry et al., 2014).

Other studies report elevated risk for STBs for Latinx females and lower risk for Black females and males compared with their NHW peers. For example, in the Chicago Health and Life Experiences of Women, African American sexual minority women were less likely to report suicidal ideation than White sexual minority women (Dirkes et al., 2016). In an analysis of pooled 2005-2007 YRBS data, Hispanic/Latina and NHW sexual minority females reported more past-year sadness, suicidal ideation, and attempts than

their Black sexual minority peers, and Hispanic/Latina sexual minority females had a higher prevalence of past-year suicide attempt than their NHW sexual minority peers (Bostwick, Meyer, et al., 2014). In that study, the prevalence of past-year sadness was higher among Hispanic/Latino sexual minority males than their Black and White peers, but the prevalence of suicide planning and attempts was similar for Black, White, and Hispanic Latino sexual minority boys (Bostwick, Meyer, et al., 2014).

Meyer (2010) suggests that sexual minority POC experience more stress than their NHW peers, but also exhibit more resilience in the face of stressors. There are similarities between the strategies used to combat racism and heterosexism among sexual minorities of color (Wilson & Miller, 2002). However, the current study suggests that, relative to their heterosexual peers, sexual minority participants are at higher risk for persistent sadness, bullying victimization, and STBs regardless of race/ethnicity.

Sex differences

There were notable sex differences in outcomes in this study. Nearly twice as many females as males reported persistent sadness and STBs, and more females than males reported 30-day bullying victimization in this sample. Other researchers have found similar sex differences for mental health symptoms and bullying victimization. For example, Bostwick and colleagues (2010) reported that a larger percentage of women than men in Wave II of the NESARC reported past-year mood or anxiety disorders. The sex differences in bullying victimization in this study are similar to what has been reported at the national level (Kahle, 2017; Messias et al., 2014; Musu-Gillette, Zhang, Wang, Zhang, & Oudekerk, 2017; Schneider et al., 2012; Zhang et al., 2016).

Other studies have reported sex differences in STBs among heterosexual and LGBQ participants. For example, Bostwick and colleagues (2014) examined suicidality in a pooled sample of YRBS surveys and found that the odds of STBs ranged from 1.44 higher odds for attempts to 1.82 higher odds for suicidal ideation for female participants compared with males, controlling for participant age. Saewyc and colleagues (2007) reported that the prevalence of suicidal ideation was higher among lesbian and bisexual girls compared with gay and bisexual boys in about half of the datasets they examined.

However, few differences were found in the present study when sex differences were examined at the intersections of sexual orientation, persistent sadness, and bullying victimization. Heterosexual females who did not report persistent sadness had higher odds of STBs than heterosexual males, regardless of bullying victimization. The probability of STBs was higher for females than males for questioning participants who reported neither bullying victimization nor persistent sadness. Bisexual females who reported persistent sadness but not bullying victimization had significantly lower odds of STBs than bisexual males and HSM females who reported bullying victimization and persistent sadness had lower odds of STBs compared with HSM males.

HSM Participants

In this sample, 5.4% of females and 1.6% of males identified as heterosexual and reported same- or both-sex contact. It was hypothesized that HSM participants would fall between their heterosexual LGBQ-identified peers in their risk for suicidality. This hypothesis was partially supported, with notable sex differences. On average, being categorized as HSM was associated with 2.76 increased odds and 6.6% increased probability of STBs compared to heterosexuals in the final adjusted model. Although

participants in this study were not given the option of identifying as mostly heterosexual, it is possible that many HSM females and males may have done so if given the opportunity (McCabe et al., 2012; Mosher et al., 2005; Vrangalova & Savin-Williams, 2012), and studies on mostly heterosexuals are included in this subsection to aid in contextualizing the results of the present study.

HSM Females

In bivariate analyses, HSM females were similar to their heterosexual peers for persistent sadness and bullying victimization, but more closely resembled their LGBTQ peers for substance use and were between their heterosexual and LGBTQ peers for STBs. At the intersection of sexual orientation and race/ethnicity, HSM females did not differ from their heterosexual peers for persistent sadness or bullying victimization, regardless of race/ethnicity, but significantly more HSM females reported STBs compared with their heterosexual peers. Ultimately, HSM and heterosexual females did not differ in three of the four sadness x bullying conditions, but HSM females who reported persistent sadness without bullying victimization had higher probability of STBs than heterosexual females.

Similarly, Przedworski and colleagues (2015) did not find significant differences in depression between heterosexual and discordant heterosexual women in her analysis of data from 2007–2011 College Student Health Surveys. However, other studies have found that HSM women report more depressive symptoms than their heterosexual peers. For example, in Add Health Wave IV data, discordant heterosexual and mostly heterosexual women had similar mean depression scores, which was more than heterosexual women, but less than gay/lesbian/bisexual women (Krueger et al., 2018).

