

**Emotion Regulation and Self-Harm among Sexual and Gender Minority Youth**

by

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## **DEDICATION**

For my community, especially the queer youth – hold on if you feel like letting go.

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## **ABSTRACT**

Suicide is the second leading cause of death for adolescents and young adults worldwide. Suicide prevention efforts would be advanced by understanding of why some youth are at disproportionately higher risk compared to others. Sexual and gender minority (SGM) youth report higher rates of self-harm than heterosexual/cisgender youth. Minority Stress Theory suggests that higher rates of victimization increase risk for adverse health within SGM populations. This dissertation examined the relationships between minority stress, emotion regulation, and self-harm behaviors in adolescence and young adulthood. This approach integrated developmental perspectives to examine cross-cutting underpinnings of SGM disparities. Through two complementary studies I characterized the associations between emotion regulation and self-harm in university students identified as being at elevated risk for suicide and in psychiatric emergency patients.

In the first study I examined emotion regulation, behavioral disinhibition, and their interaction as influences on self-harm in a cross-sectional sample of university students ages 18 years and older who were identified through online suicide risk screening. Specifically, I focused on acceptance of emotional responses and negative urgency, the tendency to engage in behaviors to avoid distress. Results indicated bivariate relationships between acceptance, negative urgency, and self-harm. In multivariate analyses controlling for age and sex, only acceptance was associated with recent non-suicidal self-injury (NSSI), suicide attempts, and any self-harm. These relationships were not moderated by SGM status.

In the second study, I examined the histories of self-harm and crisis service usage and conducted a longitudinal mediation test of the Minority Stress Model within a sample of psychiatric emergency patients ages 13 to 25 years. SGM youth reported more chronic histories of NSSI and crisis service usage. Moreover, among youth who reported both NSSI and suicide attempts, SGM youth reported a slower speed of transition between these two types of self-harm behaviors. Longitudinally, three emotion regulation strategies were tested as potential mediators of the relationships between victimization, internalizing symptoms, and self-harm. Results indicated that rumination was a mechanism prospectively linking victimization to self-harm via increased internalizing symptoms. Additionally, reappraisal was not associated with victimization but was associated with reduced risk of self-harm via reductions in internalizing symptoms. Suppression was associated with recent victimization but did not exert influences on future internalizing symptoms or self-harm. These mediation effects were found for the overall sample and for heterosexual/cisgender youth but not SGM youth.

This pair of studies examined transdiagnostic domains of functioning within samples that were characterized by elevated but heterogeneous suicide risk. Together, they highlight the importance of examining general factors that may underpin self-harm and psychopathology disparities among SGM youth, particularly the use of both adaptive and maladaptive forms of emotion regulation.

## **Chapter 1**

### **INTRODUCTION**

Suicide consistently ranks among the leading causes of death internationally for young people ages 15 to 29 years (World Health Organization, 2014). The strongest predictors of suicide are self-harm behaviors, defined as intentionally inflicted injury to one's body (Franklin et al., 2017). The transition from childhood to adolescence is accompanied by a rapid increase in the prevalence of self-harm (Cha et al., 2017). As such, an improved understanding of developmental factors influencing the onset and persistence of self-harm has the potential to inform suicide prevention efforts.

Converging evidence from several countries indicates that sexual and gender minority (SGM) adolescents and young adults report higher rates of self-harm than heterosexual/cisgender peers (Marshall et al., 2011; McNeil, Ellis, & Eccles, 2017; Miranda-Mendizábal et al., 2017). Moreover, SGM populations experience higher rates of contextual and individual self-harm risk factors including early adversity, trauma, and psychopathology (Green & Feinstein, 2012; Haas et al., 2010; Kerridge et al., 2017). Nearly 30 years ago, a landmark report by the Secretary's Task Force on Youth Suicide first called attention to disparities in suicide attempts by reviewing the available evidence from convenience samples and by advocating for developmentally-informed research into moderation of risk mediators (Gibson, 1989). Specifically, the report proposed that general cognitive, affective, and behavioral factors mediate the impact of life stressors on risk for suicide and that the influence of these factors is moderated by SGM status

because of group-specific elevations in life stressors. More recently, Minority Stress Theory has suggested that these factors may underlie disparities in psychopathology and that group-specific mechanisms may also play a role (Hatzenbuehler, 2009; Meyer, 2003). Among the mediators proposed by both the Task Force on Youth Suicide report and Minority Stress Theory, hopelessness, social connectedness, and emotion regulation have also been implicated specifically in self-harm (King & Merchant, 2008; Van Orden et al., 2010).

Empirical tests of Minority Stress Theory have primarily focused on cross-sectional associations of SGM-specific risk factors with mental health outcomes such as how internalized homophobia is associated with mood and anxiety disorder symptoms among adults (Newcomb & Mustanski, 2010). To date, there are no published empirical studies examining mediators of the relations between minority stress and future suicide attempts (Haas et al., 2010; Miranda-Mendizábal et al., 2017). Similarly, no published studies have examined mediators of relationships of minority stress and non-suicidal self-injury (NSSI), or the extent to which these mechanisms may overlap with suicidal behaviors. Among the above mediators, emotion regulation is one the most promising because it is a primary function of NSSI, profoundly influences psychopathology, becomes altered following stress, changes throughout development, and can be effectively modified using existing evidence-based interventions (Corcoran, Dattalo, Crowley, Brown, & Grindle, 2011; Hasking, Whitlock, Voon, & Rose, 2017; McLaughlin, 2016).

Project Q2 is the only published study that has assessed longitudinal predictors of self-harm in SGM youth (Liu & Mustanski, 2012; Mustanski & Liu, 2013). Project Q2 recruited a community sample of 246 SGM youth, ages 16 to 20 years (mean [SD] = 18.8 [1.3] years; 33.3% below age 18 years). NSSI was assessed at 6- and 12-month follow-up (Liu & Mustanski, 2012). Within this sample  $n = 38$  participants (15.4%) reported NSSI during the follow-up period.

Lifetime suicide attempt history, sensation-seeking, female gender, childhood gender nonconformity, hopelessness, and minority stress predicted future NSSI. A separate report (Mustanski & Liu, 2013) assessed predictors of suicide attempts between baseline and at 12-month follow-up assessment for 237 participants. Suicide attempts were endorsed by  $n = 13$  (5.5%) participants. When controlling for depressive symptoms and hopelessness, a prior suicide attempt was the only statistically predictor of future attempt. This study has several noteworthy strengths. The longitudinal design, use of multiple follow-up assessments, relatively large sample size, and inclusion of general and group-specific predictors are important methodological components. Some study limitations point to areas that should be addressed in future research. The relatively low incidence of self-harm during follow-up limited statistical power and may have been driven in part by the low to moderate baseline risk of the sample (e.g., 7.2% reported a past year suicide attempt). Regarding NSSI, cutting was the only method assessed. These findings may not generalize to the prediction of other forms of NSSI such as burning and hitting. Further, Minority Stress Theory may also be informative in understanding health disparities broadly. Past studies have found that being perceived as SGM increases risk for victimization regardless of actual SGM status (Gordon & Meyer, 2008). Indeed, in the Growing Up Today Study heterosexual/cisgender youth with a history of childhood gender nonconformity reported higher rates of sexual trauma and subsequent posttraumatic stress disorder symptoms that were comparable to sexual minorities (Roberts, Rosario, Slopen, Calzo, & Austin, 2013). As such, inclusion of a heterosexual/cisgender comparison group would facilitate testing the generalizability of Minority Stress Theory and potential moderation effects.

Taken together, prior research suggests that elevated rates of self-harm among SGM youth may be explained in part by the ways in which stress impacts emotion processing. To

address this gap in our understanding, the current studies focused on the means by which minority stress relates to emotion regulation and self-harm. More specifically, these two studies focused on clarifying the roles of adaptive and maladaptive emotion regulation strategies. The first study examined cross-sectional associations of acceptance of emotion and negative urgency with self-harm episodes in a sample of university students at elevated risk for suicide. The second study examined longitudinal associations of recent minority stress with current use of emotion regulation strategies, and future internalizing symptoms and self-harm episodes in a sample of psychiatric emergency services patients. These studies are complementary in sampling frames, scope of emotion regulation strategies assessed, and temporality of associations between strategies used and self-harm episodes.

### **Epidemiological Research on Sexual and Gender Minority Self-Harm**

There is a substantive body of research documenting elevated rates of self-harm among SGM populations (McNeil et al., 2017, 2017). Much of this prior research has significant methodological shortcomings in representative sampling and comprehensive assessment of self-harm and SGM status (Savin-Williams, 1994, 2001). These limitations have led to some difficulties in interpreting results across studies. Many early studies relied on convenience sampling of at-risk populations (Remafedi, 1999), often including youth who are homeless (Kruks, 1991), receiving treatment for psychopathology (Rotheram-Borus, Hunter, & Rosario, 1994), or seeking support due to social isolation (Hershberger & D'Augelli, 1995). While this approach may be appropriate for purposive sampling, it inflated early estimates of the magnitude of differences between SGM youth and heterosexual/cisgender peers. Further, many studies used as an inclusion criteria identification as lesbian, gay, or bisexual (LGB). This group forms the minority of populations reporting same-sex attraction or sexual behaviors, limiting external validity and generalizability (Mustanski, Van Wagenen, Birkett, Eyster, & Corliss, 2014). Recent

epidemiological evidence indicates that other sexual minority orientations (e.g., mostly heterosexual) are more than twice as prevalent as LGB identities and are associated with comparable rates of victimization and self-harm (Calzo, Masyn, Austin, Jun, & Corliss, 2017; Diamond, 2016; Vrangalova & Savin-Williams, 2012). More broadly, research on SGM self-harm has typically described associations of established risk factors with a lifetime history of self-harm without any assessment of predictive validity, stability, or implications for intervention (Miranda-Mendizábal et al., 2017). As a result, there is a dearth of research on factors that could inform interventions.

Recent epidemiological research overcoming sampling limitations has been the subject of several narrative, systematic, and meta-analytic reviews (Haas et al., 2010; Miranda-Mendizábal et al., 2017). Approximately 40% of gender minorities and 30% of sexual minorities report a history of self-harm compared to 15% of heterosexual/cisgender peers (James et al., 2016; Marshal et al., 2011; Miranda-Mendizábal et al., 2017). Notably, the magnitude of disparities increases with severity of each behavior (e.g., higher rates of attempts, multiple attempts, and use of methods with higher lethality; Marshal et al., 2011; James et al., 2016).

In contrast to the plethora of data confirming higher rates of lifetime histories of self-harm, few studies have employed longitudinal methods. A recent systematic review of the past 50 years of longitudinal research on suicidal thoughts and behaviors found that most studies reported age (94.9%) and biological sex (88.6%) but were less likely to report race (74.1%) or ethnicity (29.1%; Cha et al., 2017). Even more striking, only 3 studies (1.9%) reported SGM status (Fergusson, Horwood, Ridder, & Beautrais, 2005; Silenzio, Pena, Duberstein, Cerel, & Knox, 2007; Wichstrøm & Hegna, 2003). As a result, many fundamental questions remain

regarding the topology of self-harm behaviors, predictors of their onset, and mechanisms underlying persistence.

### **Delineating Types of Self-Harm**

Deliberate self-harm encompasses a range of behaviors that were at least partially undertaken with the intention of causing injury. Suicidal behavior describes actions that were performed with the intent, hope, expectation, or awareness that the individual may die as a result. Behaviors in this category include actual, aborted, and interrupted suicide attempts and preparation for attempts. In contrast, non-suicidal self-injury (NSSI) is the intentional harm to one's own bodily tissue for purposes other than causing death (e.g., affect regulation, nonverbal communication). The operational definitions of 'suicide risk' have varied across studies of SGM youth with some studies classifying suicidal ideation with intent as a suicide attempt, and others failing to distinguish between suicidal behavior and NSSI. Recently developed instruments comprehensively assess a range of self-injurious thoughts and behaviors with good convergent and predictive validity, but have not yet been implemented into studies of SGM youth. Within the broad category of suicidal behavior, preparatory behaviors, interrupted suicide attempts, and aborted suicide attempts are now included (Posner et al., 2011).

Clear operational definitions are important for facilitating comparisons across studies and obtaining accurate epidemiological estimates (O'Carroll et al., 1996). Clarity in defining self-harm behaviors is also informative in understanding the progression of higher risk trajectories. That is, there may early signs in that can be used to identify youth and to intervene before self-harm escalates. These considerations are particularly important for adolescents and males, both of whom are less likely to have a documented history of actual suicide attempts prior to suicide. Future long-term follow-up of large cohorts will aid in understanding whether there are any other self-harm behaviors that are also predictive of future suicides (e.g., interrupted suicide attempts).



## **Demographic Correlates of Self-Harm**

Epidemiological and clinical data indicate that prevalence rates of suicide and suicide attempts vary as a function of age, race/ethnicity, biological sex, gender, and sexual orientation (Cha et al., 2017; M. K. Nock et al., 2008). Additionally, little is known about the trajectories of individuals with overlapping identities across demographic groups, particularly gender, sexual orientation, and race/ethnicity. For instance, the gender paradox of suicidal behavior is that males are more likely to die by suicide whereas females are more likely to attempt suicide (Schrijvers, Bollen, & Sabbe, 2012). There is emerging population registry data that the gender paradox is present in heterosexual populations but not sexual minorities such that sexual minority men are more likely to be treated for, to make, and to die from suicide attempts (C. Björkenstam, Kosidou, et al., 2016; C. Björkenstam, Andersson, Dalman, Cochran, & Kosidou, 2016).

Lifetime history of suicide attempts rates among U.S. adults are approximately 4% in the general population, 11% among sexual minorities, and 40% among gender minorities. These disparities have their primary onset in adolescence and continue through adulthood. Among gender minorities, in a recent study of 27,715 transgender respondents, 40% reported at least one suicide attempt in their lifetime (James et al., 2016). The overwhelming majority (71%) of attempters were multiple attempters, and more than a third (34%) reported that their first suicide attempt was at age 13 years or younger. Racial/ethnic differences often observed in the general population were attenuated due to the high overall prevalence. Suicide attempts were reported by 57% of Native American, 50% of Multiracial, 47% of African American, 45% of Latino/a, 44% of Middle Eastern, 40% of Asian, and 37% of Caucasian participants. Evidently, research is urgently needed to understand how suicide risk operates across demographic groups.

## **Sexual and Gender Minority Populations**

**Gender Minority Status Definition.** Most countries require that birth certificates contain a designation of either male or female (hereafter referenced as “natal sex” or “biological sex”). For the majority of the population natal sex, physical bodies, and socially expected gender identity/behavioral expressions align. These individuals are referred to as cisgender, from the Latin prefix cis, meaning “adjacent to” or “on the same side.” The populations of individuals for whom these components do not align fully are referred to as gender minorities or transgender, from the Latin prefix trans, meaning “across from” or “on the other side of.” As research on gender minorities is in its infancy, there are relatively few probability surveys that can provide reliable estimates of the size of the gender minority population. Data from the Centers for Disease Control and Prevention (CDC) Behavioral Risk Factor Surveillance Survey (BRFSS) suggest that 0.3%-0.53% of adults in the US reported a transgender identity (Conron, Scott, Stowell, & Landers, 2012; Meyer, Brown, Herman, Reisner, & Bockting, 2017). National data are currently unavailable for youth. Regionally representative Youth Risk Behavior Survey (YRBS) data from the San Francisco Unified School District middle schools found that 1.3% of students ages 11-13 years identified as transgender (Shields et al., 2013).

There is a wide range of gender minority identities and expressions. Gender is a social construct that is historically and culturally contingent, and many phenomenological aspects of gender are necessarily beyond the purview of what can be captured within empiricist and positivist epistemologies. As such, survey research can only capture some components of the subjective experience of gender. With these limitations in mind, the present discussion will focus solely on gender as it is measured within epidemiological and psychological research. The specific term “transgender” (previously “transsexual”) will be used to refer to someone who experiences their natal sex, physical body, and identity such that they want to live as a different

gender than the one they were assigned at birth. More specific terms may be used such as “trans male/female,” “transmasculine,” “transfeminine.” Depending on socioeconomic status and safety of their surroundings, they may make a social transition (i.e., change of name, express a preference for pronouns, manner of dress) and seek biological interventions (e.g., gender confirmation surgery, hormone replacement therapy). In some research studies, the term “transgender” is also used interchangeably with “gender minority.” When someone has a more expansive gender identity and/or expression beyond one gender, or experiences more temporal variability in their gender identity and/or expression, they may be referred to as having a “nonbinary” gender identity. Other gender minorities may identify as male and female (“bi-gender”), neither (“agender” or “gender neutral”), or multiple genders over time (“genderfluid”).

**Gender Development.** Observable differences in children’s gendered behaviors can onset as early as 4 years of age among cisgender youth (Zahn-Waxler, Shirtcliff, & Marceau, 2008). Comparable prospective studies of transgender identity from toddlerhood onward are lacking. Retrospective reports suggest that developmental timing is largely comparable for most gender minorities (K. J. Zucker, Lawrence, & Kreukels, 2016). Some early indicators of gender minority status are cognitive and affective, which may include a general awareness that natal sex and gender identity are discordant (e.g., not “feeling like” a girl or boy). The distress associated with this awareness is referred to as gender dysphoria (K. J. Zucker, 2005). Other affective indicators may include distress in response to perceiving caregivers’ behaviors as attempts to constrain or shape gender expression (e.g., asking a natal female to wear a dress). Gender expression, or behavioral indicators, includes choice of activities, clothing, hairstyles, and mannerisms. Youth who do not conform to social expectations of their gender expression (based on their natal sex) are considered to have “gender nonconforming” behaviors. Observable

behavioral gender nonconformity is often the target of interpersonal victimization such as parental maltreatment and peer victimization (Gordon & Meyer, 2008).

**Measurement of Gender Minority Status.** As gender is multifaceted, assessment methods vary across studies. A report on best practices for assessing gender minority status was recently released by the Williams Institute on Sexual Orientation and Gender Identity Law and Public Policy at the UCLA School of Law (Reisner et al., 2015). The GenIUSS group was a multidisciplinary group of researchers and leaders of gender minority-serving community organizations. The primary recommended assessment method included the use of two items to assess separately natal sex and current gender identity. This method appears to be feasible and acceptable to gender minority adolescents and young adults (Reisner, Katz-Wise, Gordon, Corliss, & Austin, 2016).

**Sexual Minority Status Definition.** Sexuality is multifaceted and includes attractions (i.e., sexual attraction or affective attachment), behaviors (e.g., sexual behavior, romantic partnering), and identity. These facets may be decomposed further into their constituent components. Attractions and behaviors are often directed with respect to a gender or sex (e.g., attracted to males, females, both, neither) and number of romantic and/or sexual partners (e.g., none, one, multiple). Similarly, identity labels (e.g., gay/lesbian, bisexual, asexual, queer) may describe attractions and behaviors, to signal identification with a community, or to communicate preferences and availability to potential partners. At the broadest definition (i.e., having any lifetime history of same-sex attraction, behaviors, or identities besides exclusively heterosexual), 15-20% of the U.S. population may be considered a sexual minority (Savin-Williams, 2006; Savin-Williams & Ream, 2007).

**Sexual Orientation Development.** As sexual minority status is reflective of multiple domains of functioning (i.e., cognitive, affective, physiological, behavioral), there is substantial diversity in the range of populations that may be classified as sexual minorities (Diamond, 2016; Galupo, Mitchell, & Davis, 2015). The various configurations of sexuality may be described as coincident and oriented in a single direction (e.g., identifying as gay/lesbian and reporting exclusively same-sex attractions and partnering) or branched and oriented in multiple directions (e.g., identifying as heterosexual while reporting romantic and sexual partnering with multiple genders). Stereotypes and subsequent social stigma are associated with some branched configurations and may lead to underreporting. This is sometimes the case for men who have sex with men and women (MSMW), who appear to be somewhat less likely to disclose a bisexual or mostly heterosexual identity in government-funded national health studies than in surveys administered by local SGM-serving organizations (Ferlatte, Hottes, Trussler, & Marchand, 2017; Hottes et al., 2016). In instances when parental consent is required for participation in research, many adolescents are less likely to report sexual minority status in research in order to avoid inadvertent disclosures, potential maltreatment, and expulsion from their homes (Macapagal, Coventry, Arbeit, Fisher, & Mustanski, 2017). These sources of underreporting are notable because some of the populations who are least likely to report their SGM status (e.g., MSMW, bisexual adolescents) experience the highest rates of interpersonal violence and serious health disparities such as self-harm, alcohol/substance use disorders, and HIV-infection, with documented disparities onsetting as early as 13 years (C. B. Fisher & Mustanski, 2014; Mustanski & Fisher, 2016).