Gattis and colleagues (2012) reported that discordant heterosexual women had higher rates of lifetime depressive episode compared with their concordant heterosexual peers.

In this sample, 30.4% of heterosexual females and 29.9% of HSM females reported 30-day bullying victimization. In contrast, other studies have found increased prevalence of victimization in HSM females compared with their heterosexual peers. In Wave III of the NESARC, mean lifetime and past-year discrimination scores were higher for discordant heterosexual than concordant heterosexual women but lower than their gay/lesbian peers (Gattis et al., 2012). In Add Health Wave IV, when participants were 24-32 years old, mostly straight women, women with both-sex attraction, and those with mostly opposite-sex partners but some same-sex contact had significantly higher odds of victimization compared with their heterosexual peers (Lindley et al., 2012). The lack of significant differences in this study may be due to a restricted definition of victimization that focused on only two types of bullying in the 30 days before the survey.

Interestingly, although the proportion of HSM females who reported sadness and bullying victimization was similar to their heterosexual peers, more HSM than heterosexual females reported current use of tobacco, alcohol, marijuana, and lifetime hard drug use. Other studies have also found elevated substance use among HSM females. For example, Bauer and colleagues (2010) reported that heterosexual women aged 20 to 44 with a past-year female sex partner in the NSFG were significantly more likely to use tobacco, binge drink, and use marijuana compared with heterosexual women, but did not differ from lesbian or bisexual women for alcohol consumption or from bisexuals for tobacco use after controlling for demographic factors. Discordant heterosexual women had prevalence of lifetime substance use disorder that was between

concordant heterosexual women and lesbians for alcohol, narcotics, cannabis and hallucinogens, and were similar to or more than lesbians for stimulants and inhalants (Gattis et al., 2012). However, mean scores for average daily alcohol consumption were higher for discordant heterosexual than concordant heterosexual and lesbians in Wave II of the NESARC (Gattis et al., 2012).

HSM and heterosexual females did not differ in their probability of reporting STBs except among those who reported persistent sadness without bullying victimization. Somewhat surprisingly, bullying victimization did not increase the probability of STBs for HSM females. The probability of STBs was lower for HSM females than lesbians among those who reported neither bullying nor sadness, but there were no other significant differences between HSM females and their LGBTQ-identified peers when considering sadness and bullying simultaneously.

HSM Males

Differences between heterosexual and HSM males were more pronounced than those for females. The percentage of HSM males who reported persistent sadness was between their heterosexual and gay and bisexual peers, the percentage of HSM males who reported bullying victimization was similar to their bisexual but smaller than their gay peers, and percentages for STBs were similar to their gay and questioning peers but smaller than their bisexual peers. More HSM than heterosexual males reported persistent sadness, bullying victimization, and STBs across race/ethnicity categories, but the differences were not significant among Latinx males, likely due to low power.

Other studies have found elevated depressive symptoms among discordant heterosexual males. For example, Gattis and colleagues (2012) reported that discordant

heterosexual males reported less depression than their LGB peers, but more than their concordant heterosexual peers. Przedworski and colleagues (2015) reported that discordant heterosexual males had significantly higher prevalence of depression compared with concordant heterosexual, bisexual, and unsure males. In Add Health data, discordant heterosexual men had similar depression scores to mostly heterosexual men, and more than concordant heterosexual and gay/bisexual men (Krueger et al., 2018). Men with past-year or lifetime identity-behavior discordance had mean depressive symptoms that were similar to those with a non-exclusive sexual identity, but higher than straight concordant and gay men in the Add Health dataset (Caplan, 2017).

Bullying victimization was elevated among HSM males in this sample, regardless of race/ethnicity. Gattis and colleagues (2012) reported that discordant heterosexuals had somewhat higher mean discrimination scores for both past-year and lifetime measures compared with their concordant heterosexual peers, but much less than their gay/bisexual peers. However, in Wave IV of Add Health, males who identified as mostly straight, reported both-sex attraction, or reported mostly opposite-sex partners did not significantly differ from their heterosexual peers in the percentages of participants reporting discrimination (Lindley et al., 2012).

The percentage of HSM males who reported current use of alcohol and lifetime hard drug use was larger than their heterosexual and gay peers and similar to their bisexual and questioning peers. In the NESARC fewer HSM than heterosexual, gay, or bisexual men reported tobacco use and percentages of HSM men were similar to heterosexual men for current drinking, which was less than gay and bisexual men (Krueger & Upchurch, 2019). Discordant heterosexual men were between concordant

heterosexual and gay men for lifetime substance use disorder for narcotics, stimulants, cannabis, hallucinogens, and inhalants, but were lower than concordant heterosexual and gay males for lifetime alcohol use disorder and depressants in the NESARC (Gattis et al., 2012). Mean average daily alcohol consumption scores were lower for discordant heterosexual men than concordant heterosexual and gay men (Gattis et al., 2012). However, Gilbert and colleagues (2017) did not find differences in alcohol use between heterosexual, behaviorally-discordant heterosexual, and gay/bisexual men in the National Alcohol Survey.