More common sources of branched sexuality configurations include two developmentally typical factors: variability in sequencing of sexuality milestones and fluidity (i.e., changes within

and across sexual minority status indicators over time). Similar to heterosexual youth, the first sexual minority status indicators are often present during childhood and adolescence but may onset during middle to late age for up to a quarter of sexual minority adults. Cognitive and affective components of sexuality (i.e., attractions, identity) typically onset earlier than social and behavioral aspects (i.e., disclosure/coming out, first relationship). Past research has consistently found that the development of attraction most often onsets around adrenarche, typically ages 10-11 years, for heterosexuals and sexual minorities (Herdt & McClintock, 2000). As these attractions are largely affective in nature (e.g., infatuation, having “a crush” on a peer), they are indicative of an expanding capacity for different types of peer attachments that begin to become oriented toward particular genders and sexes. Attraction is typically followed by self-identification at ages 12-17 years. Ages of first attraction and identity have been found consistently over several decades of research, but historical period and cohort effects on social and behavioral milestones have been observed. Specifically, the mean age of disclosure has dropped from age 21 years in 1979 to 14 years in 2015, and is typically followed by partnering 1-2 years later (Russell & Fish, 2016).

The changes in the social components have been attributed primarily to shifts towards more inclusive laws and declines in social stigma, principally in urbanized areas (Russell & Fish, 2016). These changes have been associated more recently with the spatial epidemiology of health disparities in psychopathology and suicide attempts. Declines in structural stigma appear to have been accompanied by declines in suicide attempt rates among SGM adolescents (Raifman, Moscoe, Austin, & McConnell, 2017). In general, males and bisexual-identified individuals report earlier ages of attraction, self-identification, and partnering but older ages of disclosure to

peers when compared to females and gay/lesbian-identified individuals (Katz-Wise et al., 2017; Martos, Nezhad, & Meyer, 2015)

**Sexual Minority Status Measurement.** The assessment of sexual orientation components (i.e., attraction, behavior, identity) has been discussed at length in prior research and expert consensus groups have provided some parameters regarding best practices for measuring sexual orientation in self-report surveys (Badgett, 2009). However, to date there are still no standardized methods of measuring sexual orientation indicators; few measures have been examined for test-retest reliability and predictive validity, and only one cohort study that has assessed multiple components of sexual orientation from adolescence to young adulthood. As a result, there is little evidence available to guide researchers in selecting methods for sexual orientation components. Indeed, the Institute of Medicine has recommended that methodological research in this area is prioritized (Graham et al., 2011).

Unfortunately, the available recommendations and common methods employed (e.g., in the Youth Risk Behavior Survey fail to be inclusive of some sexual minority identities that are being increasingly endorsed by current cohorts of youth (e.g., asexual, pansexual, demisexual), to provide operational definitions for attraction and behavior, or to include gender minorities in any way. Moreover, with few exceptions, these best practices have not been incorporated into the methodology of most research studies on SGM populations. Alfred Kinsey demonstrated nearly 70 years ago that sexual orientation functions as a spectrum, that providing participants a range of options results in larger and more inclusive estimates of sexual minority populations, and that exclusively gay individuals are the smallest subgroup of sexual minorities (Cohler & Hammack, 2006; Galupo, Henise, & Mercer, 2016; Kinsey, Pomeroy, Martin, & Sloan, 1948; Russell, Clarke, & Clary, 2009). These results have been replicated in several recent studies including

convenience samples of college students and nationally representative cohorts in several countries (Diamond & Rosky, 2016).

Several studies have directly compared methods of assessing gender minority identity but few studies have been conducted for sexual minority status. In a notable exception, McCabe and colleagues compared two methods of measuring sexual orientation identity in the context of a broader survey on alcohol and substance abuse in college students (McCabe, Hughes, Bostwick, Morales, & Boyd, 2012).. Researchers administered a 3-category sexual orientation item early in the survey (i.e., "heterosexual," "gay/lesbian," and "bisexual") and a 5-category item later in the survey (i.e., "only heterosexual," "mostly heterosexual," "bisexual," "mostly gay/lesbian" "only gay/lesbian") for a randomly selected subsample. Results indicate that 8% of participants who endorsed "heterosexual" reported a different sexual orientation (typically "mostly heterosexual"). More strikingly, approximately a third of initially "bisexual" participants later identified as "mostly heterosexual" or "mostly gay/lesbian." Individuals who identify as mostly heterosexual constitute the largest proportion of sexual minorities and are distinct from other sexual orientation groups in many important ways including prevalence of suicide ideation and suicide attempts.

Despite the vast body of literature indicating that branched sexual minority sexualities are more common than coincident sexualities, most epidemiological research on sexual minorities continues to use items that require participants to select only one of three mutually exclusive options, most often "heterosexual," "gay/lesbian," and "bisexual" (Brener et al., 2004).

Depending on the component of sexual orientation and time frame assessed (e.g. current vs. lifetime), past studies have found that sexual minorities comprise between 1% and 21% of the general population (Savin-Williams, 2006). In particular, the CDC has incorporated sexual



orientation items into their epidemiological YRBS but only provide the options of gay/lesbian, bisexual, and questioning (Mustanski, Van Wagenen, et al., 2014). This methodology is concerning in light of the fact that the YRBS contributes the lion's share of available representative data on sexual minority health disparities (Graham et al., 2011). It is likely that YRBS results underestimate the size the sexual minority population. Data pooled from 5 major metropolitan areas indicate that bisexual youth comprise 72.5% of sexual minorities and that they uniformly report higher rates of risk indicators including suicide ideation and attempts (Bostwick et al., 2014; Mustanski, Andrews, Herrick, Stall, & Schnarrs, 2014). Taken together with the study comparing 3- and 5-option items, it is likely that many bisexual and mostly heterosexual youth in YRBS would identify as mostly heterosexual, mostly gay/lesbian, or in another way. Future research should examine how prevalence varies as a function of assessment.

### **Informative Theoretical Frameworks**

Given the paucity of longitudinal research concerning self-harm in SGM populations, there are few theories that consolidate empirical findings and propose testable hypotheses. However, several existing frameworks can be integrated to explore this phenomenon. The relevant theories described below provide a means for understanding this population, self-harm behaviors, and developmental influences that modulate risk trajectories longitudinally.

Within this dissertation, the overarching goal is to advance our understanding of the developmental processes underpinning self-harm among SGM youth. As such, the theories provided below inform the conceptual model being examined. Due to the unique foci of each theory, the studies presented here are not direct tests of these theories per se. Rather, these frameworks informed the selection of variables to be measured and models to be tested. As domains of functioning are under consideration, many variables that are unique to each theory are included within these studies.

**Sexual and Gender Minority Stress.** Minority Stress Theory suggests that SGM-identification leads to increased discrimination from the social environment, which elevates stress and subsequent health disparities through overtaxing coping resources. Individuals who have disclosed their SGM status and who have observable gender nonconformity are most likely to be targets of prejudice, discrimination, and violence (Gordon & Meyer, 2008). The higher prevalence of stressors is driven by structural stigma, the institutional policies and social practices that compromise the safety, health, and opportunities of minority groups. The manifestations of structural stigma can involve differential access to civil liberties (e.g., marriage, adoption), inconsistent laws to prevent and prosecute hate crimes, disproportionate disciplinary action in schools and juvenile justice systems, and discrimination in access to and quality of primary, emergency, and mental health care (Himmelstein & Bruckner, 2011; Nadal, Whitman, Davis, Erazo, & Davidoff, 2016).

Structural stigma facilitates more proximal exposure to environmental factors that confer generalized liability for poor physical and mental health, with the highest rates among gender minorities. Higher rates of interpersonal stressors observed among SGM youth include: emotional, physical, and sexual abuse by caregivers and other authority figures; parental rejection that can lead to homelessness and associated adverse experiences (e.g., assault by strangers, involvement in street economy, transactional sex, conflict with law enforcement); harassment, assault, and violence perpetrated by peers and teachers at school; failure of school administration and law enforcement to investigate and respond to reports of harassment and hate crimes; and discrimination in educational and employment opportunities. These adversities have been associated with a range of disparities in psychopathology such as internalizing, externalizing, eating, psychotic, alcohol/substance use, and personality disorders (Coker, Austin,

& Schuster, 2010; Kerridge et al., 2017). These mental health disparities have been linked to minority stressors, appear early in the lifespan, and tend to persist into adulthood (Roberts et al., 2013). Moreover, disparities are not limited to mental health. SGM populations are more likely to experience compromised cardiovascular, metabolic, endocrine, and immunological health (Duvivier & Wiley, 2015; Schneeberger, Dietl, Muenzenmaier, Huber, & Lang, 2014). Community-level prejudice can also impact individual health. For instance, SGM individuals living in areas with a high prevalence of anti-gay prejudice have a shorter life expectancy by 12 years and are more likely to die by homicide, suicide, and cardiovascular disease (Hatzenbuehler et al., 2014). For SGM individuals who die by suicide, individuals in high-prejudice communities died 18 years earlier than those in low-prejudice communities (37.5 vs. 55.7 years). Evidently, structural stigma and adversity affect multiple developmental systems and can compromise most areas of health.

Minority Stress Theory posits that there are group-specific and generalized mechanisms that link stressful experiences to health outcomes (Hatzenbuehler, 2009; Meyer, 2003). Regarding group-specific mechanisms, the most frequently examined factors include SGM-specific victimization and internalized stigma such as homophobia, biphobia, transphobia (Austin & Goodman, 2017; Newcomb & Mustanski, 2010; Puckett & Levitt, 2015). These mechanisms have been associated with internalizing symptoms and alcohol/substance abuse (Green & Feinstein, 2012; Talley et al., 2016). Further, a lack of connectedness to gender minority communities has been associated with self-harm in gender minorities (Hendricks & Testa, 2012, 2012; Testa et al., 2017). In contrast to group-specific mechanisms, relatively little research has examined which generalized mechanisms exert the greatest influence in SGM health disparities. In particular, emotion regulation is one transdiagnostic domain of functioning that

appears to partially account for disparities in internalizing symptoms among sexual minority adolescents. A recent study found that an LGB-affirmative adaptation of cognitive behavior therapy reduced internalizing and alcohol/substance abuse symptoms among sexual minority men (Pachankis, 2015; Pachankis, Hatzenbuehler, Rendina, Safren, & Parsons, 2015). While data are limited, emotion regulation may be a particularly relevant mechanism in self-harm among SGM youth.

**The Process Model of Emotion Regulation.** Emotion regulation and its immediate antecedents constitute a multi-step iterative process including awareness and acceptance of an emotional response, deployment of attention, cognitive appraisal, and response modulation (Gross, 1998; Sheppes, Suri, & Gross, 2015). Through this process, the individual has several opportunities in which they can regulate their affective state. James Gross' Process Model of Emotion Regulation provides a heuristic for understanding emotion regulation as a series of events with several potential turning points for altering affective experiences (McKenzie & Gross, 2014; Sheppes et al., 2015). The proposed temporal sequence of events for engaging in emotion regulation is: (1) a stimulus triggers an affective response, (2) attention is directed to the stimulus, (3) an appraisal is made to interpret the meaning of the stimuli and one's affective response, and (4) engagement in response modulation.

Emotional awareness and acceptance is an early stage of the emotion regulation process in which an individual attends to, interprets, and has an initial response to affective cues. At this early stage, poor awareness or non-acceptance of an emotional reaction may motivate an individual to engage in behaviors that may be incongruent with their current affective state. That is, early affective cues may signal the beginning of an intolerable or otherwise undesirable emotion or mood. Management of attention can shift an individual's cognitive resources towards

or away from emotional cues. Engagement in ruminative thought processes may lead to circuitous cognitions and secondary emotions (e.g., becoming frustrated about an initial reaction) and, over time, reinforce maladaptive cognitions. Difficulties in cognitive appraisal underlie depressive and anxious cognitions, and developing flexibility in this portion of emotion regulation is a goal of many cognitive behavioral interventions. Response modulation occurs towards the end of the emotion regulation process and consists of an individual's attempts to attenuate or magnify their present emotional state. Difficulties in consistently employing adaptive response modulation can lead to hedonic and intense escapist behaviors that provide immediate but short-term affective changes (e.g., NSSI, binge-eating and drinking, alcohol/substance use).

**The Interpersonal Theory of Suicide.** The Minority Stress informs our understanding of mental health disparities broadly but does not address suicide risk. One promising framework is the Interpersonal Theory of Suicide, which suggests that three factors are necessary for a suicide attempt: (1) a thwarted sense of belongingness, (2) perceived burdensomeness, and (3) an acquired capacity for self-harm (Van Orden et al., 2010). Thwarted sense of belongingness (“I’m alone”) and perceived burdensomeness (“Everyone would be better off if I were dead”) are thought to lead to suicide ideation (considering suicide). An acquired capacity for self-harm refers to the ability to overcome the self-preservation instinct and fear of the severe pain involved in death. This capacity is increased through repeated exposure to experiences that lead to pain. These experiences can include community violence, parental maltreatment (i.e. abuse and neglect), and sexual assault. Acquired capacity may also be developed through continual engagement in behaviors (e.g. extreme sports) and occupations (e.g. military, emergency medicine, firefighting) that are fear-inducing and entail the possibility in death. This is thought to

underlie some of the specificity of methods observed in the suicides of military personnel (Van Orden et al., 2010). For instance, some case reports suggest that military personnel are more likely to use methods that may be associated with their branch of service. For instance, personnel in the Army, Navy, and Air Force are more likely to use firearms, hanging, and jumping from heights respectively (Scoville, Gardner, & Potter, 2004; Selby et al., 2010; Van Orden et al., 2010).

The Interpersonal Theory of Suicide is informative in understanding why SGM youth might have elevated rates for suicide risk specifically. Exposure to more social stressors across the lifespan may increase a sense of thwarted belongingness and perceived burdensomeness. Families that are less accepting of SGM youth can create environments that are invalidating and potentially foster an enduring sense of thwarted belonging (Ryan, Huebner, Diaz, & Sanchez, 2009). Further, at a broader level structural stigma can contribute to thwarted belongingness and perceived burdensomeness through absence of policies/laws that prevent SGM-related victimization and infrastructure that is responsive when those incidents are reported. Similarly, an acquired capacity for self-harm may also be influenced by the physically violent forms of victimization by habituating youth to experiences of bodily harm, lowering the fear of pain involved in suicide.

### **Developmental Psychopathology**

The primary challenge in understanding health disparities lies in uncovering why some youth experience untoward outcomes when exposed to social adversity whereas most do not. Understanding differential outcomes becomes particularly important to examine during the initial periods of risk in adolescence and young adulthood. Developmental psychopathology provides a multilevel perspective on development as a series of probabilistic pathways in which individual characteristics transact with the environment over time. This framework provides tools for

understanding processes of multifinality, how exposure to a risk factor can lead to several very different outcomes, and equifinality, how different pathways can lead to the same outcome multifinality (Adler & Stewart, 2010; Belsky & Pluess, 2009). In combination with other relevant frameworks, a developmental psychopathology account of SGM health disparities has the potential to lead to a more comprehensive characterization of the processes by which high risk trajectories emerge.

### **Developmental Influences on Emotion Regulation and Behavior Disinhibition.**

Within the general population it is well established that adverse outcomes cluster together, can mutually exacerbate each other, and can lead to functional impairment that reinforces chronicity (Adler & Stewart, 2010; Beauchaine & Cicchetti, 2016; Cicchetti & Rogosch, 2002). In studies of psychopathology, comorbid disorders are more common than single disorders, which is attributable to overlap in domains of functioning across disorders (Glenn et al., 2018; Insel et al., 2010; M K Nock, Hwang, Sampson, & Kessler, 2010). One such domain relevant to suicide risk includes emotion regulation – the processes by which individuals attempt to influence the affective states that they experience as well as their valence, magnitude, duration, and behavioral expression. A substantive body of evidence indicates that individual differences in child and adolescent emotion regulation undergird many factors influencing the onset and persistence of psychopathology (Aldao, Gee, De Los Reyes, & Seager, 2016; McLaughlin & Lambert, 2017; Nolen-Hoeksema & Watkins, 2011). However, relatively little longitudinal research has articulated the ways in which emotion regulation is related to early-onset self-harm.

As described above, difficulties in emotion regulation may lead to recruitment of maladaptive means of emotion regulation in addition to adaptive strategies. Some behaviors that are proximally associated with suicide risk may also serve to regulation emotion. These

behaviors can include binge-eating, purging, NSSI, and alcohol/substance abuse-based coping. Persistent engagement in escapist behaviors may also be driven by behavioral disinhibition, an individual's inability and/or unwillingness to prevent themselves from engaging in a behavior despite the potential aversive consequences (R. A. Zucker, Heitzeg, & Nigg, 2011). The co-occurrence of difficulties in emotion regulation and behavioral disinhibition can lead to pervasively dysregulated behaviors and are thought to be among the fundamental deficits of more longstanding forms of psychopathology such as antisocial and borderline personality disorders (Beauchaine, Klein, Crowell, Derbidge, & Gatzke-Kopp, 2009; Crowell, Beauchaine, & Linehan, 2009).

The phenotype of a mood disorder co-occurring with an alcohol/substance use disorder confers significant risk for suicidal behavior and eventual suicide (Séguin, Beauchamp, Robert, DiMambro, & Turecki, 2014; Séguin, Renaud, Lesage, Robert, & Turecki, 2011; Séguin et al., 2011). It is likely that this pattern of symptoms is the manifestation of a propensity toward emotion dysregulation and behavioral disinhibition (Buckholtz & Meyer-Lindenberg, 2012). Disinhibition (i.e., the behavioral component of impulsivity) is observed across ADHD, alcohol/substance use disorders, and conduct disorder. In each disorder, there is a propensity to engage in behaviors that are potentially harmful to oneself and others due to difficulties in inhibiting urges to engage in these behaviors and/or underestimation of the likelihood and severity of potential consequences. As a result, the combination of mood and alcohol/substance use disorder symptoms is likely to confer significant risk due to a precarious co-occurrence of tendencies to experience and have difficulties modulating intense negative affect, increased sensitivity to potentially rewarding experiences, poor ability to discern the probability and severity of negative consequences, and vacillation between behavioral disinhibition and



inhibition (Abram et al., 2015; Beauchaine & Cicchetti, 2016; Blasco-Fontecilla, Rodrigo-Yanguas, Giner, Lobato-Rodriguez, & de Leon, 2016). Thus, emotionally dysregulated/behaviorally disinhibited individuals may be at risk for suicide due to positive and negative urgency (i.e., tendencies to act rashly in response to anticipated reward and distress).

**Trajectories of Disparities among Sexual and Gender Minority Youth.** Disparities are observed across risk behaviors that can serve emotion regulation functions (e.g., NSSI, binge-eating and purging, alcohol/substance-related coping), suggesting heterotypic continuity (Graham et al., 2011). That is, the developmental mechanisms of risk within broad domains (i.e., emotion dysregulation, behavioral disinhibition) remain stable but the observed behaviors display variability in patterns of co-occurrence within and across time points. Heterotypic continuity would partially account for the apparently diverse range of risk behaviors across the lifespan and distinct patterns of escalation. For instance, one heterotypically continuous and escalating high risk trajectory of avoidant coping may comprise sensitive temperament manifesting as mood- and anxiety-driven tantrums in early childhood, school refusal to avoid bullying in late childhood and early adolescence, engagement in NSSI in response to social stressors such as peer exclusion throughout adolescence, and alcohol/substance use to attenuate anticipatory anxiety in social and sexual encounters in late adolescence and early adulthood (Hannesdóttir, Doxie, Bell, Ollendick, & Wolfe, 2010; Roley-Roberts, Zielinski, Hurtado, Hovey, & Elhai, 2017; Shevlin, McElroy, & Murphy, 2017). This collection of behaviors may appear to be unrelated but at each developmental stage the overall internal antecedent (poorly modulated distress) and its consequence (harmful behaviors) exhibit continuity. Within this particular trajectory, signals of comorbid internalizing and externalizing symptoms can be detected at a young age but their expressions are shaped by developmental stage-dependent contextual

influences that provide intermittent social reinforcement such as parental praise, avoidance of peer conflict and rejection, and an expanded range of potential friends and partners (Beauchaine, Zisner, & Sauder, 2017; Cappadocia, Desrocher, Pepler, & Schroeder, 2009). Thus, the dysregulated/disinhibited phenotype may confer generalized liability across domains, driving SGM disparities in self-harm and related behaviors.