The results of the marginal analyses were less stable for HSM males than females. The marginal effects of persistent sadness and bullying victimization were significant only for HSM males who reported the presence of both sadness and bullying. The probability of STBs was higher for HSM than heterosexual and gay males for those who reported both persistent sadness and bullying victimization, and higher than heterosexual males for those who did not report sadness or bullying victimization.

HSM Females and Males

Several studies that are useful for contextualizing the results for HSM participants did not stratify their results by sex. Harper and colleagues (2018) found that percentages of discordant heterosexual participants who reported missing school due to safety concerns, school-based bullying, and suicidal ideation were between their heterosexual and LGB-identified peers. Annor and colleagues (2018) found that discordant students had 70% increased odds of being at high risk for suicide compared with their concordant peers. Zhao and colleagues (2010) found that heterosexual students with same-sex attraction or behavior had higher odds of suicidal ideation compared with heterosexual

students in unadjusted analyses, but controlling for confounders eliminated this difference. The odds of STBs were higher in this study than those cited above which may have been due to stratifying the results by sex (Harper, Clayton, et al., 2018; Zhao et al., 2010) and not combining heterosexual and gay/lesbian identity-discordant participants (Annor et al., 2018).

Interpretation of HSM findings

Although heterosexuality is still assumed to be the default sexual identity label, some heterosexual men and women actively question and explore their label before adopting it (E. M. Morgan, 2012; E. M. Morgan et al., 2010). Identity certainty and identity disclosure are associated with better psychological well-being among LGB individuals (Bejakovich & Flett, 2018). Determinants of sexual identity disclosure include implicit devaluation of societal acceptance and holding positive attitudes about one's identity (Bry et al., 2017). Positive outcomes of adopting an LGB identity include increased self-esteem, sense of community, and a sense of living authentically (Riggle et al., 2008).

Silva and Whaley (2018) pointed to two populations of straight-identified MSM: those who are secretly gay or bisexual and conceal their sexual orientation, and those who have a more expansive conception of heterosexuality that does not preclude same-sex contact. Those who conceal their sexual identity likely have more internal conflict, rejection sensitivity, and internalized self-stigma (Bry et al., 2017; Dyar, Feinstein, Eaton, & London, 2018; Schrimshaw et al., 2013), or may live in situations where concealment protects them from the effects of structural stigma and the social consequences of noncompliance with local cultural norms (Pachankis & Bränström,

2018; Silva, 2017a). Those with more expansive conceptualizations of heterosexuality may share personality characteristics such as unrestricted sociosexual orientation and sensation seeking with their bisexual peers (Stief, Rieger, & Savin-Williams, 2014).

More females than males were categorized as HSM in this sample, and other studies have also found more same-sex contact among heterosexual women than heterosexual men (Copen et al., 2016; Vrangalova & Savin-Williams, 2010). More HSM females and males reported substance use and STBs compared with their heterosexual peers. However, although the percentage of HSM and heterosexual females who reported bullying victimization and persistent sadness did not differ, more HSM than heterosexual males reported these outcomes. This sex difference requires explanation.

This section explores possible explanations for the increased risk for STBs in HSM participants and the disparities between male and female HSM participants for persistent sadness and bullying victimization found in this sample. First, potential explanations for similarities between HSM and bisexual participants are discussed in terms of sexual sensation seeking. The larger disparity between HSM and heterosexual males relative to HSM and heterosexual females for persistent sadness and bullying victimization is then discussed in terms of biphobia, gender nonconformity, self-stigmatization and concealment, cultural influences on sexual identity, and contact with the LGBTQ community.

Sensation Seeking

Sensation seeking is associated with the tendency to engage in reward-seeking behaviors such as using alcohol or drugs, and sexual sensation seeking is associated with novel sexual behavior and sexually permissive attitudes (Zuckerman, 1994). Those with

higher levels of sexual sensation seeking report more unfamiliar sexual partners (Fisher & Misovich, 1990) and one-night-stands (Gaither & Sellbom, 2003) compared to those with lower levels of sexual sensation seeking.