**Early Adversity as A Launching Factor for Developing Generalized Risk.** As discussed above, early-onset adversity figures prominently in diathesis stress models. Parental maltreatment, discrimination and harassment at school, and general victimization in public spaces are all potential forms of adversity that could increase risk for developing an emotionally dysregulated/behaviorally disinhibited trajectory. In this context, a developmental launch is analogous to a catapult in which the initial forces of the contextual antecedent display undue influence on the course of the outcome (Hussong, Curran, Moffitt, Caspi, & Carrig, 2004). That is, a developmental launch can foreshadow a trajectory toward a variety of health outcomes because it acutely interrupts the homeostasis of most neurological and physiological systems, thus requiring significant adaptation (P. A. Fisher et al., 2016; McLaughlin, 2016). Although the degrees of its effects vary widely as a function of the severity of the stressor and individual differences in temperament, genetic predispositions, and access to protective factors, both short- and long-term outcomes are well-established (Cicchetti, 2016).

Maltreatment in particular can serve as a proxy for other individual, family, and environment risk factors. At the individual level, some children are inherently more difficult to parent due to highly reactive temperaments and caregiver-directed antisocial behavior (Crick & Zahn-Waxler, 2003). Within the family system, the presence of maltreatment can be indicative of limited access to effective behavior management strategies, a generally harsh parenting style,

permissive attitudes towards aggression and interpersonal violence, and parents' own history of maltreatment and psychopathology (Balsam, Rothblum, & Beauchaine, 2005; Beauchaine & Gatzke-Kopp, 2012; Crowell et al., 2009). The presence of chronic maltreatment may indicate that the childhood passes through environments (e.g. neighborhoods, school systems) that are unlikely to systematically detect and intervene in instances of maltreatment (Klika & Herrenkohl, 2013; O'cleirigh, Safren, & Mayer, 2012; Shalev, Heim, & Noll, 2016). More broadly, psychopathology is more likely to develop in children with limited access to compensatory mechanisms due to low socioeconomic status, caregiver absence due to excessive work or impairing psychopathology, lack of in-school support services, etc. (McLaughlin & Lambert, 2017; McLaughlin & Sheridan, 2016)

Early adversity can influence suicide risk in a number of ways. First, it can launch an emotionally dysregulated and behaviorally disinhibited pathway trajectory and disrupt the typical development of attachment to caregivers. Suboptimal attachments in early life are associated with many poor developmental and health outcomes (Shalev et al., 2016). Second, experiencing victimization at school and in public spaces can create intermittent hypervigilance and anticipatory anxiety. These experiences can, over time, make it difficult for youth to develop supportive peer relationships and decrease the size of youths' social networks (Cicchetti, 2016; Klika & Herrenkohl, 2013). Together, this trajectory and atypical attachment can lead to more persistent impairment in social functioning with peers and other adults (e.g., poor reading of social cues, disinhibited behavior that leads to more discipline in school, peer exclusion). As a result, youth with early adversity are more likely to experience thwarted belonging and perceived burdensomeness earlier in life and to develop later acquired capacity for self-harm.

The developmental mechanisms linking adversity to mental health outcomes have been relatively unexplored. This gap in the literature is due in large part to methodological approaches that are less likely to detect the effects of specific forms of adversity. Many early research studies in this area focused primarily on bivariate associations between particular types of adversity and outcomes (e.g., associations between childhood physical abuse and mood disorder symptoms). The seminal Adverse Childhood Experiences Study highlighted strikingly high rates of adversity and co-occurring types of adversity. Many more recent studies, including those focused on SGM-populations, have begun examining the extent to which the cumulative number of stressors is associated with poor physical and mental health outcomes (Shields et al., 2013; Shields, Whitaker, Glassman, Franks, & Howard, 2012). These studies are generally consistent in the direction of findings (i.e., more stressors increase risk for virtually all outcomes) but effect sizes can vary widely. This variability is likely owed to the fact that potential reason is that stressors are highly correlated and that a cumulative risk score assumes identical magnitude and mechanism of effects (McLaughlin & Sheridan, 2016; P. A. Rutter, 2008). There is little support for the above assumption. For instance, maltreatment broadly (including physical abuse, sexual abuse, and neglect) contributes to difficulties in affect regulation, behavioral disinhibition, and attachment. However, specific effects are also evident – physical and sexual abuse substantially increase risk for post-traumatic dissociation whereas neglect confers greater risk for communication deficits (Pechtel & Pizzagalli, 2011; Teicher & Samson, 2016).

Research that has delineated adversity into separate dimensions (threat and deprivation) has found preliminary support for the specificity of effects (McLaughlin & Sheridan, 2016). Experiences of threat include exposure to events that confer physical harm or the strong probability of harm to oneself or a loved one. Examples include physical abuse, sexual abuse,

coercion, and exposure to domestic and community violence. Deprivation curtails the necessary range of cognitive and social experiences that scaffold typical executive functioning. Examples include neglect, social isolation, and poverty. The effects of threat on psychopathology appear to be mediated by influences on components of emotional processing. In particular, attention and memory biases (e.g., to vocal tones, facial expression), reactivity (e.g., blunted positive emotions, exaggerated startle response), and responses to distress (e.g., rumination, self-medication with substances). In contrast, deprivation appears to attenuate development of core aspects of executive function such as working/short-term memory, inhibitory control (e.g., impulsivity), and cognitive flexibility. There is also accumulating evidence of influences of deprivation on emotional reactivity (e.g., risk for depression due to under-development of response to rewarding experiences) and of threat on executive functioning in emotionally salient contexts (e.g., dissociation in response to perceived threat cues).

Regarding SGM populations, the cumulative risk score is a common approach to examining minority stress (Mustanski, Andrews, & Puckett, 2016; P. A. Rutter, 2008). However, this approach can obscure the varied effects of stress because higher rates of adversity are noted across many forms of childhood- and adolescent-onset early adversity (e.g., poverty 29%; school victimization: 32%; familial physical abuse: 34%; familial sexual abuse: 28%; Katz-Wise & Hyde, 2012). Further, few studies have examined both early adversity and group-specific stressors. Given that SGM-specific research is often oriented towards enhancing our understanding of mechanisms of general and group-specific stressors, alternative approaches are needed to account for heterogeneity due to floor effects in rates of adversity. For example, gender minority stress is thought to contribute to psychopathology due to both the types of stress exposure as well as the multilevel experience of stigma from family, intimate partners, and

strangers (Reisner, Poteat, et al., 2016). Socioeconomic adversity is a common consequence of stigma due to transphobia in hiring and in the workplace. In the US Transgender Survey of more than 20,000 gender minorities, 87% of participants reported completing at least some college, of whom 29% were living in poverty (James et al., 2016). Thus, mechanisms linking adversity to outcomes is a crucial area for future research.

### **Permissive Alcohol/Substance Use Social Norms as An Ensnaring Factor**

**Maintaining Risk.** While launch factors accelerate propensity toward risk, ensnaring factors serve to maintain risk status (Hussong et al., 2004). Ensnaring factors interfere with the normative deceleration of an untoward behavior that is observed within a population. For instance, alcohol/substance use is associated with self-harm and other potentially harmful behaviors (Brennan et al., 2012; Mustanski, Garofalo, Herrick, & Donenberg, 2007). Acutely, intoxication increases reward response and decreases executive functioning through its effects on the frontostriatal neural circuit, increasing likelihood of engaging in mood-dependent behaviors (Victor & Hariri, 2016). More generally, the longitudinal course of alcohol and substance use is of interest to suicide risk, particularly for sexual minority males who are more likely to attempt and die by suicide.

By the end of high school, approximately half of youth have engaged in some level of use of alcohol, cigarettes, and/or illicit drugs (Volkow, Wang, Fowler, & Tomasi, 2012). A common alcohol/substance use trajectory entails minimal use until adolescence at which point there is a pronounced frequency of experimentation into young adulthood. This is followed by rapid decrease, particularly for those who are employed, enrolled in higher education, or in serious romantic relationships (Hussong et al., 2004; Jackson & Schulenberg, 2013). For SGM individuals, norms regarding frequency, amount, and contexts of alcohol and substance use differ

from those of the general population (Mereish, Goldbach, Burgess, & DiBello, 2017; Talley et al., 2016). These norms typically manifest as greater acceptance of higher frequencies and amounts of use as well as an expanded variety of contexts (e.g., before, during, and after sex). This is particularly the case for sexual minority males in most countries (Green & Feinstein, 2012; Marshal et al., 2008). As alcohol and substance use disorders are significantly more prevalent among men than women, homosocial environments enhance this distinction. This broader range of norms is more likely to permit, prescribe, or otherwise facilitate coping motives (i.e., maladaptive use of alcohol/substances to down-regulate negative affect) that become part of a more chronic pattern of use. Marriage and romantic partnering yields reductions in problematic alcohol and substance use for heterosexual men, which may be mediated by role impairment and discrepant use patterns among women (Keyes, Li, & Hasin, 2011; Talley, Sher, & Littlefield, 2010). In contrast, partnerships between men have greater potential to magnify alcohol and substance use, principally through homophily in partner selection, overlap of social and sexual networks, and higher usage patterns among men generally (Janulis et al., 2018; Janulis, Birkett, Phillips, & Mustanski, 2015; Mustanski, Newcomb, Du Bois, Garcia, & Grov, 2011). In this way, developmental contexts for some SGM populations may contribute to sustained rather than desisting risk.

### **Dissertation Studies**

SGM youth are more likely to report deliberate self-harm than heterosexual/cisgender peers (McNeil et al., 2017; Miranda-Mendizábal et al., 2017), and current evidence implicates minority stress and emotion regulation as mechanisms underlying mental health disparities (Hatzenbuehler, 2017; Meyer, 2003). However, data are lacking that link minority stress, emotion regulation, and self-harm. Thus, examining these factors in high risk samples provides a

unique opportunity to characterize their mediating effects. This dissertation focuses on clarifying the role of emotion regulation in the association between SGM stress and self-harm. The primary dissertation hypothesis is that minority stress leads to internalizing symptoms and, subsequently, self-harm behaviors in the presence of maladaptive emotion regulation strategies and negative urgency. It is hypothesized that emotion regulation strategies will exhibit relationships with self-harm and that maladaptive strategies will have stronger relationships with self-harm. Further, it is hypothesized that negative urgency will link internalizing symptoms, emotion regulation, and self-harm behaviors. In particular, two adaptive and two maladaptive strategies will be examined: acceptance, reappraisal, suppression, and rumination.

The primary hypothesis was tested in two studies. Study 1 utilized cross-sectional data from a sample of university students at elevated risk for suicide who participated in a trial study to examine the effectiveness of a suicide risk screening and counseling protocol (N=794; Electronic Bridge to Mental Health Services, eBridge; King et al., 2015). The primary aim of this study was to examine the relationships between acceptance of emotional experience, negative urgency, and self-harm (e.g., suicide attempts and NSSI). It was hypothesized that acceptance and negative urgency would have main and interaction effects on self-harm. A secondary aim was to explore whether these associations were moderated by SGM status. It was hypothesized that the above relationships would be stronger among SGM students.

Study 2 utilized longitudinal data from a sample of psychiatric emergency services patients (N=285; Emergency Department Mood and Coping Study, ED MACS). The first aim of this study was to characterize histories of self-harm among adolescents and young adults who were receiving psychiatric emergency services. It was hypothesized that SGM youth would report higher rates of self-harm at baseline and follow-up. The second aim of this study was to



conduct a longitudinal test of the Minority Stress Model. It was hypothesized that the effects of minority stress and internalizing symptoms on future self-harm would be mediated by suppression, rumination, and, to a lesser extent, reappraisal (i.e., victimization to strategy to internalizing symptoms to self-harm). A third aim was to explore whether these mediated pathways were moderated by SGM status. It was hypothesized that the above relationships would be stronger among SGM youth.

## Chapter 2

### **Study 1: Emotion Regulation and Behavioral Disinhibition in Students at Risk for Suicide**

The transition to college is a developmental milestone that is associated with sharp increases in the prevalence of self-harm behaviors, particularly among sexual and gender minority (SGM) students (Silva, Chu, Monahan, & Joiner, 2015). SGM students report experiencing higher rates of harassment, discrimination and assault, and this onset of social stress coinciding with the general stress of a developmental transition may contribute to recurrent self-harm after the initial transition to college (Ylloja, Cochran, Woodford, & Renn, 2016).

Emotion regulation plays a central role in the development of psychopathology and has been implicated in SGM mental health disparities, with substantial evidence for its role in internalizing disorders (Aldao et al., 2016; Hatzenbuehler, McLaughlin, & Nolen-Hoeksema, 2008). Emotion regulation has been established as a probable mechanism of mental health disparities but surprisingly few studies have examined which types of emotion regulation strategies may serve to attenuate risk for psychopathology (Aldao et al., 2016; Aldao & Nolen-Hoeksema, 2012; Sheppes et al., 2015). Studies of emotion regulation in SGM populations have largely focused on use of maladaptive strategies such as rumination and suppression (Hatzenbuehler et al., 2008; Hatzenbuehler, Nolen-Hoeksema, & Dovidio, 2009). Enhancing use of adaptive strategies forms the crux of many evidence-based interventions implemented with suicidal individuals including Dialectical Behavior Therapy (Lynch, Trost, Salsman, & Linehan, 2007). A recent meta-analysis examined the use of reappraisal, problem-solving, and acceptance as adaptive strategies that may attenuate severity of mood, anxiety, and eating disorder

symptoms (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Combined effects across studies were in the expected direction for all strategies and were statistically significant for reappraisal and problem-solving but not acceptance. The authors noted that these results were likely driven in part by the difference in the number of studies included in the meta-analysis for reappraisal and problem-solving in comparison to acceptance (15, 42, and 7 studies respectively). In a recent meta-analysis focused specifically on the influences of emotion regulation strategies on internalizing psychopathology in children and adolescents, acceptance demonstrated medium effect sizes for both depressive and anxious symptoms (Schäfer, Naumann, Holmes, Tuschen-Caffier, & Samson, 2017). As such, acceptance is an underexplored emotion regulation strategy that may be associated with self-harm.

As self-harm is evident across psychiatric disorders, an additional research priority is identifying transdiagnostic factors that further differentiate among populations at elevated risk for self-harm and that may facilitate the transition from self-injurious thoughts to behaviors (May & Victor, 2018). Disorders associated with impulsive behaviors (e.g., conduct disorder, alcohol/substance use disorders) have been consistently associated with markedly increased risk for engaging in self-harm behaviors in the presence of cognitive and affective risk factors such as self-injurious thoughts (Beauchaine & Gatzke-Kopp, 2012; Fox et al., 2015; Franklin et al., 2017). Within a prospective study of SGM adolescents and young adults, impulsivity predicted future non-suicidal self-injury (NSSI) and suicide attempts (Liu & Mustanski, 2012; Mustanski & Liu, 2013). Some evidence suggests that negative urgency (a heightened intolerance of aversive experiences and a tendency to act rashly to avoid persisting negative affect) has relatively stronger relationships with self-harm than other aspects of impulsivity such as a lack of planning and difficulties in sustained attention (Hamza, Stewart, & Willoughby, 2012; Hamza,

Willoughby, & Heffer, 2015; Valderrama, Miranda, & Jeglic, 2016). Although the negative urgency itself exhibits consistent but modest relationships with suicide, its influence on suicide is likely mediated by engagement in behaviors that reduce fear of pain involved in a suicide attempt (Anestis et al., 2012; Anestis, Soberay, Gutierrez, Hernández, & Joiner, 2014). Indeed, the combination of emotion dysregulation and negative urgency has been suggested as the mechanism underlying higher rates of suicide associated with antisocial and borderline personality disorders (C. Björkenstam, Björkenstam, Gerdin, & Ekselius, 2015; E. Björkenstam, Björkenstam, Holm, Gerdin, & Ekselius, 2015; Chesney, Goodwin, & Fazel, 2014).

Taken together, prior research suggests that self-harm may be driven in part by emotion regulation, behavioral disinhibition, and the co-occurrence of difficulties in both areas. Specifically, acceptance may serve to attenuate risk whereas negative urgency may elevate risk. In light of their effects on self-harm, these factors may be especially important in understanding disparities among SGM populations. Accordingly, the primary aim of the current study was to examine the relationships of acceptance and negative urgency with past year self-harm among university students at elevated risk for suicide. A secondary aim of the current study was to explore the extent to which these relationships were moderated by SGM status.

### **Hypotheses**

1. In a sample of university students at elevated risk for suicide, acceptance and negative urgency will be associated with past year self-harm. Specifically, acceptance and negative urgency will respectively be associated with lower and higher likelihoods of self-harm.
2. The associations between acceptance and negative urgency with past year self-harm will be stronger among SGM students than heterosexual/cisgender students.

### **Method**

## Participants

The data for this study were drawn from a multi-site randomized controlled trial of the Electronic Bridge to Mental Health Services (*eBridge*) online intervention study for university students at risk for suicide (King et al., 2015). Study sites included the University of Michigan, University of Iowa, University of Nevada at Reno, and Stanford University. The analytic sample was composed of participants recruited during Year 3, the first year in which all constructs of interest were measured (see Figure 1). Email addresses were obtained from the respective university registrars for students who were at least 18 years of age and were new students to the universities at which they are enrolled (i.e., first year undergraduate and postgraduate students, transfer students). A total of 39,385 students were invited to complete the screening survey ( $n = 28,412$  undergraduate; 72.1%). Natal sex data were available from university registrars for most students ( $n = 26,655$ ; 75.3%), among whom 14,346 (48.4%) were male and 15,309 (51.6%) were female. More than a quarter of invited students visited the *eBridge* site ( $n = 11,510$ ; 29.2%) and viewed the study consent page ( $n = 11,122$ ; 28.2%). Approximately a quarter of invited students consented ( $n = 9,812$ ; 24.9%) and completed the screening survey ( $n = 9,412$ ; 23.9%). Among students completing the screening survey, a minority ( $n = 1,320$ ; 14.0%) reported at least two suicide risk factors (described below) and were deemed eligible to complete the baseline measures. The primary goal of the intervention was to link students to mental health services. As such, students were considered eligible if they reported at least two suicide risk factors but were not currently receiving mental health services. The majority of eligible students ( $n = 794$ ; 60.7%) completed baseline measures pertinent to the study.

Among all students invited to participate ( $N = 39,385$ ), students registered as female were more likely than those registered as male ( $p < .001$ ) to visit the *eBridge* study page (44.4% vs.

29.8%), view the consent form (43.3% vs. 28.9%), and to consent to participate in the study (39.6% vs. 26.0%). Similarly, postgraduate students were more likely than undergraduate students ( $p < .001$ ) to visit the eBridge study page (37.7% vs. 26.0%), view the consent form (36.5% vs. 25.1%), and to consent to participate in the study (32.3% vs. 22.0%). Among consenting students ( $n = 9,812$ ), students registered as female were more likely than those registered as male ( $p < .01$ ) to complete the screening survey (96.6% vs. 95.5%) and to be eligible to complete the baseline measures (11.3% vs. 14.8%). They were slightly more likely ( $p = .055$ ) to complete all baseline measures (8.5% vs. 7.4%). Completion rates did not differ ( $p > .5$ ) between postgraduate and undergraduate students (95.8% vs. 96.1%). Postgraduate students were less likely than undergraduate students ( $p < .001$ ) to be eligible to complete the baseline measures (4.9% vs. 10.0%) and to complete them (4.9% vs. 9.9%).

Students completing the screening measures reported a mean (SD) age of 22.2 (4.9) years. Most students were undergraduates ( $n = 6,017$ ; 63.9%), White or Caucasian ( $n = 6,463$ ; 68.6%), and not Hispanic or Latino/a ( $n = 8,487$ ; 90.1%). Racial minority identities endorsed were African American/Black ( $n = 374$ ; 4.0%), American Indian/Alaskan Native ( $n = 40$ ; 0.4%), Asian/Asian-American or Pacific Islander ( $n = 1,903$ ; 20.2%), multiracial ( $n = 580$ ; 6.2%), or other ( $n = 58$ ; 0.6%). The majority of students completing the screening measures provided responses to items assessing current gender identity ( $n = 9,410$ ; 99.9%) and sexual orientation ( $n = 9,382$ ; 99.6%). Nearly a quarter of students ( $n = 2,166$ ; 23.0%) identified as either a sexual minority ( $n = 2,151$ ; 22.8%) or a gender minority ( $n = 164$ ; 1.7%). Most gender minority students ( $n = 148$ ; 89.2%) were sexual minorities. The distribution of identities endorsed by gender minorities was: genderqueer/gender non-conforming ( $n = 66$ ; 39.8%), multiple identities ( $n = 62$ ; 37.3%), male ( $n = 5$ ; 3.0%), female ( $n = 5$ ; 3.0%), transmasculine ( $n = 14$ ; 8.4%),

transfeminine (n = 8; 4.8%), non-binary (n = 3; 1.8%), agender/gender neutral (n = 3; 1.8%).