Bisexual females and males have higher levels of sexual sensation seeking and sexual curiosity than their heterosexual and gay/lesbian peers (Stief et al., 2014). For those who are oriented towards only one sex, sexual contact with the non-preferred sex is a source of novelty (Stief et al., 2014). For example, the long form of the dopamine D4 receptor gene is associated with novelty seeking: heterosexual men with the long form were five times more likely to report sex with both men and women and homosexual men with the long form reported six times as many female partners compared with their peers with the short form of the dopamine D4 receptor gene (Hamer, 2002). Thus, it is possible that some HSM females and males in the present study have a heterosexual orientation and engaged in same-sex contact for the novelty of the experience.

More HSM and bisexual females and males in the current study reported substance use compared with their heterosexual peers, and other studies have reported elevated substance use in bisexual participants. In a sample of LGB adults in New York City, bisexual participants had more substance use disorders than gay men and lesbians (Meyer, Dietrich, et al., 2008). Button and colleagues (2012) found that bisexual students were the most likely to report alcohol and marijuana use, followed by gay/lesbian and unsure adolescents. Substance use is also elevated in mostly heterosexuals. For example, in the National Study of Health and Life Experiences of Women study, mostly heterosexual women were more likely than heterosexuals to report heavy drinking, potential alcohol dependence, and drinking-related consequences, as well as past-year

and lifetime use of marijuana and cocaine (Hughes, Wilsnack, & Kristjanson, 2015). Mostly heterosexuals reported higher levels of smoking, drug use, psychological distress, and suicidality in a sample of Dutch young adults (Kuyper & Bos, 2016).

Despite possible similarities in sensation seeking, as ascertained through similarities in substance use, HSM females are protected from the harmful effects of stigma by identifying as heterosexual rather than bisexual, which reduces their risk for harassment and discrimination compared with their peers who identify as bisexual. However, HSM males appear to derive less benefit from heterosexual identity than HSM females do. This disparity may be due to differences in the acceptability of women's and men's same-sex behavior and bisexual identity.

Biphobia & The Bisexual Double Standard

Bisexual identity in females is considered to be more socially acceptable than male bisexuality (Alarie & Gaudet, 2013). While opposite-sex contact is encouraged in males, but discouraged in females, same-sex contact is discouraged in males and encouraged in females, usually with the assumption that women's same-sex behavior is performative (Boyer & Galupo, 2015; Flanders & Hatfield, 2013). Indeed, Women are more likely than men to report having been asked to engage in same-sex sexual behavior, and men are more likely to report requesting same-sex behavior from someone else (Esterline & Galupo, 2013).

Bisexual males are often assumed to be gay, while bisexual females are assumed to be straight (Hertlein, Hartwell, & Munns, 2016). Indeed, lesbians are also assumed to be heterosexual, and as a result, women do not need to assert their heterosexuality in the same ways that men do to maintain their social status (Rich, 2003).

Males hold more negative attitudes towards both female and male bisexuals than females do (de Bruin & Arndt, 2010). Heterosexual women's and men's attitudes are more positive towards lesbians and bisexual females than gay and bisexual males, and bisexual men are subjected to the most negative attitudes (Helms & Waters, 2016). Heterosexual, gay/lesbian, and asexual participants all held more negative attitudes towards bisexuals than bisexuals themselves did (2010). Similarly, heterosexual participants reported significantly more biphobia and negative bisexual attitudes than gay, lesbian, or bisexual participants, but there were no differences by participant gender in a sample of college students in the southeastern United States (Hertlein et al., 2016).

Gender Nonconformity

Western masculinity is thought to be inextricably tied to heterosexual identity and same-sex or behavior attraction is considered to be incompatible with masculinity (Flanders & Hatfield, 2013). Men's heterosexuality is considered to be more precarious than women's (Mize & Manago, 2018) and a single instance of same-sex sexual behavior among males is considered to be indicative of innate homosexuality (Schilt & Westbrook, 2009). Masculine gender role norms may lead to stronger heterosexist attitudes in men to maintain masculine presentation, and heterosexual men hold greater implicit and explicit preferences for heterosexuals than do heterosexual women (Anselmi, Voci, Vianello, & Robusto, 2015). Heterosexual men affirm their masculinity to themselves and others by expressing prejudice against gay and bisexual men (Anselmi et al., 2015; Herek & McLemore, 2013; McCreary, 1994).

Gender role violations are met with prejudice, discrimination, and negative evaluations, even among young children (Blakemore, 2003). Women's gender roles have

gained in flexibility, but men's gender roles have not, leading to harsher perception of men's gender role norm violations than such violations by women (Prentice & Carranza, 2002). Male gender role violators are evaluated more negatively than women who violate gender roles (David, Grace, & Ryan, 2004).