Participants in the final analytic sample (n = 794) were 20.8 (3.6) years of age. Most participants were undergraduates (n = 619; 78.0%), White or Caucasian (n = 545; 68.6%), not Hispanic or Latino/a (n = 692; 87.2%), exclusively heterosexual (n = 481; 60.6%), cisgender (n = 768; 96.7%), and both heterosexual and cisgender (n = 479; 60.3%). The distribution of sexual minority identities is provided in Figure 2.

## **Measures**

**Demographics.** Participants reported their age, race, and whether they are Hispanic or Latino/a. Response options for race included White or Caucasian, African American/Black, American Indian/Alaskan Native, Asian/Asian-American, Pacific Islander, and Other (free response). Students were asked to check all options that apply.

**Gender identity and natal sex.** The two-step method was used to current gender identity and natal sex (Reisner et al., 2015). Identity response options included male, female, transmale (female to male transgender), transfemale, genderqueer/gender nonconforming, or a different identity (free response). Students were asked to check all options that apply.

**Sexual orientation.** Participants were asked “Which of the following do you identify most closely with? Check all that apply.” Response options included heterosexual, mostly heterosexual (straight), mostly gay or lesbian, gay or lesbian, bisexual, pansexual, asexual, demisexual, queer, unlabeled, not sure, and other (free response).

**Alcohol abuse.** The 10-item AUDIT is used to screen for alcohol abuse (Reinert & Allen, 2007). Respondents are asked report consumption of alcohol and associated impairment in the past 2 months (e.g., frequency of heavy episodic drinking, being unable to meet role obligations due to drinking). Scores range from 0-12 with a cutoff score of 8. Cronbach’s alpha was .80.

**Depressive symptoms.** The Patient Health Questionnaire (PHQ-9) is a 9-item instrument based on DSM-IV criteria for a major depressive episode (Kroenke, Spitzer, & Williams, 2001). This instrument asks the respondent to indicate the frequency of depressive symptoms over the past two weeks on an ordinal frequency (0 = Not at all; 1 = Several days; 2 = More than half the days; 3 = Nearly every day). The first 3 items were used to screen for anhedonia, negative affect, and thoughts of self-harm over the past two weeks. Items are respectively phrased as “Little interest or pleasure in doing things,” “Feeling down, depressed, or hopeless,” and “Thoughts that you would be better off dead or of hurting yourself in some way.” The PHQ-2 was used to screen for suicide risk with a cutoff score of 3 or higher. Endorsement of any thoughts of self-harm were considered a risk factor for suicide. Cronbach’s alpha was .77.

**Suicidal behavior.** Suicidal behavior was assessed with 2 items from the National Comorbidity Survey (Kessler, Berglund, Borges, Nock, & Wang, 2005). Suicide attempt items inquire about lifetime number of attempts and past year attempts. Endorsement of a lifetime history of suicide attempts was considered a risk factor for suicide. Data for past year attempts were used in order to facilitate comparison with NSSI data (described below).

**NSSI.** An item adapted from the Youth Risk Behavior Survey assessed NSSI (Brener et al., 2004). Participants were asked to report frequently they engaged in NSSI in the past 12 months. Response options included 0, 1, 2 or 3, 4 or 5, and 6 or more times.

**Negative urgency.** The Negative Urgency subscale of the Urgency Premeditated Perseverance Sensation Seeking (UPPS) scale was used (Coskunpinar, Dir, & Cyders, 2013; Magid & Colder, 2007). Participants rated their agreement with 4 items on a 4-point Likert scale (Agree Strongly to Disagree Strongly). Items include: “When I feel rejected, I will often say things that I wish I hadn’t.” and “Sometimes I do impulsive things that I wish I hadn’t.”



Cronbach's alpha was .81.

**Acceptance.** The Acceptance and Action Questionnaire (AAQ) measures respondents' experiences of negative affect and their reactions to it (Bond et al., 2011). Responses are rated as agreement with statements on a 7-point Likert scale (1 = Never; 4 = Sometimes true; 7 = Always true). Items include "My painful experiences and memories make it hard difficult for me to live a life that I value" and "Worries get in the way of my success." Scores range from 7 to 49.

Cronbach's alpha was .87.

### **Data Analysis**

Descriptive statistics were used to test for differences in key study variables based on SGM status using SPSS Version 24. Cross-tabulations and *t* tests compared SGM and heterosexual/cisgender students on demographics, screening characteristics, and primary variables of interest.

To test the first hypothesis, I conducted a series of hierarchical logistic regressions using Mplus Version 8. Variables were entered in 4 steps: (1) main effect of acceptance; (2) main effects of acceptance and negative urgency; (3) main and interaction effects of acceptance and negative urgency; and (4) main and interaction effects of acceptance and negative urgency controlling for demographic variables. Parallel analyses were conducted for each of 3 outcomes: (1) past year suicide attempts; (2) past year NSSI; and (3) any past year self-harm (i.e., suicide attempts or NSSI).

To test the second hypotheses, the final models (i.e., containing main and interaction effects controlling for demographics) were assessed for moderation by SGM status. Wald tests of parameter equality constraints were used to conduct tests of differences by SGM. Owing to severe imbalances across sexual orientations endorsed (e.g.,  $n = 9$  queer,  $n = 89$  mostly

heterosexual, n = 25 gay/lesbian), tests were underpowered to examine heterogeneity within sexual minority students. Similarly, the low number of gender minority students (n = 26) precluded tests of within-group heterogeneity. Sexual and gender minority students were analyzed together because nearly all (n = 24) gender minorities were also sexual minorities.

## **Results**

### **Sample characteristics**

Characteristics of the sample are provided in Table 1. SGM students were more likely to be natal females. There were no between-group differences by age, undergraduate status, race, ethnicity, alcohol abuse symptoms, or depressive symptoms.

SGM students were more likely to report recent suicidal ideation, past year NSSI, at least one lifetime suicide attempt, lower AAQ scores, and UPPS scores (see Table 2). While they were more likely to report engaging in any type of self-harm in the past year, this appears to be largely driven primarily by the higher rates of NSSI compared to heterosexual/cisgender students (38.4% vs. 24.0%).

### **Acceptance, negative urgency, and self-harm**

Bivariate correlations showed that acceptance and negative urgency were associated with past year NSSI and self-harm (Table 3). However, only acceptance was associated with suicide attempts. Age, undergraduate status, and being a natal female were associated with NSSI and self-harm. Age and undergraduate status were associated with suicide attempts. Given the high correlation between age and undergraduate status, only age was used as a covariate in hierarchical logistic regressions (see Tables 4-6).

A hierarchical logistic regression predicting past year NSSI was conducted and controlled for age and natal sex (Table 4). Acceptance was negatively associated with likelihood of

engaging in NSSI in the past year, Odds Ratio (OR) = 0.95 (95% CI: -0.90, -0.01),  $p < .05$ . A 1-point increase on the acceptance scale, with values ranging from 7 to 49, was associated with a 5% decrease in likelihood of reporting NSSI in the past year. Negative urgency was not significantly associated with NSSI, OR = 0.99 (95% CI: -0.14, 0.12),  $p > .05$ . An interaction effect of acceptance with negative urgency was not associated with NSSI, OR = 1.00 (95% CI: -0.01, 0.01),  $p > .1$ . Wald tests for moderation by SGM status were not significant ( $p > .1$ ).

A hierarchical logistic regression was conducted controlling for age (Table 5). Natal sex was not significant when entered into the model and was removed. Past year suicide attempts were not associated with acceptance, OR = 1.00 (95% CI: 0.92, 1.09),  $p > .1$ , negative urgency, OR = 1.00 (95% CI: 0.91, 1.50), or an interaction term OR = 0.99 (95% CI: 0.98, 1.00),  $p > .1$ . Effects were not moderated by SGM status ( $p > .1$ ).

A final model predicting past year self-harm was conducted controlling for age and natal sex (Table 6). Acceptance was negatively associated with self-harm, OR = 0.95 (95% CI: -0.94, -0.01),  $p < .05$ . A 1-point increase on the total acceptance scale was associated with a 5% decrease in likelihood of reporting NSSI in the past year. Neither negative urgency, OR = 0.98 (95% CI: 0.83, 1.12),  $p > .1$ , nor an interaction term with acceptance, OR = 1.00 (95% CI: -0.004, 0.01),  $p > .1$ , were associated with past year self-harm. SGM status did not moderate any of these relationships ( $p > .1$ ).

## **Discussion**

The present study examined relationships among emotion regulation, behavioral disinhibition, and recent self-harm in a sample of SGM university students at elevated risk for suicide. More specifically, this study focused on the use of the emotion regulation strategy acceptance of emotional response and the negative urgency component of behavioral

disinhibition. These factors have been associated with self-harm in clinical samples and are targets of efficacious interventions but have not been examined within SGM populations (Haas et al., 2010) (Fraser et al., 2017; Hamza et al., 2015; Willoughby, Heffer, & Hamza, 2015; Wolff, Allen, Himes, Fish, & Losardo, 2014). I hypothesized that acceptance and negative urgency would, respectively, be associated with lower and higher risk for engaging in past year NSSI, suicide attempts, and any self-harm. A secondary hypothesis was that these relationships would be relatively stronger for SGM students. Findings of the study provided partial support for the first hypothesis. When controlling for age and natal sex, acceptance was significantly associated with a reduced likelihood of engaging in NSSI and any self-harm (i.e., NSSI or a suicide attempt). Negative urgency did not exhibit significant main or interaction effects with acceptance in influencing likelihood of reporting self-harm outcomes. Moreover, none of the above relationships were moderated by SGM status within this sample.

These findings are consistent with prior research indicating that use of adaptive coping strategies is associated with lower risk for engaging in self-harm, particularly NSSI (Hasking et al., 2017; Paul, Tsypes, Eidlitz, Ernhout, & Whitlock, 2015). Indeed, a primary function of NSSI is to down-regulate intense negative affect or to interrupt experiences of dissociation and depersonalization. That is, engaging in NSSI is often a consequence of difficulties in accepting emotional states. These findings are in contrast to suicidal behavior, which were not statistically significant in bivariate or multivariate analyses. These contrasting relationships likely point to differences in temporal proximity between use of emotion regulation strategies and engagement in these two different types of self-harm behaviors. These differences likely also reflect variation in the contexts and cognitive and affective states antecedent suicide attempts in comparison to NSSI. That is, emotion regulation processes may relate most strongly to NSSI because of greater

overall emotional reactivity, which could be associated with a more frequent but also more transient difficulties in emotion regulation. In contrast, suicide attempts are necessarily more severe and are more likely to be related to more protracted difficulties in managing emotions that emanate from more chronic sources of stress (e.g., relationships problems, financial issues).

The lack of relationships between negative urgency and self-harm behaviors is somewhat surprising in light of the extensive literature suggesting that some components of impulsivity may play key roles in the onset and persistence of self-harm behaviors (Beauchaine et al., 2009; Hamza et al., 2015). However, the relationship between impulsivity and self-harm has been suggested to be mediated by other factors such as tendency to engage in behaviors that increase pain tolerance and, subsequently, likelihood of self-harm (Anestis et al., 2012). Some methodological aspects of the study may also explain these results. Students can become eligible for the study through a combination of cognitive, affective, and behavioral criteria. Endorsement of recent suicide ideation, a lifetime history of suicide attempts, elevated depressive symptoms, and alcohol abuse were all used as screening criteria. Suicidal individuals in general have diverse constellations of risk factors, as is reflected in the sample. Developmental factors also contribute to the heterogeneity in the sample. Elevated risk for suicide and engagement in self-harm are equifinal outcomes that can be reached from a diverse number of developmental trajectories (Keenan, Hipwell, Stepp, & Wroblewski, 2014; Séguin et al., 2014). The analytic sample is subsequently composed of individuals at varying severity of risk, each of which may not operate primarily by the mechanism of behavioral disinhibition. Cognitive factors such as hopelessness and loneliness can profoundly elevate risk for suicide, which is a different set of mechanisms for which behavioral disinhibition is neither necessary nor sufficient to precipitate a suicide attempt (Goldston et al., 2016; Van Orden et al., 2010). In addition to suicide risk criteria, students were

eligible for the overall study only if they were not currently receiving treatment. The efficacy of interventions for suicidal individuals vary widely. Inclusion of students in treatment would have enhanced statistical power and may have yielded a more inclusive range of suicide risk.

Prior research has demonstrated higher rates of self-harm but little has examined whether and which transdiagnostic factors may function differently. Among the relationships examined here, none were moderated by SGM status. That is, self-harm has a different prevalence but not necessarily a different process among SGM populations. This study focused on factors that are not specific to SGM populations and thus only provides information regarding generalized processes rather than group-specific mechanisms. These results focused on domains of functioning that change in parallel with group-specific factors. With respect to emotion regulation, the type and chronicity of stressors that generate negative affect can be unique to SGM populations (e.g., discrimination, harassment). In the case of an intervention such as individual cognitive behavior therapy, the content and context of emotions will differ but may still be addressed through different skills that facilitate greater distress tolerance and acceptance of negative affect. Further, group-specific mechanisms such as internalized homo- and transphobia were not measured here but can influence self-harm risk via influences on internalizing symptoms and suicide ideation and are important avenues for future research (Austin & Goodman, 2017; Hendricks & Testa, 2012).

There are several methodological strengths of this study. First, the focus on transdiagnostic factors that may influence self-harm is novel. The majority of research on SGM populations, particularly university students, has focused on describing the higher rates of self-harm in different populations and the magnitude of its associations with established self-harm correlates such as victimization, depressive symptoms, and alcohol/substance abuse (Haas et al.,

2011; Miranda-Mendizábal et al., 2017). As a result, there is relatively little research concerning factors that cut across diagnostic categories and reflect domains of functioning that can be highly impacted by minority stress (Hendricks & Testa, 2012; Singer, Herring, Littleton, & Rock, 2011). Second, this study followed best practice guidelines for assessing sexual orientation, gender identity/expression, and natal sex (Reisner et al., 2015). Most studies find that at least half of gender minorities report self-injurious thoughts and behaviors (Marshall, Claes, Bouman, Witcomb, & Arcelus, 2016; McNeil et al., 2017). Combined with the high rates of discrimination and violence that occur in educational settings following disclosure of gender minority status, inclusive assessment of gender identity/expression is crucial to identifying this population to characterize the nature of risk for self-harm (Austin & Goodman, 2017; dickey, Hendricks, & Bockting, 2016; Stotzer, 2009). In addition to the two-step procedure recommended for obtaining self-reported gender identity/expression and natal sex, this study obtained data from the university registrars. Use of multiple data sources bolstered confidence that gender minority students were represented within the study. Third, this study used well-established measures of self-harm. The functions of suicide attempts and NSSI are distinct, which makes the use of explicitly assessing both informative to accurately capturing participants' risk for suicide.

The strengths of this study notwithstanding, its findings should be interpreted in light of its limitations, chief of which is the cross-sectional design. Emotion regulation strategies and behavioral disinhibition are both modifiable risk factors. A cross-sectional design precludes inferences about the direction and temporality of effects. That is, the particular pattern of an individual's affective and behavioral functioning could be both a cause and a consequence of self-harm behaviors. For instance, NSSI is more prevalent among individuals predisposed to marked affective lability but often exhibits a relatively time-limited course (Barrocas, Giletta,

Hankin, Prinstein, & Abela, 2015; Barrocas et al., 2015). On the other hand, experimental use of NSSI as an emotion regulation strategy could disincentivize use of other more adaptive strategies that are more effortful. Through opponent processes that reinforce the regulatory functions of NSSI and create habituation to pain, individuals engaging in NSSI may develop a lower capacity to accept their emotional responses. An additional limitation is that this study was insufficiently to explore heterogeneity of risk within SGM students. For instance, there were 26 gender minority students and 25 students who identified as exclusively gay/lesbian. Moreover, the majority of gender minorities in the screening sample were also sexual minorities (89.2%). This distribution of sexual orientations is comparable to other studies but limited the ability to explore differences between gender minorities who were and who were not also sexual minorities.

Results from this study highlight the role of acceptance as an emotion regulation strategy and suggest that addressing the use of avoidant coping behaviors may be a promising intervention target for individuals at risk for suicide. Longitudinal research would be well positioned to examine the relationships explored within this study with greater granularity. Naturalistic cohort studies could address some limitations of the present study by incorporating repeated measurements of each construct, thus providing a means of ascertaining trajectories of these domains of functioning and their relations to self-harm. Intervention research is especially poised to facilitate a lasting impact in addressing the disparities experienced by SGM populations. There were no differences found within the cross-sectional data analyzed here, which may suggest that different prevalence rates may not indicate different processes. If intent-to-treat and actually-treated analyses do not find group differences in outcomes, that may suggest that the intervention has comparable efficacy across SGM status. Such findings would aid in building a body of research informing which interventions are promising for SGM populations.



**Table 1.** Sample characteristics.

Variable	Sample (N = 794)	Heterosexual and cisgender (n = 479)	Sexual and gender minority (n = 315)	<i>p</i>
Age in years, Mean (SD)	20.8 (3.6)	20.8 (3.6)	20.8 (3.7)	.86
Natal female (%)	65.1	58.2	75.6	<.001
Undergraduate (%)	78.0	78.9	76.5	.42
Race (%)				.29
White or Caucasian	68.6	70.8	65.4	
African American/Black	5.0	4.2	6.3	
American Indian/Alaskan Native	1.0	1.0	1.0	
Asian American or Pacific Islander	15.7	16.1	15.2	
Multiracial	8.8	7.3	11.1	
Other	0.8	0.6	1.0	
Hispanic or Latino/a (%)	12.8	11.7	14.6	.23
AUDIT score, Mean (SD)	5.8 (5.1)	6.0 (5.0)	5.4 (5.3)	.11
Positive screen (AUDIT ≥ 8; %)	38.9	42.0	34.3	.03
PHQ-2 score, Mean (SD)	3.4 (1.6)	3.3 (1.6)	3.5 (1.6)	.13
Positive screen (PHQ-2 ≥ 3; %)	73.4	74.9	71.1	.23

Notes. AUDIT = Alcohol Use Disorders Identification Test; PHQ-2 = Patient Health Questionnaire-2. *p* values are given for tests of differences across groups (*t* tests for continuous variables, chi-square for categorical variables).

**Table 2.** Analytic variables.

Variable	Sample (N = 794)	Heterosexual and cisgender (n = 479)	Sexual and gender minority (n = 315)	<i>p</i>
Suicidal ideation (past 2 weeks)	55.3	51.4	61.3	<.01
Past year self-harm (%)	30.7	24.8	39.7	<.001
NSSI (%)	29.7	24.0	38.4	<.001
Suicide attempt (%)	3.5	3.1	4.1	.46
Lifetime suicide attempts (%)				<.01
None	75.3	80.0	68.3	
One	12.2	10.4	14.9	
Multiple	12.5	16.8	9.6	
AAQ score, Mean (SD)	19.9 (8.5)	20.6 (9.1)	18.9 (7.5)	<.01
UPPS score, Mean (SD)	5.8 (3.1)	5.6 (3.0)	6.1 (3.1)	.01

*Note:* AAQ = Acceptance and Action Questionnaire; UPPS = UPPS Impulsive Behavior Scale (Negative Urgency subscale). *p* values are given for tests of differences across groups (t tests for continuous variables, chi-square for categorical variables).

**Table 3.** Correlation matrix for key study variables.

	1	2	3	4	5	6	7	8	9	10
1. Age	-									
2. Undergraduate	.64**	-								
3. Natal female	-.13**	-.08*	-							
4. Race	.00	.03	.05	-						
5. Hispanic or Latino/a	-.04	-.03	.01	-.01	-					
6. AAQ	.09**	.08*	-.10**	-.06	.05	-				
7. UPPS	-.08*	-.07*	.08*	.05	-.00	-.34**	-			
8. Suicide attempt	-.10**	-.09*	.07	.05	-.01	-.10**	.03	-		
9. NSSI	-.19**	-.16**	.19**	.03	.01	-.18**	.10**	.17**	-	
10. Self-harm	-.20**	-.17**	.20**	.04	.01	-.18**	.10**	.29**	.98**	-

*Note:* AAQ = Acceptance and Action Questionnaire; UPPS = UPPS Impulsive Behavior Scale (Negative Urgency subscale); NSSI = Non-suicidal self-injury. Suicide attempt, NSSI, and self-harm are reported for the past year.

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

**Table 4.** Hierarchical Logistic Regression Predicting Non-Suicidal Self-Injury

Variable	<b>Step 1</b>		<b>Step 2</b>		Wald	<i>p</i>
	B (SE)	<i>p</i>	B (SE)	<i>p</i>		
Age in years	-.14 (.03)	<.001	-.14 (.03)	<.001	.97	.32
Natal sex (female = 1)	.88 (.19)	<.001	.83 (.19)	<.001	.79	.37
AAQ	-	-	-.05 (.02)	.02	.05	.49
UPPS	-	-	-.01 (.07)	.87	.002	.97
AAQ x UPPS interaction	-	-	.002 (.003)	.62	.22	.63

*Note:* AAQ = Acceptance and Action Questionnaire; UPPS = UPPS Impulsive Behavior Scale (Negative Urgency subscale). Moderation by sexual and gender minority status was assessed using the Wald test for equality of parameters across groups.

**Table 5.** Hierarchical Logistic Regression Predicting Suicide Attempts

Variable	<b>Step 1</b>		<b>Step 2</b>		Wald	<i>p</i>
	B (SE)	<i>p</i>	B (SE)	<i>p</i>		
Age in years	-.35 (.10)	<.001	-.15 (.03)	<.001	.54	.46
AAQ	-	-	-.05 (.02)	.01	.25	.62
UPPS	-	-	-.01 (.06)	.94	.53	.47
AAQ x UPPS interaction	-	-	.002 (.003)	.61	1.26	.26

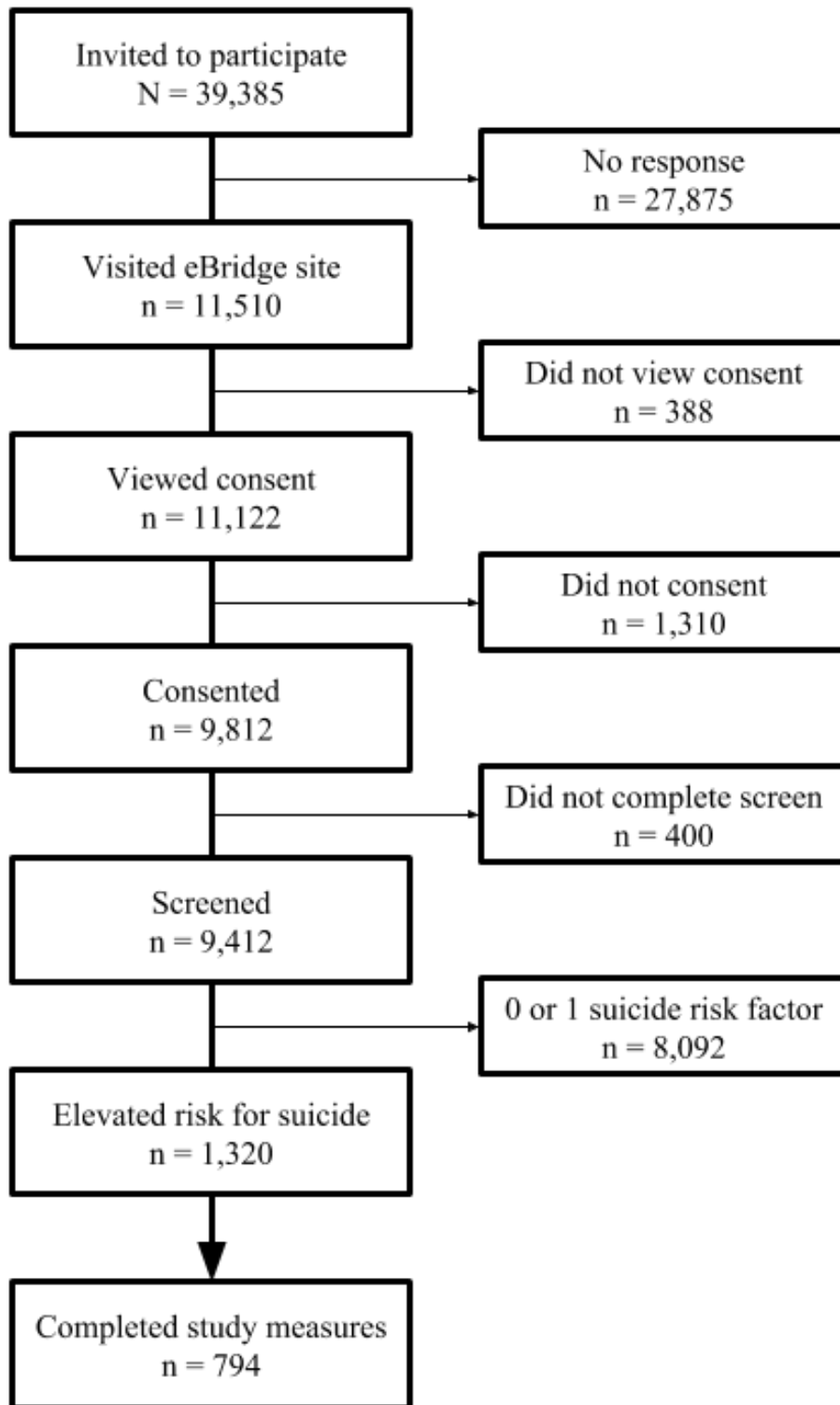
*Note:* AAQ = Acceptance and Action Questionnaire; UPPS = UPPS Impulsive Behavior Scale (Negative Urgency subscale). Moderation by sexual and gender minority status was assessed using the Wald test for equality of parameters across groups.

**Table 6.** Hierarchical Logistic Regression Predicting Self-Harm

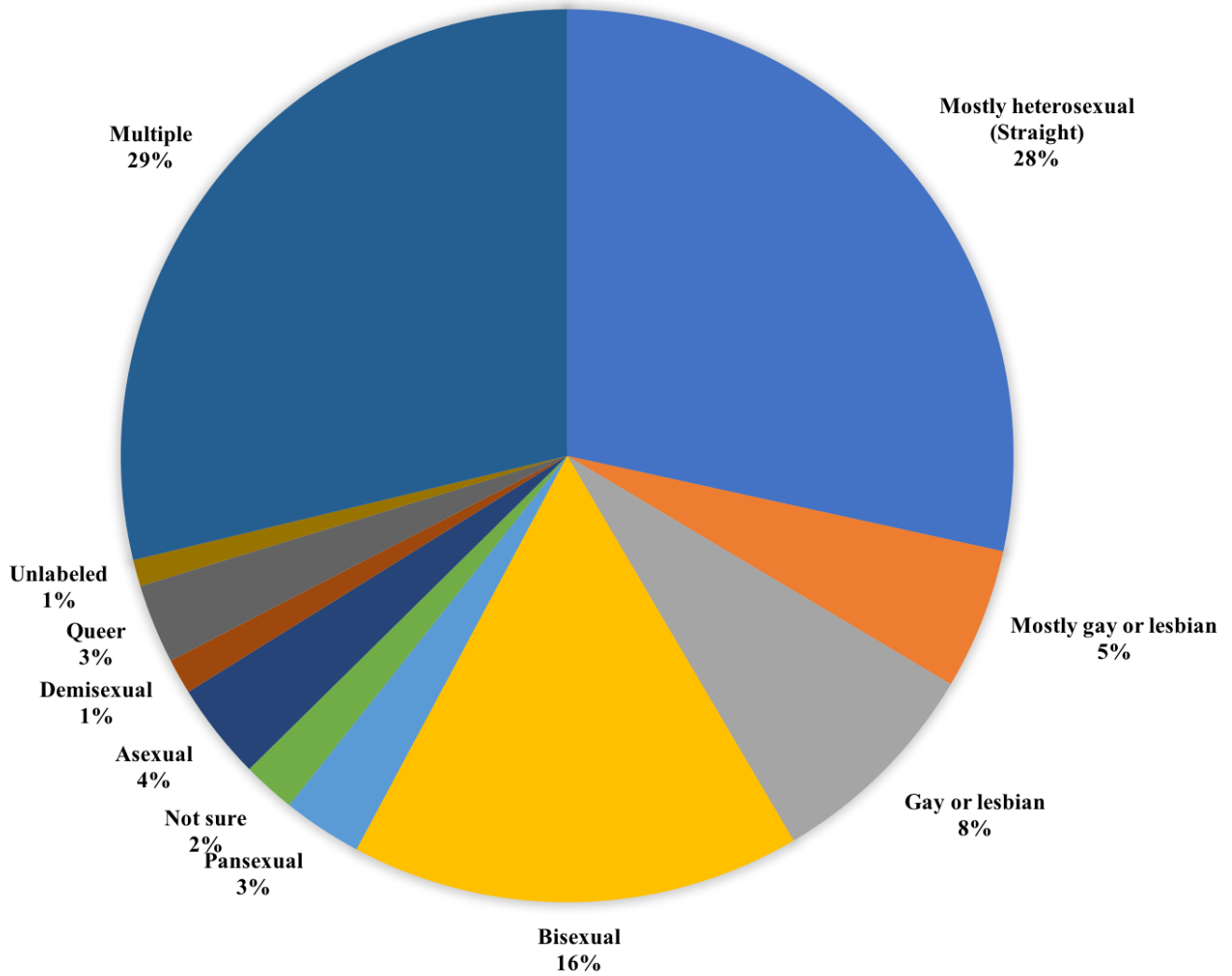
Variable	<u>Step 1</u>		<u>Step 2</u>		Wald	<i>p</i>
	B (SE)	<i>p</i>	B (SE)	<i>p</i>		
Age in years	-.17 (.03)	<.001	-.15 (.03)	<.001	.57	.45
Natal sex (female = 1)	.88 (.18)	<.001	.83 (.19)	<.001	.67	.43
AAQ	-	-	-.05 (.02)	.02	.13	.72
UPPS	-	-	-.02 (.07)	.80	.04	.84
AAQ x UPPS interaction	-	-	.002 (.003)	.67	.03	.43

*Note:* AAQ = Acceptance and Action Questionnaire; UPPS = UPPS Impulsive Behavior Scale (Negative Urgency subscale). Moderation by sexual and gender minority status was assessed using the Wald test for equality of parameters across groups.

**Figure 1.** Subject flow diagram.



**Figure 2.** Distribution of sexual orientations endorsed by sexual minorities (n = 313) within the analytic sample.





### Chapter 3

#### **Study 2: A Longitudinal Mediation Model of Self-Harm in Psychiatric Emergency Patients**

Study 1 findings suggest that emotion regulation, particularly the use of the cognitive strategy of accepting one's emotional response, may be at least as important as behavioral factors such as impulsivity, if not more so. Given the range of cognitive strategies of emotion regulation associated with psychopathology, multiple strategies should be compared in their relative strengths in predicting self-harm behaviors. Emotion regulation strategies vary in the contexts in which they would be utilized, the types of psychopathology with which they are associated, and in the magnitude of influence on mental health outcomes (Sheppes et al., 2015; Webb, Miles, & Sheeran, 2012). A key limitation of Study 1 is the cross-sectional design, which precludes inferences about how acceptance and negative urgency may influence self-harm over time. In Study 2, I examine multiple forms of emotion regulation as potential mechanisms linking recent victimization with future self-harm in a high-risk sample of adolescents and young adults. This study forms a novel contribution to the literature as there are no published empirical studies that have conducted a longitudinal test of Minority Stress Theory in relation to self-harm.

Despite evidence of relatively higher rates of self-harm among sexual and gender minority (SGM) youth, gaps remain in our understanding of how to predict and prevent suicide in this population for several reasons (Haas et al., 2010). Beyond the low incidence of suicidal behavior, identifying predictors is difficult because most risk indicators are overly sensitive due to their generality. Use of many of these indicators, even in combination, often results in many false positives in attempts to identify youth at high risk. Furthermore, few studies of suicidal

behavior among SGM youth have included comprehensive, validated measures of NSSI and suicidal behavior (Miranda-Mendizábal et al., 2017). Finally, there are few studies that have used longitudinal designs to identify prospective predictors of suicidal behavior in SGM populations that may be targeted in prevention efforts.

Several cohort studies have assessed SGM status (e.g., Add Health, the Dunedin Multidisciplinary Health, the Growing Up Today Study, and the National Survey of Midlife Development). Among those studies that also examined suicide attempts, SGM status was used as a covariate rather than a grouping variable. That is, these studies examined whether SGM status was a predictor of future suicide attempts rather than whether other predictors were moderated by SGM status. It is well established that SGM populations experience substantially higher rates of risk markers along the causal chain from stressors to suicide. These risk markers may have poor specificity in distinguishing youth who will and will not go on to attempt suicide. For instance, bullying may be an overly inclusive marker of risk because more than half of SGM youth have experienced peer harassment (Katz-Wise & Hyde, 2012). Specific components may be more salient for SGM youth than heterosexual youth (e.g., whether teasing is related to their identity vs. height, threats of an unwanted SGM identity disclosure). As such, moderation of predictors may point to unique intervention targets. On the other hand, if some risk factors exhibit comparable predictive strength regardless of minority status, this would bolster confidence in using extant evidence-based interventions with little adaptation (e.g., cognitive behavior therapy for insomnia). In either case, whether differences exist across SGM status has implications for development and intervention and is an important direction for future research.

While many cohort studies have included some assessment of SGM status, only cohort study to date has prospectively examined self-harm among SGM youth (Liu & Mustanski, 2012;

Mustanski & Liu, 2013). Briefly, Project Q2 recruited a community sample of 246 SGM youth, ages 16 to 20 years (mean [SD] = 18.8 [1.3] years; 33.3% below age 18 years). Longitudinal predictors of NSSI included lifetime suicide attempt history, sensation-seeking, female gender, childhood gender nonconformity, hopelessness, and minority stress. Lifetime history of a suicide attempt was the only significant longitudinal predictor of suicide attempts after controlling for depressive symptoms and hopelessness.

Each of the aforementioned studies had relatively small incidence of suicide attempts due to low to moderate risk of the samples, a common challenge in longitudinal research on suicide attempts. As treatment history is a strong predictor, targeted recruitment of a high-risk sample could bolster statistical power. Emergency department (ED) visits are conducive to recruiting high-risk samples, and visits for suicide-related reasons have been steadily increasing for the past decade (Asarnow & Miranda, 2014; Babeva, Hughes, & Asarnow, 2016; McClatchey, Murray, Rowat, & Chouliara, 2017). Individuals receiving psychiatric emergency services (PES) and psychiatric inpatient hospitalization services are among the groups with the highest risk for future suicide attempts, suicides, and all-cause mortality (E. Björkenstam et al., 2015; Chesney et al., 2014; Franklin et al., 2017) (Franklin et al., 2017; Gerson et al., 2017). There is also emerging evidence that sexual minorities comprise up to a fifth of adult PES patients (Currier et al., 2015). However, to our knowledge there have not been PES studies of adolescents.

Minority Stress Theory suggests that emotion regulation strategies may link victimization experiences to SGM mental health disparities (Hatzenbuehler, 2009; Meyer, 2003). While this hypothesis has not been tested in relation to self-harm specifically there is some evidence suggesting that emotion regulation is associated with stress reactivity and internalizing

symptoms within SGM adolescents and young adults over time (Hatzenbuehler et al., 2008; Timmins, Rimes, & Rahman, 2017; Zoccola et al., 2017). In particular, the use of the strategies of rumination, reappraisal, and suppression appear to influence internalizing symptoms over time. These strategies are important to examine together because they also correspond to distinct potential turning points in the process of emotion regulation. The Process Model of Emotion Regulation provides a heuristic for understanding emotion regulation as a series of events with several potential turning points for altering affective experiences (Sheppes et al., 2015). The proposed temporal sequence of events is: (1) a stimulus triggers an affective response, (2) attention is directed to the stimulus, (3) an appraisal is made to interpret the meaning of the stimuli and one's affective response, and (4) engagement in response modulation. Rumination, cognitive reappraisal, and expressive suppression are strategies that could be implemented in steps 2, 3, and 4 respectively. Thus, examining these factors together provides a more granular consideration of which components of affective processes are most salient. Within the context of a high-risk sample, many participants have some history of affective lability and engagement in maladaptive efforts to regulate affect. As such, examining multiple strategies facilitates a more specific parsing of the unique effects of each in relation to self-harm by simultaneously examining multiple steps in the process of emotion regulation.

The current study utilized a purposive sample of SGM and heterosexual/cisgender youth who received psychiatric emergency services and were contacted approximately 4 months following discharge from the hospital. The specific aims of the present study were (1) to characterize histories of self-harm and crisis service use, (2) to determine which types of emotion regulation prospectively mediate the relationship between recent victimization, internalizing symptoms, and post-discharge self-harm, and (3) to test for moderation by SGM status.

## **Hypotheses**

1. SGM youth, ages 13 to 25 years, recruited from the University of Michigan Psychiatric Emergency Services, will report more extensive histories of self-harm and crisis service use than heterosexual/cisgender youth.
2. The effects of victimization and internalizing symptoms on future self-harm will be mediated by suppression, rumination, and, to a lesser extent, reappraisal.
3. If mediated relationships are found, these indirect effects will be stronger among SGM youth relative to heterosexual/cisgender youth.

## **Method**

### **Sample**

Participants were 285 adolescents and young adults ages 13 to 25 years (mean [SD] = 18.0 [3.5]) who presented for psychiatric emergency services at a large Midwestern university hospital. More than half of participants (57.5%) were ages 13 to 17 years. The sample was 42.1% male, 57.9% female, and 2.5% transgender. A significant proportion of participants (41.8%) endorsed SGM status. Most participants were non-Hispanic Caucasian (73.3%), had private insurance (77.9%), and presented to the ED due to a concern about suicidal thoughts or behaviors (70.0%). Prior to the index ED visit, 35.1% reported past ED visits for a mental health reason and 36.1% reported past psychiatric hospitalization.

### **Procedure**

#### **Recruitment**

Participants were recruited from among consecutive admissions during afternoon and evening shifts (2 pm to 10 pm) between June 2014 and January 2015. There were approximately 4-5 shifts per week from Sunday to Thursday. These time frames for recruitment were selected

upon advisement from ED staff to optimize recruitment efforts. All patients with mental health chief complaints were routed for specialized psychiatric ED services. Research team members approached patients who ED staff believed were capable of consenting. Exclusion criteria included cognitive impairment, alcohol/substance intoxication, mania, psychosis, and agitation. Among eligible individuals, 79.4% provided informed written assent or consent to participate in this IRB-approved study. The parents of adolescents also provided written informed consent. Participants were remunerated \$20 for baseline assessments and \$25 for follow-up assessments.

### **Outcome assessment**

Telephone follow-up assessments were conducted approximately 4 months after the initial visit ( $M [SD] = 112.8 [29.9]$  days). This time period was selected as risk is most pronounced within the first months after leaving the hospital. Interviews were conducted by five doctoral students in clinical psychology. All interviewers had experience in risk management in the context of prior clinical research studies. Licensed faculty in the Department of Psychiatry at the University of Michigan provided training, on-call consultation, and weekly reviews of risk management procedures for all interviews.

Comprehensive risk management procedures were implemented for all follow-up interviews. For adolescent participants, parents/legal guardians were contacted before interviews were conducted. In cases when an adult was not physically present with the youth, interviews were only conducted when the interviewer could obtain confirmation that an adult would be available if safety concerns arose during the interview. When a participant was deemed to be at high-risk, the designated on-call clinician was paged for a consultation. High risk criteria were: (1) recent active suicidal ideation on the Columbia-Suicide Severity Rating Scale defined as endorsing a past week ideation score of 3 or higher, indicating suicide ideation with

consideration of methods, intent, and/or plans; (2) an actual, aborted, or interrupted suicide attempt in the past week; (3) a verbal statement of clear suicidal intent or a plan to attempt suicide; and (4) clinician judgment. Consultations focused on the formation and execution of an action plan and included a discussion of the participant's current mental status, risk and protective factors, availability of parents and other family members to assist in maintaining safety, and whether a recommendation would be made to visit PES.

Participants interviewed by phone (226; 79.3%) did not differ from other participants on key sociodemographic or clinical factors (i.e., age, natal sex, race/ethnicity, insurance status, history of suicide attempts and NSSI, severity of suicide ideation). Medical chart reviews were also conducted 4 months after the initial visit for all participants (N=285), which enabled us to obtain supplemental follow-up data on those who returned to the recruitment ED/hospital during this period of time.

## **Measures**

### **Suicidal ideation and self-harm behaviors**

The Columbia-Suicide Severity Rating Scale (C-SSRS), a semi-structured interview, assesses a range of suicidal and non-suicidal thoughts and behaviors (Posner et al., 2011). The C-SSRS is administered to all patients by ED staff as part of standard clinical practice. Past week suicide ideation severity and histories of self-harm behaviors were obtained via medical record review at baseline. Suicide ideation severity is rated on a 1-5 scale: wish to be dead, nonspecific suicide ideation, suicidal ideation with considerations of method, suicide ideation and intent, and suicide ideation with a specific plan. Self-harm behaviors assessed were NSSI, suicide attempts, and other suicidal behavior (aborted and interrupted suicide attempts, preparation for attempts).

The same behaviors were assessed using the C-SSRS by doctoral students in clinical psychology, supervised by licensed clinical psychology faculty.