Gender nonconformity and perceived sexual orientation are associated with bullying victimization (Camodeca et al., 2018; Patrick et al., 2013; Poteat & Espelage, 2007). More males than females reported being bullied based on perceived sexual orientation, and orientation-based bullying was associated with increased odds of depressive symptoms and suicidal ideation for males and females in a sample of high school students in grades 8, 10, and 12 in Washington state (Patrick et al., 2013). To my knowledge, there are no studies examining childhood gender nonconformity in HSM participants, but mostly heterosexuals are less gender conforming than their heterosexual peers and less gender nonconforming than their bisexual peers (Vrangalova & Savin-Williams, 2014). Recalled childhood gender nonconformity is one of the few biodemographic markers that is consistently associated with non-heterosexual orientation in women and men (Lippa, 2008).

Outness

More bisexual females and males in the current study reported persistent sadness and bullying victimization compared with their heterosexual peers. Indeed, similar percentages of HSM and bisexual males reported bullying victimization in this sample. The difference may be partly due to levels of outness. Higher levels of outness are associated with higher rates of violence and victimization among adolescents and adults (Baams et al., 2015; Chesir-Teran & Hughes, 2009; Kosciw et al., 2016, 2018). Earlier

openness about sexual orientation is associated with increased risk of suicide attempts in non-heterosexual youth (D'Augelli & Hershberger, 1993; Savin-Williams & Ream, 2003). College students have more negative attitudes towards their gay and lesbian peers than their peers with an undisclosed sexual orientation in social, academic, and family scenarios (Engstrom & Sedlacek, 1997). This would suggest that heterosexual identity should have a protective effect for HSM participants, but that effect is present only for females in this study. In a sample of straight White college students, participants perceived MSM who identified as straight or not gay as actually being gay and as being less psychologically healthy than if the target had identified as gay (Mitchell & Stroupe, 2016). A similar mechanism may be responsible for the disparities between HSM and heterosexual males in this sample, despite lower levels of outness than bisexual males.

Self-Stigmatization & Concealment

Although HSM females may secretly identify as bisexual and choose not to identify in that way openly, the lack of significant differences between HSM and heterosexual females for persistent sadness suggests that the incongruence and concealment do not create internal conflict. In contrast, internalized homophobia and concealment motivation may drive differences in persistent sadness between HSM and heterosexual males. Higher self-stigma is associated with more identity confusion and lower sense of belonging (Anselmi et al., 2015) and there is an inverse relationship between internalized homophobia and positive sexual identity development in non-heterosexual youth (Rosario et al., 2006). Many bisexuals experience internalized biphobia (Obradors-Campos, 2011) and bisexuals have increased sexual self-stigmatization compared with their gay/lesbian and heterosexual peers (Herek et al.,

2009). However, social support from family and friends attenuates the effect of internalized homophobia (Sheets & Mohr, 2009).

Internalized homophobia is associated with depression and anxiety in sexual minority youth (H. Bos, Sandfort, de Bruyn, & Hakvoort, Esther, 2008; Igartua, Gill, & Montoro, 2003; Newcomb & Mustanski, 2010). In addition, internalized homophobia is associated with difficulty developing or accepting a sexual minority identity (Dube 2000; Horowitz & Newcomb, 2004; Peplau & Garnets, 2003; Rowen & Malcom, 2003). Internalized homophobia is associated with higher concealment motivation (Mohr & Kendra, 2011) and mediates the relationship between identity concealment and mental health (Schrimshaw et al., 2013). However, positive identity development partially mediated the effects of concealment stress on internalized homophobia (Bruce, Harper, & Bauermeister, 2015).

Concealment of a stigmatized characteristic is associated with lower sense of belonging, mediated by felt inauthenticity and reduced self-disclosure about personal information not related to the stigma, and interaction partners find these interactions to be less enjoyable and are more likely to reject the person concealing a stigmatized characteristic (Newheiser & Barreto, 2014). Sexual identity concealment is associated with problematic substance use and alcohol-related problems (Cortopassi, Starks, Parsons, & Wells, 2017; Hartman et al., 2015). Concealment stress was directly related to major depression and indirectly related to social support through positive identity development in a sample of sexual minority male youth (Bruce et al., 2015).

LGB identity affirmation—the perception that non-heterosexual identity is a positive aspect of one’s personality—is associated with lower depression, increased self-

esteem, and greater life satisfaction (Mohr & Kendra, 2011). Resolution of internalized homophobia was associated with positive health outcomes for gay and bisexual men in the Multicenter AIDS Cohort Study (Herrick et al., 2013).

Cultural Influences on Sexual Identity

Nonsexual factors, such as cultural climate, religious beliefs and practices, and political context also influence the decision to adopt or conceal a sexual minority identity among those who identify as heterosexual and report same-sex behavior, attractions, or fantasies (Baunach & Burgess, 2013; Gattis et al., 2012; Krueger & Upchurch, 2019; Kuperberg & Walker, 2018; Silva, 2017a). In countries with higher structural stigma, identity concealment partially protects from the effects of discrimination and victimization on well-being (Pachankis & Bränström, 2018).