### **Baseline measures**

*Sexual orientation.* Participants were asked “Which of the following do you identify most closely with? Check all that apply.” Response options included heterosexual, mostly heterosexual (straight), mostly gay or lesbian, gay or lesbian, bisexual, pansexual, asexual, demisexual, queer, unlabeled, not sure, and other (free response). They were also given two items adapted from the Youth Risk Behavior Survey (Brener et al., 2004). They were asked “To whom have you had a romantic attraction” and “With whom have you had sexual contact?” Response options include male, female, both, or neither.

NSSI. Severity and chronicity of NSSI was assessed using a brief self-report form for NSSI adapted from the Self-Injurious Thoughts and Behaviors Interview (Matthew K. Nock, Holmberg, Photos, & Michel, 2007). Participants reported number of lifetime and past month episodes, methods used, and age of onset of the first episode.

*Internalizing symptoms.* The Patient Health Questionnaire-4 is a 4-item measure used to assess symptoms of depression and anxiety in the last two weeks (Löwe et al., 2010). Frequency of symptoms are rated on a scale ranging from “not at all” to “nearly every day”.

*Emotion regulation.* The Emotion Regulation Questionnaire assessed suppression and reappraisal using 10 items (Gross & John, 2003). Participants were asked to rate their agreement with statements on a 7-point scale (“Strongly Disagree” to “Strongly Agree”). Items included “I control my emotions by changing the way I think about the situation I’m in.”

*Rumination.* The 10-item version of the Ruminative Response Scale assessed brooding and reflecting (Treyner, Gonzalez, & Nolen-Hoeksema, 2003). Participants were asked to report



the frequency of their use of emotion regulation strategies on a 4-point scale (“Almost Never” to “Almost Always”). Items included, “Think ‘why can’t I handle things better?’” (brooding) and “Analyze recent events to try to understand why you are depressed” (reflection).

*Interpersonal victimization.* Recent victimization was assessed using five items from the 18-item Peer Experiences Questionnaire (Prinstein, Boergers, & Vernberg, 2001). The included items assessed the frequency of recent experiences of overt and relational aggression. The time frame for items assessed is the past four months.

*Baseline Medical Chart Review.* Electronic medical records were reviewed to obtain sociodemographics and clinical information from previous ED visits.

## **Data Analysis**

Cross-tabulations and *t* tests compared SGM and heterosexual/cisgender youth on baseline sociodemographics, histories of self-harm, and crisis service utilization.

Structural equation modeling (SEM) was used to estimate mediation models. First, confirmatory factor analysis was used to construct latent variables of interest. Separate factors were created to represent rumination, suppression, and reappraisal using items from each scale. Each model was tested for invariance across SGM status. Establishing invariance permits inferences that are limited to the effects estimated in the model rather than measurement issues. For instance, if the grouping of subscales differed by SGM status or certain items were not reliable across groups then between-group effects in the SEM would be difficult to disentangle from artifacts of between-group differences in scale reliability. Three standard model fit indices will be used to determine quality of models: Root Mean Square Error of Approximation (RMSEA), Tucker-Lewis Index, and Comparative Fit Index (CFI). Models with RMSEA below 0.1 and TLI and CFI values above 0.95 indicate good model fit.

Second, SEM was used to examine the relationships between victimization, internalizing symptoms, and self-harm. Victimization predicted each emotion regulation strategy, each of which in turn predicted internalizing symptoms and self-harm. Additionally, a mediating effect was included in which internalizing symptoms predicted self-harm. Parallel models were fit for each of 3 outcomes: NSSI, suicidal behavior, and any self-harm. To conserve power, negative binomial distributions were used to model outcomes continuously. In sensitivity analyses, zero-inflated negative binomial distributions were estimated. When comparing models with different distributions, model fit indexed by the Bayesian Information Criterion (BIC) reductions by more than 100 indicate improved model fit. When comparing negative binomial and zero-inflated negative binomial distributions, BIC values were reduced, respectively, by 2 and 23 for NSSI and suicidal behavior. The self-harm model BIC value was reduced by 285. In all instances, the overall results of the models were the same with little to no differences in parameter estimates. For the self-harm model the only significant variables in the zero-portion of the model predicting no attempt were lifetime histories of NSSI and suicide attempts. There was insufficient evidence to indicate any incremental contributions of the more complex modeling procedures.

Third, the models assessed for potential moderation by SGM status. Using Wald tests for equality, parameters of the models were constrained to be equal across groups. Results of the Wald tests indicate whether the specified parameters differ significantly by SGM status.

*Sample size considerations.* SEM requires substantial statistical power to estimate the large number of parameters in the model, to detect decreases in the magnitude of some direct effects relationships after mediators are added to the model, to yield stable estimates of indirect (i.e., mediated) effects, and to differentiate between nested models. In a Monte Carlo simulation study, the changes in statistical power and minimum sample size requirements were evaluated

across several conditions in a mediation model with 3 latent variables, a design similar to this study (Wolf, Harrington, Clark, & Miller, 2013). Results of the simulation indicated that a minimum sample size of 180 subjects was required to estimate unstandardized direct effects of .40 with 0.8 power and to estimate unstandardized indirect effects of size .16. With these simulations results in mind, the sample for the longitudinal SEM analyses (n = 226) will provide sufficient power to detect effects of that size.

## Results

### **Aim 1: To characterize histories of self-harm, crisis service use, and self-report measures of risk and protective factors.**

Baseline characteristics of the sample are detailed in Table 7. A substantial proportion (41.7%) of the sample reported SGM status (see Figure 3). SGM participants were similar to heterosexual/cisgender participants on most sociodemographic characteristics and aspects of self-harm. Among all participants (N=285) the majority reported suicide ideation within the past week (79.3%) and a lifetime history of any self-harm (76.1%). Specifically, 67.7% reported NSSI; 35.8% reported actual suicide attempts; and 31.6% reported other suicidal behaviors (i.e., interrupted attempts, aborted attempts, and preparatory behavior). Participants endorsing NSSI (n=193) reported a mean (SD) age of onset of 13.3 (3.1) years. Almost half (46.6%) also reported a suicide attempt. In most cases (96.7%) NSSI preceded the first suicide attempt by an average of 3.3 (3.2) years. SGM participants reported higher prevalence of lifetime history of any NSSI, multiple lifetime episodes and methods, and to have a slower speed of transition from NSSI to suicide attempt (4.0 [3.3] years vs. 2.6 [2.9] years).

SGM participants were more likely than heterosexual/cisgender participants to have public insurance, prior ED visits, and prior psychiatric hospitalizations. They also endorsed

higher scores on internalizing symptoms and reflecting but were less likely to engage in suppression. These group differences were statistically significant but most effect sizes were small to medium. Effect sizes were medium for lifetime number of self-injury methods ( $d=.51$ ) and speed of transition from NSSI to suicide attempts ( $d=.45$ ).

**Aims 2-3: To examine the potential mediating role of emotion regulation in the relationships between victimization, internalizing symptoms, and self-harm, and to assess for potential moderation by SGM status.**

At follow-up, 32.7% ( $n = 74$ ) of the sample reported engaging in NSSI, 8.0% ( $n = 18$ ) made at least one suicide attempt, 16.4% ( $n = 37$ ) engaged in any suicidal behavior, and 38.5% ( $n = 87$ ) reported any self-harm. SGM youth were more likely to engage in self-harm ( $n = 50$ ; 51.5%) than heterosexual/cisgender youth ( $n = 37$ ; 28.7%),  $\chi^2 = 12.23$  (1,  $N = 226$ ),  $p < .001$ . SGM youth reported similar rates of suicide attempts ( $n = 9$ ; 9.3%) as heterosexual/cisgender youth ( $n = 9$ ; 7.0%),  $\chi^2 = 0.40$  (1,  $N = 226$ ),  $p > .1$ ). Suicidal behavior rates were somewhat higher among SGM youth ( $n = 21$ ; 21.6%) than heterosexual/cisgender youth ( $n = 16$ ; 12.4%),  $\chi^2 = 3.46$  (1,  $N = 226$ ),  $p = .06$ . SGM youth were more likely to engage in NSSI ( $n = 43$ ; 44.3%) than heterosexual/cisgender youth ( $n = 31$ ; 24.0%),  $\chi^2 = 10.36$  (1,  $N = 226$ ),  $p = .001$ .

Measurement models for rumination, suppression, and reappraisal were estimated and had significant factor loadings for all items ( $p < .001$ ). Indices of model fit suggested that the factors appropriately reflected the data: rumination, RMSEA = .07, CFI = .94, and TLI = .92; suppression, RMSEA = .08, CFI = .99, TLI = .97; reappraisal, RMSEA = .06, CFI = .99, TLI = .98. All models demonstrated invariance for SGM and heterosexual/cisgender participants. When constraining model structure and factor loadings to be equivalent across groups there was not significant decrease in model fit as evidenced by Chi-square difference testing: rumination,

$\chi^2 = 9.47$  (9, N = 226),  $p = .40$ ); suppression,  $\chi^2 = 4.17$  (3, N = 226),  $p = .23$ ); reappraisal,  $\chi^2 = 12.21$  (9, N = 226),  $p = .06$ ).

Structural equation models were estimated to test longitudinal relationships between victimization in the past 4 months, current emotion strategy use, and post-discharge internalizing symptoms and self-harm. All models controlled for baseline internalizing symptoms, lifetime history of suicide attempt, and lifetime history of NSSI. Rumination, suppression, and reappraisal were entered into models simultaneously. Figures 3-6 display the final models for suicidal behavior, NSSI, and self-harm respectively.

*Suicidal behavior.* In the final model, internalizing symptoms were associated with the number of future suicide attempts during the 4-month follow-up period ( $\beta = .66, p < .01$ ). Victimization was associated with rumination ( $\beta = .18, p < .01$ ) and exerted an indirect effect on suicidal behavior via increases in rumination and internalizing symptoms ( $\beta = .02, p = .08$ ). Rumination was associated with internalizing symptoms ( $\beta = .16, p < .05$ ) and indirectly with suicidal behavior via increases in internalizing symptoms ( $\beta = .08, p < .05$ ). Reappraisal was negatively associated with future internalizing symptoms ( $\beta = -.15, p < .01$ ). There was a trend for an effect of negative association of reappraisal on suicide attempts ( $\beta = -.14, p = .07$ ) and for an indirect effect via reductions in internalizing symptoms ( $\beta = -.07, p = .09$ ).

These effects differed for heterosexual/cisgender and cisgender youth (see Figure 4 for main effects). All direct and indirect effects described above were significant for heterosexual/cisgender youth ( $p < .05$ ). There was a small a main effect of internalizing symptoms on suicidal behavior for SGM youth ( $\beta = .47, p = .08$ ). This effect was stronger for heterosexual/cisgender youth ( $\beta = .82, p < .001$ ) and was moderated by group (Wald = 4.69,  $p$

< .05). There were no other main effects or indirect effects for SGM youth (see Table 9 for indirect effects by group).

*NSSI.* Internalizing symptoms were positively associated with the number of NSSI episodes during the follow-up period ( $\beta = .72, p < .001$ ). Victimization was associated with rumination ( $\beta = .20, p < .01$ ) and exerted a small indirect effect on NSSI via increases in rumination and internalizing symptoms ( $\beta = .01, p = .07$ ). Rumination was positively associated with future internalizing symptoms ( $\beta = .18, p < .05$ ) and indirectly with NSSI via internalizing symptoms ( $\beta = .06, p < .05$ ). Reappraisal was negatively associated with internalizing symptoms ( $\beta = -.16, p = .06$ ). There was a direct effect on NSSI ( $\beta = -.47, p < .01$ ) and a small indirect effect through negative associations with internalizing symptoms ( $\beta = .01, p = .07$ ).

These effects differed for heterosexual/cisgender and cisgender youth (see Figure 5 for main effects). With two exceptions, the direct and indirect effects described above were present for heterosexual/cisgender youth but not SGM youth. There was a direct effect of reappraisal on NSSI for SGM youth ( $\beta = -.47, p < .01$ ) but not heterosexual/cisgender youth ( $\beta = -.28, p > .10$ ). Internalizing symptoms were associated with NSSI for both heterosexual/cisgender youth ( $\beta = .85, p < .01$ ) and SGM youth ( $\beta = .60, p < .001$ ). Wald tests did not indicate that either of these effects were moderated by SGM status (Wald  $< .3, p > .5$ ). There were no mediated effects for SGM youth.

*Self-harm.* Internalizing symptoms were associated with the number of self-harm episodes during the follow-up period ( $\beta = .76, p < .001$ ). Victimization had direct effects on rumination ( $\beta = .20, p < .01$ ) and indirect effects on self-harm that were mediated by rumination and internalizing symptoms ( $\beta = .01, p = .07$ ). Rumination predicted internalizing symptoms ( $\beta = .18, p < .05$ ) and exerted indirect effects on self-harm through internalizing symptoms ( $\beta = .36,$

$p < .05$ ). Reappraisal had modest negative associations with internalizing symptoms ( $\beta = -.16, p = .06$ ) and with self-harm through internalizing symptoms ( $\beta = -.06, p = .06$ ).

Similar to the results of the NSSI models, effects differed for heterosexual/cisgender and cisgender youth (see Figure 6 for main effects). The direct and indirect effects described above were present for heterosexual/cisgender youth but not SGM youth with the exceptions of reappraisal and internalizing symptoms. There was a direct effect of reappraisal on self-harm for SGM youth ( $\beta = -.49, p < .01$ ) but not heterosexual/cisgender youth ( $\beta = -.17, p > .10$ ). Internalizing symptoms were associated with NSSI for both heterosexual/cisgender youth ( $\beta = .92, p < .001$ ) and SGM youth ( $\beta = .83, p < .001$ ). Wald tests did not indicate moderation of these effects by SGM status (Wald  $< .3, p > .5$ ). There were no mediated effects for SGM youth.

### **Discussion**

The aims of the present study were to characterize the self-harm and crisis service use histories of SGM youth and to examine a moderated mediation model in which emotion regulation strategies linked recent victimization with future self-harm. SGM youth were overrepresented within this sample and had more chronic histories of self-harm and crisis service use. In longitudinal mediation analyses, findings provided partial support for the overall pattern of relationships hypothesized by Minority Stress Theory within the full sample. However, there were few significant pathways for SGM youth and fewer that provided evidence of the specificity of the overall model. These findings suggest that emotion regulation is an important domain of consideration for future research in this area with particular attention to rumination and reappraisal. Results of this study underscore the utility of an expanded assessment of SGM status, use of measures that can differentiate self-harm behaviors, and considerations of youths' repertoire of emotion regulation strategies, particularly for SGM youth.

Using multicomponent assessment of SGM status, SGM youth comprised approximately 42% of this sample of adolescents and young adults receiving psychiatric emergency services. In nearly all cases, youth who endorsed a sexual minority identity also endorsed same-sex attraction and behavior. This pattern is striking in light of epidemiological data from the Youth Risk Behavior Survey showing that discordance between identity, attraction, and behavior is common among youth (Diamond, 2016; Mustanski, Van Wagenen, et al., 2014). When considering studies with similar methodological designs, the proportion of SGM participants is 3 times higher than recent ED studies that used single-item measures of SGM identity (Arias et al., 2016; Asarnow, Berk, Zhang, Wang, & Tang, 2017; Currier et al., 2015). These differences likely arise from the nature of identity measures. In the Youth Risk Behavior Survey and the ED studies listed above, participants are asked to indicate which of 4 identities apply to them: heterosexual, gay/lesbian, bisexual, and questioning. Epidemiological studies have found that the population of youth identifying as “mostly heterosexual” is larger than the combined number of youth identifying as gay/lesbian, bisexual, and questioning (Savin-Williams & Ream, 2007). We provided “mostly heterosexual” as an option and allowed participants to endorse multiple identities. These methods should be replicated in future research to ascertain how more inclusive measures may capture greater diversity of SGM youth.

SGM youth generally reported higher lifetime prevalence and frequencies of self-harm behaviors. Within an already high-risk sample, SGM youth reported more acute and chronic histories of self-harm, crisis service use, and self-reported risk factors. Notably, they had a much slower transition from self-injury to suicide attempts and reported more frequent use of effective emotion regulation strategies. Approximately half of SGM participants reported post-discharge self-harm compared to a quarter of heterosexual/cisgender youth. These results highlight the role



of NSSI as a potent marker for future risk. Temporal relations between NSSI and suicide attempts have been difficult to discern in prior studies but in this sample NSSI nearly always preceded a suicide attempt. SGM youth reported more severe NSSI histories but slower speed of transition to suicide attempt. This pattern may indicate the presence of more behavioral forerunners and a wider window of opportunity to intervene.

While these data are striking, over-representation of SGM youth and the persistence of disparities are consistent with other high-risk samples. For instance, SGM youth comprise up to 40% of the homeless adolescent population (Keuroghlian, Shtasel, & Bassuk, 2014). Relative to homeless heterosexual/cisgender adolescents, SGM youth report higher rates of parental maltreatment before homelessness, interpersonal violence while homeless, new onset or worsening of mood and substance use disorders, self-harm, and recurrent use of temporary shelters and drop-in centers (Barr, Fulginiti, Rhoades, & Rice, 2017; Keuroghlian et al., 2014). In addition to finding further disparities in self-harm, this study also examined candidate mechanisms of these differences, described below.

Longitudinal analyses incorporated three emotion regulation strategies that correspond to the deployment of attention, shifts in cognition, and behavioral response. Specifically, rumination, cognitive reappraisal, and expressive suppression were examined. Consistent with prior research, hypotheses proposed that the maladaptive strategies (i.e., rumination and suppression) would have relatively stronger associations with internalizing symptoms and self-harm. However, suppression was unrelated to the outcomes of interest after accounting for rumination, reappraisal, and their correlations. The Process Model of Emotion Regulation proposes that the primary temporal sequence is that attention precedes cognitive shifts and behavioral responses. With that in mind, rumination and reappraisal are more likely to be

recruited as emotion regulation strategies than suppression. Moreover, engagement in self-harm behaviors, particularly NSSI, are subject to operant conditioning and automatic negative reinforcement. As such, individuals engaging in self-harm may only use it in response to specific contexts and affective states that have provided reinforcing consequences. Thus, self-report measures of general tendencies to engage in suppression may be less likely to reflect these specific behavioral patterns.

Rumination has been associated with the multiple forms of psychopathology across the lifespan as well as NSSI (Hilt, Cha, & Nolen-Hoeksema, 2008; Nolen-Hoeksema & Watkins, 2011; Voon, Hasking, & Martin, 2014). This particular emotion regulation strategy may be especially problematic for individuals at risk for self-harm because of the potential for amplifying negative affect by preventing engagement in problem-solving. Within this context, it can be difficult to interrupt cyclical thought patterns if they are triggered by intense aversive states. The tendency to engage in rumination that is captured by self-report measures may also be a marker for more passive forms of responses to environmental challenges. Interpersonal victimization is strikingly common among SGM populations. As such, individuals may develop sensitivity to rejection and hypervigilance secondary to trauma (Rood et al., 2016). Relational manifestations of SGM social stigma are more prevalent than overt forms of victimization (Coker et al., 2010; Katz-Wise & Hyde, 2012; Prinstein et al., 2001). As such, SGM youth may be in many social situations that they might experience as ambiguous, which provides more opportunities for rumination after the encounter. Indeed, rejection sensitivity due to SGM identity is associated with internalizing psychopathology and may interact with rumination to exacerbate risk for self-harm (Feinstein, Goldfried, & Davila, 2012; Pachankis, Goldfried, & Ramrattan, 2008). Conversely, cognitive reappraisal may be an especially effective strategy for

copied with ambiguous situations. Cognitive flexibility broadly is associated with more resilient functioning (M. Rutter, 2013). Use of cognitive reappraisal thus also signals a broader repertoire of problem-solving that to which youth have access, some of which are likely to be adaptive alternatives to self-harm for regulating distress (McKenzie & Gross, 2014; Zatti et al., 2017).

This study had several methodological strengths. The longitudinal design and use of a large high-risk sample increased the likelihood of observing post-discharge outcomes, enhancing statistical power to examine between-group differences. The combination of closed- and open-ended measures of SGM status aided in identifying several high-risk groups of youth, including mostly heterosexual, unsure, and transgender youth. Moreover, at baseline and follow-up, self-harm behaviors were comprehensively characterized with the C-SSRS interview. Few studies of SGM youth have explicitly differentiated between self-harm behaviors with and without suicidal intent. These data expand the literature beyond lifetime and past year history of suicide attempts to include information about the onset, progression, and recurrence of risk. Further, this study informs our understanding of the temporal relationships between types of self-harm behaviors.

Results of this study should be considered in light of its limitations. As the participants were high risk, findings may not generalize to community samples. Despite the high-risk nature of the sample, the incidences of post-discharge suicide attempts and suicidal behavior were approximately 8% and 16% respectively. Although these incidence rates are largely comparable to other studies of high risk youth, this study was still underpowered to stratify by SGM status and examine predictors within each subsample. Participants were only approached for recruitment in the ED if they had a psychiatric chief complaint. Including youth presenting with medical and injury-related complaints would expand the range of risk in the sample and should

be explored in future research. Most participants reported self-harm, which may have limited the sensitivity of statistical models to estimate relationships between risk and protective factors.