Religion is a formative part of childhood development for many people and plays a role in sexual identity development and its outcomes. In a sample of college students whose last hook-up was with a same-sex partner, 28% of those who identified as heterosexual reported strong religious practices or beliefs that were intolerant of non-heterosexual identity (Kuperberg & Walker, 2018). Straight-identified rural White MSM report religious beliefs as a reason for identifying as straight (Silva, 2017b). Sexual minority youth who grow up in religious contexts have higher odds of chronic suicidal ideation and attempts compared with sexual minorities not raised in such a context (Gibbs & Goldbach, 2015).

Contact with the LGBTQ Community & Social Support

More contact with LGB-identified people is associated with more positive attitudes towards non-heterosexual identities and behavior (Baunach & Burgess, 2013; Bowen & Bourgeois, 2001; Herek et al., 1996). For example, in a survey of college dormitory residents, those with the perception that they shared a floor with 1 or 2 LGB students had more positive LGB attitudes (Bowen & Bourgeois, 2001). Some participants HSM participants in the current study may hold negative beliefs about non-heterosexual identities because of a lack of contact with LGB-identified peers.

Although HSM participants may benefit from reduced exposure to stigma by virtue of their heterosexual identity, they miss the opportunity to find support from their sexual minority peers and to gain a sense of belonging through identification with a group based on shared sexual orientation. Friendships with other sexual minorities are associated with decreased emotional distress for sexual minority youth (Doty, Willoughby, Lindahl, & Malik, 2010). In the Delaware YRBS, social support was significantly associated with reduced risk for bullying victimization and substance use for sexual minorities (Button et al., 2012). Discordant heterosexual men but not women had less social support than their concordant heterosexual peers but more than their LGB peers in Wave II of the NESARC (Gattis et al., 2012). A similar discrepancy in social support between HSM and heterosexual males in this study may account for some of the differences in persistent sadness and STBs.

Membership in a stigmatized group can have protective effects on self-esteem and self-concept (Crocker & Major, 1989). Participants in more socially privileged positions in Add Health reported more perceived stress in response to experiences of discrimination than their less privileged peers (Everett et al., 2016), suggesting that

practice with coping with stigma increases resilience to discrimination. Those with concealable stigmas benefit from the presence of similar others in their social network (Frable et al., 1998). Indeed, the presence of more LGBTQ students in schools protected female, but not male, LGBTQ students from some of the effects of peer victimization on internalizing problems and suicide attempts (Eisenberg, McMorris, Gower, & Chatterjee, 2016).

HSM: Summary

HSM, bisexual, and questioning participants in this sample shared similarities in substance use and had elevated probability of STBs relative to their heterosexual peers. Similarities among non-exclusively-oriented participants may be due to elevated sensation seeking in those populations (Stief et al., 2014). Indeed, sensation seeking may also explain the motivation for novel experiences through engaging in same-sex behavior (Hamer, 2002). Higher levels of sensation seeking are associated with increased risk for substance use (Schauer, Berg, & Bryant, 2013; Zuckerman, 1994), which in turn increases the risk for suicidality.

However, the disparities between HSM and heterosexual males were larger than those for HSM and heterosexual females. Differences with regard to persistent sadness may be due to elevated levels of self-stigma among males, related to cultural norms for masculinity and to biphobic and monosexist attitudes (H. Bos et al., 2008; Igartua et al., 2003; Newcomb & Mustanski, 2010). Differences in bullying victimization are also related to male gender role norms and cultural ideals of masculinity. That is, HSM males may be perceived as less gender conforming than their exclusively heterosexual peers, and gender nonconformity is associated with increased bullying victimization (Camodeca

et al., 2018; Patrick et al., 2013; Poteat & Espelage, 2007). Males are evaluated more negatively for gender role violations than are females (David et al., 2004).

Concealment of sexual identity protects against stigma, but is associated with lower sense of belongingness and affects the quality of interactions with people who are unaware of the stigma (Newheiser & Barreto, 2014). In addition, concealment of sexual identity precludes the opportunity to tap into social support in the LGBTQ community (Crocker & Major, 1989; Frable et al., 1998; Nouvilas-Pallejà et al., 2018; Riggle et al., 2008). Social support from sexual minority friends is associated with better outcomes in sexual minority youth (Doty et al., 2010).

Summary

This study explored outcomes for sexual minority youth in a pooled sample of state YRBS surveys to better understand the effects of persistent sadness and bullying victimization on the probability of STBs. Participants in this sample were classified as heterosexual, HSM, gay/lesbian, bisexual, and questioning, and there were significant differences among these groups for use of substances, persistent sadness, bullying victimization, and STBs. Examination across race/ethnicity showed that more LGBTQ-identified females and more HSM and LGBTQ-identified males reported bullying victimization and persistent sadness than their heterosexual peers. HSM females differed from their heterosexual peers for substance use and STBs, but not for sadness or bullying victimization. Compared within sexual orientation, fewer non-White LGBTQ-identified participants reported persistent sadness, bullying victimization, and STBs compared with their NHW peers. When considering persistent sadness and bullying victimization simultaneously, bisexual and questioning females and males had higher probability of

STBs than their heterosexual peers, but did not differ significantly from each other. Sex differences in HSM participants may be explained by male gender role norms and disparities in negative attitudes toward bisexual males relative to bisexual females.

Conclusions

This study contributes to the growing body of literature on heterosexual-identified sexual minorities as a subgroup that has differential risks and outcomes compared to their heterosexual peers who report exclusively opposite-sex sexual contact. HSM females appear to benefit more than males in maintaining a heterosexual identity in this sample due to the acceptability of same-sex behavior between females and the relaxation of women's gender role norms. Proponents of Inclusive Masculinity and Critical Heterosexuality suggest that perceptions of heterosexuality are becoming more expansive among men and adolescents (Anderson, 2008, 2011; Anderson & Adams, 2011; Carrillo & Hoffman, 2018; Silva, 2017a, 2017b). Although this may be the case in general, HSM males in this study experienced more bullying victimization and persistent sadness than their heterosexual male peers, but HSM and heterosexual females did not differ for bullying or sadness.

This study also demonstrated that bisexual adolescents are at significantly higher risk for suicidality than their heterosexual peers, even when comparing participants at varying levels of persistent sadness and bullying victimization. Elevated probability for STBs was also found among participants who were questioning their sexual identity. This study provides evidence that those who are unsure of their sexual identity are a group that differs from their other sexual minority peers in ways that are worthy of further investigation.

Although not nationally representative, this study used data from a large probability-based sample of participants selected through a complex two-stage cluster sampling framework under the supervision of the CDC (Brener et al., 2013). This sample

was 45.7% female, 54% NHW, 14.2% Black, 23.9% Latinx, and 8% Other POC. Most participants identified as heterosexual, followed by bisexual (6.8%), questioning (2.2%), and gay or lesbian (2.1%). The sample for this study is comparable to two studies that reported data for sexually active participants in the 2015 National YRBS. Annor and colleagues (2018) reported a sample that was 44% female, 54.8% non-Hispanic White, 14.8% non-Hispanic Black, and 22.1% Hispanic. Harper and colleagues (2018) identified 3.2% of their sample as discordant heterosexual and reported 2.1% gay/lesbian participants and 7.5% bisexual. Based on these comparisons, it is reasonable to assume that the sample used in this study is similar to the 2015 national YRBS sample for participant sex, sexual orientation, and race/ethnicity.

Another strength of this study is the inclusion only of participants who reported they had no history of forced sexual intercourse. In most studies, it is difficult or impossible to determine if identity-behavior discordance is the result of forced sexual intercourse. Indeed, Harper and colleagues (2018) reported that discordant heterosexuals had higher prevalence of forced sexual intercourse than their other heterosexual peers. Annor and colleagues (2018) found that 9% of their sample reported history of forced intercourse and that forced intercourse was significantly associated with being in the high-risk group for suicidality compared with the low-risk group. The current study took the important step of excluding participants who reported a history of forced sexual intercourse in order to prevent a history of sexual trauma from obscuring the effects of sexual orientation on STBs.

Limitations

This study has several strengths and limitations. One limitation is that the use of pooled state data, as opposed to use of the national YRBS dataset, means these results are not generalizable to the adolescent population of the US. However, the data are drawn from sample that closely resembles the 2015 national YRBS. Unfortunately, because states are able to add items to and remove items from the YRBS Standard High School Questionnaire, it is possible that states that chose not to include the sexual identity and sexual contacts items from the questionnaire differ in important ways from the states that included these items. For example, an analysis of state-level YRBS data from 1999 to 2015 found that state policies allowing same-sex marriage were associated with a reduction in the proportion of high school students reporting suicide attempts (Raifman, Moscoe, Austin, & McConnell, 2017).

Initially the plan was to use data for 2015 and 2017—the years for which the national YRBS assessed sexual identity and sexual contacts—to minimize potential differences between states that voluntarily included optional sexual orientation items and those that did not. However, 2013 data were added to the analysis to increase power to detect differences by race/ethnicity. Unfortunately, even with the addition of another year of data, cell sizes were too small to include race/ethnicity in the logistic regression model, preventing the estimation of predicted probabilities and marginal effects.