Despite the aforementioned limitations, this study's design and findings provide some direction for future research. This study sought to subject the Minority Stress Theory to rigorous evaluation in the context of a high-risk sample. Self-harm behaviors, particularly suicide attempts, can have relatively low incidence rates even in clinical samples. Nevertheless, the purposive sampling implemented in this study allowed for the observation of self-harm in a sizeable number of participants. This facilitated the examination of minority stress in relation to behavioral outcomes that are more difficult to observe than cognitive and affective targets such as internalized homophobia and depressive symptoms. Future research should examine in further detail the extent to which the relationships considered here may portend longer term outcomes such as self-harm past 4 months post-discharge from the ED. Moreover, cohorts composed of primarily SGM youth would bolster statistical power to detect group-specific relationships that may function over and above general risk factors. Such research would aid in discerning which factors could be addressed through intervention as well as more broadly informing our understanding of developmental trajectories of SGM youth.

**Table 7.** Baseline participant characteristics

Characteristic	Sample	SGM	HC	<i>p</i> -Value	Effect Size
	(N=285)	(n=119)	(n=166)		
<b>Sociodemographics</b>					
Age (years)	18.0 (3.5)	18.0 (3.4)	18.0 (3.6)	.96	.00
Male (%)	42.1	37.8	45.2	.21	.07
Race/Ethnicity (%)				.81	.06
Non-Hispanic Caucasian	73.3	73.1	73.5		
Non-Hispanic African American	9.5	8.4	10.2		
Hispanic	3.2	4.2	2.4		
Other	14.0	14.3	13.9		
Insurance (%)				.05	.14
Private	77.9	71.4	82.5		
Public	17.9	24.4	13.3		
None	4.2	4.2	4.2		
<b>Self-Injurious Thoughts and Behaviors</b>					
Past week ideation severity	3.0 (1.6)	3.4 (1.1)	3.3 (1.2)	.13	.09
Lifetime NSSI (%)	67.7	79.0	59.6	< .001	.20
Age of onset (years)	13.3 (3.1)	13.0 (3.1)	13.7 (3.1)	.62	.23
Lifetime methods	3.4 (2.0)	3.9 (2.1)	2.9 (1.8)	< .001	.51
Lifetime episodes	33.4 (36.0)	40.2 (38.5)	27.0 (32.4)	.01	.37
Lifetime suicidal behavior (%)	51.2	56.3	47.6	.15	.09
Actual suicide attempt				.27	.10
None	64.2	58.8	68.1		
One	19.3	21.8	17.5		
Multiple	16.5	19.3	14.5		
NSSI and suicide attempt (%)	31.6	37.8	27.1	.06	.11
NSSI to suicide attempt (years)	3.3 (3.2)	4.0 (3.3)	2.6 (2.9)	.05	.45
<b>Crisis Service Utilization</b>					
PES (%)	35.1	46.2	27.1	.001	.20
Psychiatric hospitalizations (%)	36.1	44.5	30.1	.01	.15
<b>Self-Reported Measures</b>					
Victimization	17.3 (30.0)	22.2 (34.3)	13.8 (25.9)	.02	.28
Internalizing symptoms	8.0 (3.0)	8.7 (2.9)	7.5 (3.0)	.001	.41
Reappraisal	3.3 (1.4)	3.2 (1.4)	3.4 (1.3)	.09	.15
Suppression	4.0 (1.6)	3.7 (1.6)	4.2 (1.5)	.01	.32
Brooding	14.9 (3.5)	14.8 (3.5)	14.9 (3.5)	.90	.03
Reflecting	12.8 (3.4)	13.3 (3.4)	12.4 (3.4)	.05	.26

*Note.* HC = heterosexual/cisgender. SGM = sexual and gender minority. Results are based on t-tests for continuous variables and cross-tabulations for categorical variables. Continuous variables are presented as mean (SD). Effect sizes are Cohen's *d* for continuous variables and Phi for categorical variables.

^  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 8.** Correlations between primary study variables.

	1	2	3	4	5	6	7	8	9	10	11
1. Victimization	-										
2. Baseline PHQ-9	.03	-									
3. Follow-up PHQ-9	.09	.38**	-								
4. Rumination	.21**	.27**	.17**	-							
5. Suppression	.14*	.20**	.13	.89**	-						
6. Reappraisal	-.07	-.24**	-.21**	.04	.14*	-					
7. Lifetime NSSI	.08	.28**	.20**	.13	.12	-.19**	-				
8. Lifetime suicide attempts	.19**	.14*	.21**	.11	.02	-.23**	.34**	-			
9. Follow-up NSSI	.13^	.22**	.35**	-.06	-.09	-.24**	.26**	.15*	-		
10. Follow-up suicidal behavior	.18**	.16*	.32**	.11	.09	-.13	.25**	.15*	.36**	-	
11. Follow-up self-harm	.18**	.25**	.40**	-.01	-.03	-.25**	.31**	.22**	.93**	.60**	-

*Note.* PHQ = Patient Health Questionnaire-9; NSSI = non-suicidal self-injury.

^ $p < .1$ . \* $p < .05$ . \*\* $p < .01$ .

**Table 9.** Structural model coefficients for indirect effects.

Pathway	Suicidal behavior		Non-suicidal self-injury		Self-harm	
	HC	SGM	HC	SGM	HC	SGM
	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)
Reappraisal → Internalizing symptoms	-.10 (.05)*	-.01 (.04)	-.09 (.04)*	-.02 (.04)	-.10 (.05)*	-.01 (.04)
Rumination → Internalizing symptoms	.13 (.05)**	.00 (.05)	.11 (.05)*	.01 (.04)	.13 (.05)*	.00 (.05)
Victimization → Rumination → Internalizing symptoms	.04 (.02)*	.00 (.01)	.03 (.02)^	.00 (.00)	.04 (.02)*	.00 (.01)

*Note.* HC = Heterosexual/cisgender; SGM = Sexual/gender minority.

^p<.1. \*p<.05. \*\*p<.01.

Figure 3. Distribution of sexual orientations endorsed by sexual minorities (n = 119) within the analytic sample.

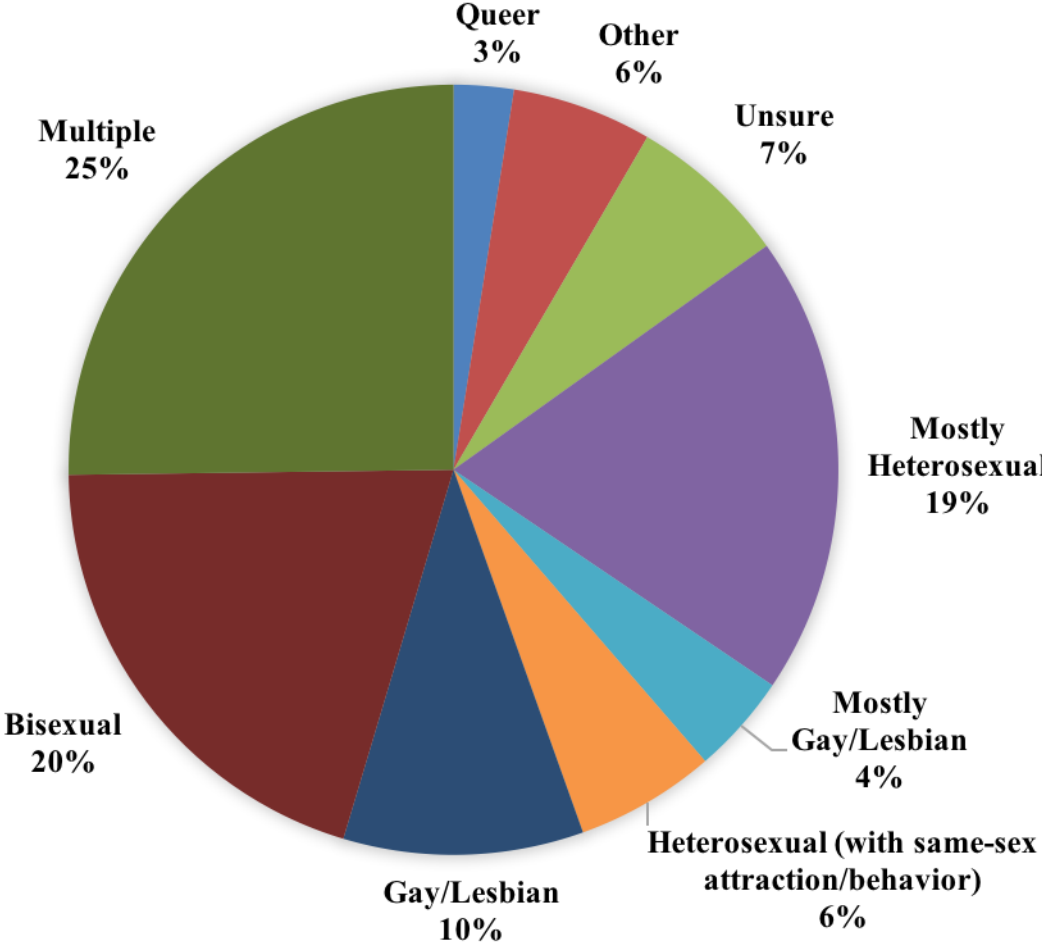




Figure 4. Final structural equation model in which emotion regulation mediates the relation between recent victimization, internalizing symptoms, and suicidal behavior within 4 months of leaving psychiatric emergency services. Standardized parameter coefficients are given as the full sample estimate (heterosexual/cisgender estimate, sexual/gender minority estimate). Paths shown are significant direct effects ( $p < .05$ ). Due to space constraints non-significant effects and covariates (baseline internalizing symptoms, lifetime suicide attempts, lifetime non-suicidal self-injury) are not shown.

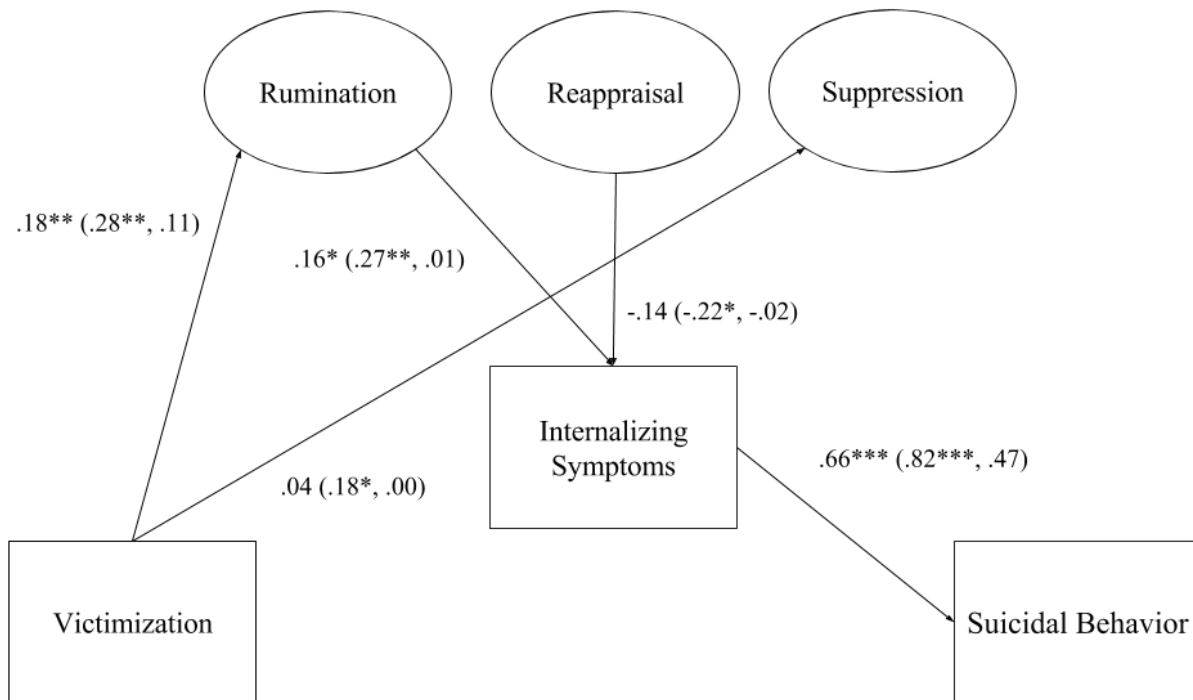


Figure 5. Final structural equation model in which emotion regulation mediates the relation between recent victimization, internalizing symptoms, and non-suicidal self-injury within 4 months of leaving psychiatric emergency services. Standardized parameter coefficients are given as the full sample estimate (heterosexual/cisgender estimate, sexual/gender minority estimate). Paths shown are significant direct effects ( $p < .05$ ). Due to space constraints non-significant effects and covariates (baseline internalizing symptoms, lifetime suicide attempts, lifetime non-suicidal self-injury) are not shown.

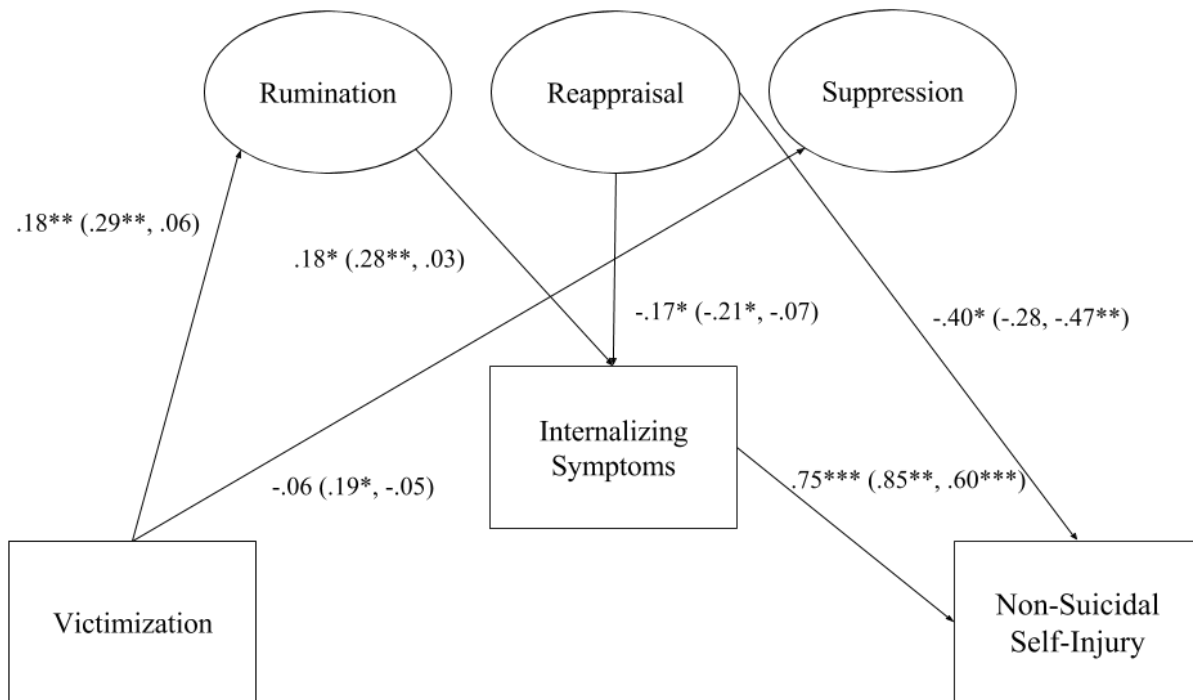
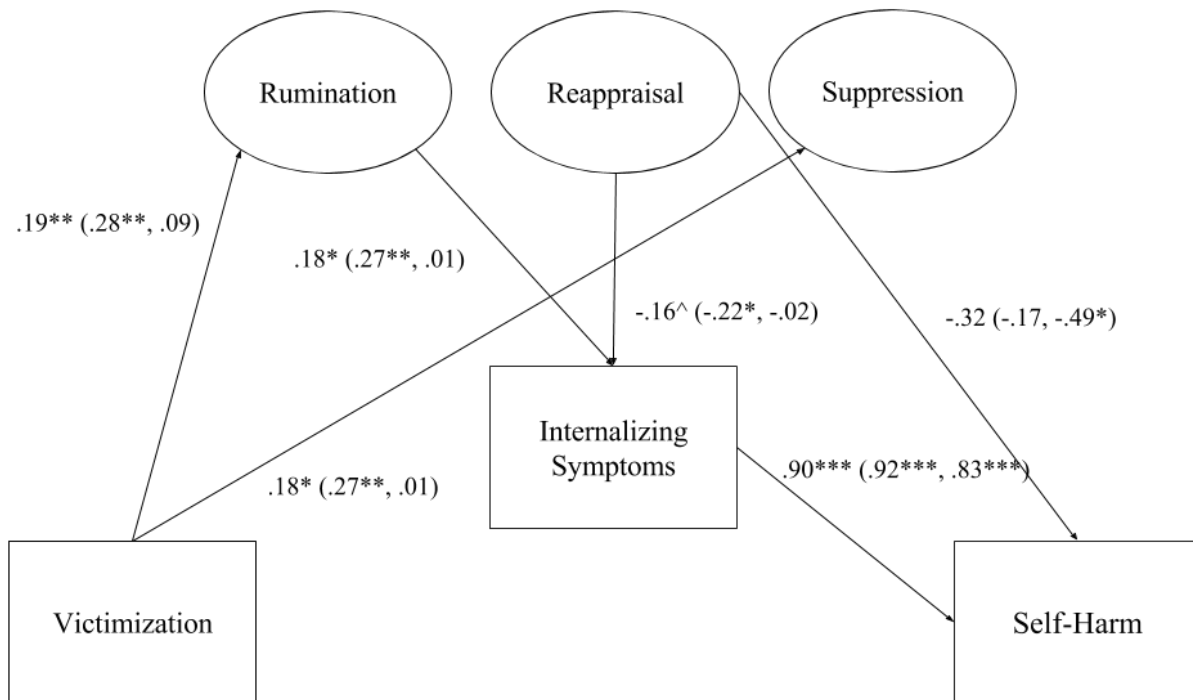


Figure 6. Final structural equation model in which emotion regulation mediates the relation between recent victimization, internalizing symptoms, and self-harm within 4 months of leaving psychiatric emergency services. Standardized parameter coefficients are given as the full sample estimate (heterosexual/cisgender estimate, sexual/gender minority estimate). Paths shown are significant direct effects ( $p < .05$ ). Due to space constraints non-significant effects and covariates (baseline internalizing symptoms, lifetime suicide attempts, lifetime non-suicidal self-injury) are not shown.



## **Chapter 4**

### **General Discussion**

This dissertation sought to address limitations of prior research on self-harm among SGM youth by (a) utilizing rigorous measurement by employing inclusive measures of SGM status and validated measures of self-harm, (b) examining transdiagnostic factors underlying self-harm in the general population, (c) recruiting purposive samples selected for heterogeneity in risk for self-harm, and (d) utilizing cross-sectional and longitudinal methodology to examine aspects of Minority Stress Theory. Research has documented higher rates of self-harm risk in this population but strikingly few studies have attempted to apply developmental considerations to the emergence of this health risk behavior in this population (dickey et al., 2016; Haas et al., 2010). Much of the discourse surrounding this topic in both the popular press and scientific literature has focused on social stigma, its structural manifestations, and the interpersonal consequences such as victimization, harassment, and violence (Hatzenbuehler, Phelan, & Link, 2013). While minority stress is indeed an undeniable driver of risk, stress is generally known to be associated with poor health and cannot sufficiently explain disparities. Although internalizing and alcohol/substance use disorders are frequently included as correlates of self-harm behaviors few studies have examined the domains of functioning that give rise to those more distal outcomes. As such, there are missed opportunities in leveraging the vast literature documenting mechanisms of chronic and desisting risk trajectories for those outcomes. Research in this area must account for why some SGM youth attempt suicide as well as why most do not. Emotion

regulation and behavioral disinhibition are key areas of functioning that relate to the etiology of self-harm, and may help identify key turning points in developmental trajectories.

Study 1 examined the interface between emotion regulation and behavioral disinhibition. Negative urgency – the tendency to engage in behaviors that are designed to escape aversive affective experiences – was a particular interest. Moreover, within the realm of emotion regulation acceptance of one's own emotional response is an additional factor hypothesized to interact with urgency to modulate risk for self-harm. The majority of individuals who consider self-harm do not engage in it, and this combination of factors may partially account for why some individuals are able to overcome the fear of pain. Within this study, negative urgency was not associated with self-harm after accounting for the influences of acceptance and demographic factors. As such, acceptance of emotional responses demonstrated strong influences on self-harm behaviors that extended beyond negative urgency.