The YRBS assesses risk behaviors and does not provide the opportunity to examine the reasons that heterosexual-identified participants who reported same-sex contacts continued to identify as heterosexual, or to what degree factors such as

internalized homophobia affected their outcomes. Future research should examine these potential influences among heterosexual-identified youth in larger samples.

The data in this study are self-reported and over- or under-reporting of risk behaviors cannot be determined. Test-retest reliability is good for the YRBS as a whole (Brenner et al., 1995, 2002), and for the suicidality items (May & Klonsky, 2011). However, an examination of participants aged 18 or older in 2009-2011 YRBS data and 2008-2012 NSDUH data found substantially higher annual average percentages of all measures of suicidality (Miller et al., 2015).

It was also not possible to determine if the presence of identity-behavior discordance in heterosexual participants was due to a lack of response options that might better describe the sexual identity of those participants (Budnick, 2016; Eliason et al., 2016; Savin-Williams & Vrangalova, 2013). Another possibility is that discordance in this sample is indicative of sexual fluidity or experimentation (Diamond & Butterworth, 2008; Katz-Wise, 2015). In addition, it is not possible to determine if participants who selected “not sure” as the response option for sexual identity failed to understand the question or if they had difficulty selecting among the other provided options. Adolescents have adopted a wide range of descriptors for their sexual identity (Savin-Williams, 2005). In the 2017 NSCS, 20.5% of participants identified as pansexual, 4.1% as queer, 2.5% identified as questioning or unsure, 2.4% identified as asexual, and 1.4% identified as another sexual orientation such as omnisexual (Kosciw et al., 2018). Katz-Wise (2015) suggests that apparent increases in sexual fluidity in men may reflect expanded response options on questionnaires.

Socioeconomic factors are important to consider in assessing outcomes for sexual minority youth, as well as for assessing behavioral patterns. For example, some straight-identified MSM report engaging in same-sex behavior in exchange for money or transportation, but not enjoying such contact (A. Morgan, Saunders, Dodge, Harper, & Arrington Sanders, 2018). In an urban sample, higher SES was related to more involvement in gay/lesbian social activities, self-identifying as gay/lesbian compared with bisexual, and reporting more past 3-month sexual experiences (Rosario et al., 2006).

This study contributes to the current literature in several ways. Most research involving heterosexual-identified participants who report same- or both-sex contact has focused on HIV transmission, but this study provides evidence that HSM participants have increased probability of STBs compared with their other heterosexual peers. As reviewed in the introduction, most studies with adolescent HSM participants have failed to stratify results by participant sex (e.g., Annor et al., 2018; Harper, Clayton, et al., 2018; Zhao et al., 2010), but the current study provides evidence of notable sex differences in outcomes for HSM females and males that should be explored further. Furthermore, most research about heterosexual MSM has focused on Black and Latinx men, perpetuating assumptions that straight-identified White men do not engage in sex with other men (Calabrese et al., 2018; Pettaway et al., 2014; Ward, 2008). An additional contribution of this study is the inclusion of White, Black, Latinx, and Other racial/ethnic minority males and females in a probability-based sample of adolescents.

Future Directions

Future research should examine the associations between suicidality, persistent sadness, and bullying victimization in a larger sample of participants that allows for

sufficiently powered analyses to detect differences within and across racial/ethnic minority populations. In addition, further research is needed to explore individual differences within HSM, bisexual, and questioning populations. In his work, Silva (2017a, 2017b; 2018) points to an important difference between populations of MSM: those who identify as gay or bisexual but choose to conceal this identity (remaining "in the closet") and those who identify as straight and reinforce their identity through the meaning they attribute to their same-sex activities. Silva reinforces a statement by Seidman (2002) that the closet metaphor should not be used to describe individuals who identify as heterosexual and engage in secretive same-sex contact. Future research should explore individual differences within female and male HSM populations to better understand patterns of risk and resilience among those who conceal their sexual identity and those who have a more elastic understanding of heterosexuality.

Although there is excellent research that examines the role of state and local policies and their influence on the mental health and related outcomes among sexual minority adolescents, an area that is ripe for examination is how these policies might differentially subgroups of sexual minority participants. For example, school anti-bullying policies that include language that specifically protects sexual minority students are associated with reduced risk for suicide attempts among gay and lesbian, but not bisexual, students (Hatzenbuehler & Keyes, 2013). Risks for suicide-related outcomes are higher for rural youth compared to urban youth, and risks might be further increased for sexual minority youth living in rural areas due to lower levels of support and fewer resources in rural schools and communities (Kosciw, Palmer, & Kull, 2015). Future

research should explore outcomes for sexual minority youth in underserved areas, as well as policy interventions to reduce disparities between urban and rural youth.

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