Having established the relative importance of acceptance of emotional responses in lowering risk for self-harm, the aim of the second study was to examine how victimization is prospectively associated with self-harm via engagement in three strategies to modulate emotional responses. This study found that while all strategies were related to victimization and self-harm, rumination was the primary mechanism by which victimization exerted influence on likelihood of future self-harm. Cognitive reappraisal also exhibited strong influences on self-harm but was not associated with victimization. Suppression was unrelated to future internalizing symptoms and self-harm. This finding was somewhat surprising in light of prior literature suggesting that self-harm can function to suppress aversive affect. However, engagement in self-harm may be driven by more context-specific factors that provide reinforcement, which may be less strongly related to a generalized tendency to engage in suppression.

Across both studies an aim was to test whether their relationships examined within the studies were moderated by minority status. The majority of statistical tests did not find empirical support for group differences. However, these findings are still informative. Results suggest that factors of processes that have been established within in the broader literature should be brought to bear on the issue of SGM self-harm disparities. Much of the research on group-specific risk factors has largely examined those factors outside of the contribution of generalized mechanisms. However, general and group-specific factors should be considered together and examined in future research to discern which factors are most relevant to addressing self-harm.

Findings from this study contribute to the literature by highlighting the need to instantiate longitudinal perspectives on developmental phenomena such as the emergence of self-harm in the second decade of life. Additionally, findings of these studies should direct researchers' attention to the wealth of information that can be integrated into future studies to shed light on health issues. For instance, studies of victimization should disentangle the effects of victimization that is and is not related to SGM status. The effects of victimization that may not be related to identity (e.g., being mugged or robbed in public) might have less enduring effects than victimization that is related to one's identity (e.g., homophobic harassment in the workplace). Future research should consider the extent to which general and SGM-specific victimization overlap and exert differential effects. The utility of emotion regulation strategies would likely vary by context and chronicity, leading to different mental health outcomes.

Findings can inform current clinical practice. Prior research has found that healthcare providers often report feeling unprepared in addressing the problems facing their SGM patients (Coker et al., 2010; Vance, Ehrensaft, & Rosenthal, 2014). This creates reticence to inquire about SGM status and the potential implications for their health. In parallel, researchers have found

that youth are not likely to disclose their identities to healthcare providers spontaneously due to concerns about confidentiality (Durso & Meyer, 2013; Macapagal et al., 2017). However, once those concerns have been addressed they are very willing to share that information. In both studies reported here, more than 98% of provided complete responses to all questions about SGM status. Taken together with findings that generalized factors may play a key role in health broadly, healthcare providers may be reassured that they are more prepared to help their patients than they may feel. Clinically, across studies, SGM individuals reported greater acuity and chronicity of suicide risk factors. However, there were some differences that were unexpected. In Study 1, there was a higher overall proportion of SGM students endorsing at least one lifetime suicide attempt. However, SGM students were less likely to report multiple suicide attempts than heterosexual/cisgender students. In Study 2, SGM youth reported greater lifetime prevalence, methods, and episodes of NSSI but a slower transition to a suicide attempt. Another surprising finding in Study 2 was that reappraisal was protective against NSSI for SGM youth but not heterosexual/cisgender youth. Taken together, these findings suggest that SGM individuals may experience more chronic distress but this may also provide a wider window of opportunity for intervention to deflect youth away from higher risk trajectories (e.g., preventing youth who self-injure from making a suicide attempt and preventing single attempters from becoming multiple attempters). This pattern of findings should be replicated in larger, more definitive studies but should focus researchers' attention to the factors that facilitate persistence and desistance from high risk trajectories. Factors such as emotion regulation may be generalized factors that could facilitate comparison across SGM and heterosexual/cisgender youth.

The geographic regions in which these studies were conducted constrained the ability to engage in any substantive analysis of overlapping sociodemographic characteristics. We were

underpowered to ascertain the extent to which the developmental processes here differ across subgroups (e.g., racial/ethnic sexual minority males). Individual characteristics such as gender, sexual orientation, race/ethnicity, and socioeconomic status transact with variations in the environment to lead to differential exposure to minority stressors and subsequent mental health outcomes. Beyond characterizing prevalence and correlates of health disparities across these groups, it is crucial that researchers explore how structural stigma influences multiple groups and may be a more impactful target for universal intervention in promoting population health.

Future developmental research should examine how the domains of functioning examined here develop over longer periods of time and how minority stress can cascade into multiple co-occurring health disparities. Additional knowledge in this area would inform targeted intervention efforts as well as contribute to the body of knowledge regarding adolescent health and development broadly. Conversely, researchers with other foci should consider collaborating with SGM-focused researchers to incorporate measures of sexual orientation and gender identity/expression given that brief survey items exist and that adolescents will respond to them. This consideration is particularly important for research in self-harm because widespread phenomena such as the gender paradox may not apply to SGM individuals. Understanding why that may be the case has the potential to inform how risk operates more broadly. As SGM adolescents experience health disparities in most areas of health, collaborative research efforts across disciplines would aid in addressing these disparities. As results from these studies have shown, different prevalence rates do not necessarily indicate different developmental processes. As such, integrating methods from basic developmental science has the potential to reveal longitudinal mechanisms of these disparities that can be addressed through efficacious interventions that reduce health burden across diagnoses and identities.



## References

- Abram, K. M., Zwecker, N. A., Welty, L. J., Hershfield, J. A., Dulcan, M. K., & Teplin, L. A. (2015). Comorbidity and continuity of psychiatric disorders in youth detention after detention: A longitudinal study. *JAMA Psychiatry*, *72*(1), 84.  
<https://doi.org/10.1001/jamapsychiatry.2014.1375>
- Adler, N. E., & Stewart, J. (2010). Health disparities across the lifespan: meaning, methods, and mechanisms. *Annals of the New York Academy of Sciences*, *1186*(1), 5–23.
- Aldao, A., Gee, D. G., De Los Reyes, A., & Seager, I. (2016). Emotion regulation as a transdiagnostic factor in the development of internalizing and externalizing psychopathology: Current and future directions. *Development and Psychopathology*, *28*(4pt1), 927–946. <https://doi.org/10.1017/S0954579416000638>
- Aldao, A., & Nolen-Hoeksema, S. (2012). When are adaptive strategies most predictive of psychopathology? *Journal of Abnormal Psychology*, *121*(1), 276–281.  
<https://doi.org/10.1037/a0023598>
- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review*, *30*(2), 217–237.  
<https://doi.org/10.1016/j.cpr.2009.11.004>
- Anestis, M. D., Fink, E. L., Bender, T. W., Selby, E. A., Smith, A. R., Witte, T. K., & Joiner, T. E. (2012). Re-considering the association between negative urgency and suicidality: Negative urgency and suicide. *Personality and Mental Health*, *6*(2), 138–146.  
<https://doi.org/10.1002/pmh.178>

- Anestis, M. D., Soberay, K. A., Gutierrez, P. M., Hernández, T. D., & Joiner, T. E. (2014). Reconsidering the link between impulsivity and suicidal behavior. *Personality and Social Psychology Review, 18*(4), 366–386.
- Arias, S. A., Miller, I., Camargo, C. A., Sullivan, A. F., Goldstein, A. B., Allen, M. H., ... Boudreaux, E. D. (2016). Factors associated with suicide outcomes 12 months after screening positive for suicide risk in the emergency department. *Psychiatric Services, 67*(2), 206–213. <https://doi.org/10.1176/appi.ps.201400513>
- Asarnow, J. R., Berk, M., Zhang, L., Wang, P., & Tang, L. (2017). Emergency department youth patients with suicidal ideation or attempts: Predicting suicide attempts through 18 months of follow-up. *Suicide and Life-Threatening Behavior, 47*(5), 551–566. <https://doi.org/10.1111/sltb.12309>
- Asarnow, J. R., & Miranda, J. (2014). Improving Care for Depression and Suicide Risk in Adolescents: Innovative Strategies for Bringing Treatments to Community Settings. *Annual Review of Clinical Psychology, 10*(1), 275–303. <https://doi.org/10.1146/annurev-clinpsy-032813-153742>
- Austin, A., & Goodman, R. (2017). The impact of social connectedness and internalized transphobic stigma on self-esteem among transgender and gender non-conforming adults. *Journal of Homosexuality, 64*(6), 825–841. <https://doi.org/10.1080/00918369.2016.1236587>
- Babeva, K., Hughes, J. L., & Asarnow, J. (2016). Emergency department screening for suicide and mental health risk. *Current Psychiatry Reports, 18*(11). <https://doi.org/10.1007/s11920-016-0738-6>

- Badgett, M. (2009). Best practices for asking questions about sexual orientation on surveys. *The Williams Institute*.
- Balsam, K. F., Rothblum, E. D., & Beauchaine, T. P. (2005). Victimization over the life span: A comparison of lesbian, gay, bisexual, and heterosexual siblings. *Journal of Consulting and Clinical Psychology, 73*(3), 477–487. <https://doi.org/10.1037/0022-006X.73.3.477>
- Barr, N., Fulginiti, A., Rhoades, H., & Rice, E. (2017). Can better emotion regulation protect against suicidality in traumatized homeless youth? *Archives of Suicide Research, 21*(3), 490–501. <https://doi.org/10.1080/13811118.2016.1224989>
- Barrocas, A. L., Giletta, M., Hankin, B. L., Prinstein, M. J., & Abela, J. R. Z. (2015). Nonsuicidal self-injury in adolescence: longitudinal course, trajectories, and intrapersonal factors. *Journal of Abnormal Child Psychology, 43*(2), 369–380. <https://doi.org/10.1007/s10802-014-9895-4>
- Beauchaine, T. P., & Cicchetti, D. (2016). A new generation of comorbidity research in the era of neuroscience and Research Domain Criteria. *Development and Psychopathology, 28*(4pt1), 891–894. <https://doi.org/10.1017/S0954579416000602>
- Beauchaine, T. P., & Gatzke-Kopp, L. M. (2012). Instantiating the multiple levels of analysis perspective in a program of study on externalizing behavior. *Development and Psychopathology, 24*(03), 1003–1018. <https://doi.org/10.1017/S0954579412000508>
- Beauchaine, T. P., Klein, D. N., Crowell, S. E., Derbidge, C., & Gatzke-Kopp, L. (2009). Multifinality in the development of personality disorders: A Biology × Sex × Environment interaction model of antisocial and borderline traits. *Development and Psychopathology, 21*(03), 735. <https://doi.org/10.1017/S0954579409000418>

- Beauchaine, T. P., Zisner, A. R., & Sauder, C. L. (2017). Trait impulsivity and the externalizing spectrum. *Annual Review of Clinical Psychology, 13*, 343–368.
- Belsky, J., & Pluess, M. (2009). Beyond diathesis stress: Differential susceptibility to environmental influences. *Psychological Bulletin, 135*(6), 885.
- Björkenstam, C., Andersson, G., Dalman, C., Cochran, S., & Kosidou, K. (2016). Suicide in married couples in Sweden: Is the risk greater in same-sex couples? *European Journal of Epidemiology, 31*(7), 685–690. <https://doi.org/10.1007/s10654-016-0154-6>
- Björkenstam, C., Björkenstam, E., Gerdin, B., & Ekselius, L. (2015). Excess cause-specific mortality in out-patients with personality disorder. *BJPsych Open, 1*(01), 54–55. <https://doi.org/10.1192/bjpo.bp.115.000356>
- Björkenstam, C., Kosidou, K., Björkenstam, E., Dalman, C., Andersson, G., & Cochran, S. (2016). Self-reported suicide ideation and attempts, and medical care for intentional self-harm in lesbians, gays and bisexuals in Sweden. *Journal of Epidemiology and Community Health, 70*(9), 895–901. <https://doi.org/10.1136/jech-2015-206884>
- Björkenstam, E., Björkenstam, C., Holm, H., Gerdin, B., & Ekselius, L. (2015). Excess cause-specific mortality in in-patient-treated individuals with personality disorder: 25-year nationwide population-based study. *British Journal of Psychiatry, 207*(04), 339–345. <https://doi.org/10.1192/bjp.bp.114.149583>
- Blasco-Fontecilla, H., Rodrigo-Yanguas, M., Giner, L., Lobato-Rodriguez, M. J., & de Leon, J. (2016). Patterns of comorbidity of suicide attempters: An update. *Current Psychiatry Reports, 18*(10). <https://doi.org/10.1007/s11920-016-0733-y>
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., ... Zettle, R. D. (2011). Preliminary psychometric properties of the Acceptance and Action

- Questionnaire–II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy*, 42(4), 676–688.
- Bostwick, W. B., Meyer, I., Aranda, F., Russell, S., Hughes, T., Birkett, M., & Mustanski, B. (2014). Mental health and suicidality among racially/ethnically diverse sexual minority youths. *American Journal of Public Health*, 104(6), 1129–1136.
- Brener, N. D., Kann, L., Kinchen, S. A., Grunbaum, J. A., Whalen, L., Eaton, D., ... Ross, J. G. (2004). Methodology of the youth risk behavior surveillance system. *MMWR. Recommendations and Reports: Morbidity and Mortality Weekly Report. Recommendations and Reports/Centers for Disease Control*, 53(RR-12), 1–13.
- Brennan, J., Kuhns, L. M., Johnson, A. K., Belzer, M., Wilson, E. C., Garofalo, R., & Interventions, A. M. T. N. for H. (2012). Syndemic theory and HIV-related risk among young transgender women: the role of multiple, co-occurring health problems and social marginalization. *American Journal of Public Health*, 102(9), 1751–1757.
- Buckholtz, J. W., & Meyer-Lindenberg, A. (2012). Psychopathology and the human connectome: Toward a transdiagnostic model of risk for mental illness. *Neuron*, 74(6), 990–1004. <https://doi.org/10.1016/j.neuron.2012.06.002>
- Calzo, J. P., Masyn, K. E., Austin, S. B., Jun, H.-J., & Corliss, H. L. (2017). Developmental latent patterns of identification as mostly heterosexual versus lesbian, gay, or bisexual. *Journal of Research on Adolescence*, 27(1), 246–253. <https://doi.org/10.1111/jora.12266>
- Cappadocia, M. C., Desrocher, M., Pepler, D., & Schroeder, J. H. (2009). Contextualizing the neurobiology of conduct disorder in an emotion dysregulation framework. *Clinical Psychology Review*, 29(6), 506–518. <https://doi.org/10.1016/j.cpr.2009.06.001>

- Cha, C. B., Franz, P. J., M. Guzmán, E., Glenn, C. R., Kleiman, E. M., & Nock, M. K. (2017). Annual Research Review: Suicide among youth - epidemiology, (potential) etiology, and treatment. *Journal of Child Psychology and Psychiatry*.  
<https://doi.org/10.1111/jcpp.12831>
- Chesney, E., Goodwin, G. M., & Fazel, S. (2014). Risks of all-cause and suicide mortality in mental disorders: a meta-review. *World Psychiatry, 13*(2), 153–160.
- Cicchetti, D. (2016). Socioemotional, personality, and biological development: Illustrations from a multilevel developmental psychopathology perspective on child maltreatment. *Annual Review of Psychology, 67*, 187–211.
- Cicchetti, D., & Rogosch, F. A. (2002). A developmental psychopathology perspective on adolescence. *Journal of Consulting and Clinical Psychology, 70*(1), 6–20.  
<https://doi.org/10.1037//0022-006X.70.1.6>
- Cohler, B. J., & Hammack, P. L. (2006). The psychological world of the gay teenager: Social change, narrative, and “normality.” *Journal of Youth and Adolescence, 36*(1), 47–59.  
<https://doi.org/10.1007/s10964-006-9110-1>
- Coker, T. R., Austin, S. B., & Schuster, M. A. (2010). The health and health care of lesbian, gay, and bisexual adolescents. *Annual Review of Public Health, 31*(1), 457–477.  
<https://doi.org/10.1146/annurev.publhealth.012809.103636>
- Conron, K. J., Scott, G., Stowell, G. S., & Landers, S. J. (2012). Transgender health in Massachusetts: results from a household probability sample of adults. *American Journal of Public Health, 102*(1), 118–122.

- Corcoran, J., Dattalo, P., Crowley, M., Brown, E., & Grindle, L. (2011). A systematic review of psychosocial interventions for suicidal adolescents. *Children and Youth Services Review*, 33(11), 2112–2118. <https://doi.org/10.1016/j.childyouth.2011.06.017>
- Coskunpinar, A., Dir, A. L., & Cyders, M. A. (2013). Multidimensionality in impulsivity and alcohol Use: A meta-analysis using the UPPS model of impulsivity. *Alcoholism: Clinical and Experimental Research*, 37(9), 1441–1450.
- Crick, N. R., & Zahn-Waxler, C. (2003). The development of psychopathology in females and males: Current progress and future challenges. *Development and Psychopathology*, 15(3), 719–742.
- Crowell, S. E., Beauchaine, T. P., & Linehan, M. M. (2009). A biosocial developmental model of borderline personality: Elaborating and extending Linehan’s theory. *Psychological Bulletin*, 135(3), 495–510. <https://doi.org/10.1037/a0015616>
- Currier, G. W., Brown, G., Walsh, P. G., Jager-Hyman, S., Chaudhury, S., & Stanley, B. (2015). Screening for sexual orientation in psychiatric emergency departments. *Western Journal of Emergency Medicine*, 16(1), 80.
- Diamond, L. M. (2016). Sexual fluidity in males and females. *Current Sexual Health Reports*, 8(4), 249–256. <https://doi.org/10.1007/s11930-016-0092-z>
- Diamond, L. M., & Rosky, C. J. (2016). Scrutinizing immutability: Research on sexual orientation and U.S. legal advocacy for sexual minorities. *The Journal of Sex Research*, 53(4–5), 363–391. <https://doi.org/10.1080/00224499.2016.1139665>
- dickey, lore m., Hendricks, M. L., & Bockting, W. O. (2016). Innovations in research with transgender and gender nonconforming people and their communities. *Psychology of*

*Sexual Orientation and Gender Diversity*, 3(2), 187–194.

<https://doi.org/10.1037/sgd0000158>

Durso, L. E., & Meyer, I. H. (2013). Patterns and predictors of disclosure of sexual orientation to healthcare providers among lesbians, gay men, and bisexuals. *Sexuality Research and Social Policy*, 10(1), 35–42. <https://doi.org/10.1007/s13178-012-0105-2>

Duvivier, R. J., & Wiley, E. (2015). WHO and the health of LGBT individuals. *The Lancet*, 385(9973), 1070–1071.

Feinstein, B. A., Goldfried, M. R., & Davila, J. (2012). The relationship between experiences of discrimination and mental health among lesbians and gay men: An examination of internalized homonegativity and rejection sensitivity as potential mechanisms. *Journal of Consulting and Clinical Psychology*, 80(5), 917.

Fergusson, D. M., Horwood, L. J., Ridder, E. M., & Beautrais, A. L. (2005). Sexual orientation and mental health in a birth cohort of young adults. *Psychological Medicine*, 35(7), 971–981. <https://doi.org/10.1017/S0033291704004222>

Ferlatte, O., Hottes, T. S., Trussler, T., & Marchand, R. (2017). Disclosure of sexual orientation by gay and bisexual men in government-administered probability surveys. *LGBT Health*, 4(1), 68–71. <https://doi.org/10.1089/lgbt.2016.0037>

Fisher, C. B., & Mustanski, B. (2014). Reducing health disparities and enhancing the responsible conduct of research involving LGBT youth. *Hastings Center Report*, 44(s4), S28–S31. <https://doi.org/10.1002/hast.367>

Fisher, P. A., Beauchamp, K. G., Roos, L. E., Noll, L. K., Flannery, J., & Delker, B. C. (2016). The neurobiology of intervention and prevention in early adversity. *Annual Review of*



- Clinical Psychology*, 12(1), 331–357. <https://doi.org/10.1146/annurev-clinpsy-032814-112855>
- Fox, K. R., Franklin, J. C., Ribeiro, J. D., Kleiman, E. M., Bentley, K. H., & Nock, M. K. (2015). Meta-analysis of risk factors for nonsuicidal self-injury. *Clinical Psychology Review*, 42, 156–167. <https://doi.org/10.1016/j.cpr.2015.09.002>
- Franklin, J. C., Ribeiro, J. D., Fox, K. R., Bentley, K. H., Kleiman, E. M., Huang, X., ... Nock, M. K. (2017). Risk factors for suicidal thoughts and behaviors: A meta-analysis of 50 years of research. *Psychological Bulletin*, 143(2), 187–232. <https://doi.org/10.1037/bul0000084>
- Galupo, M. P., Henise, S. B., & Mercer, N. L. (2016). “The labels don’t work very well”: Transgender individuals’ conceptualizations of sexual orientation and sexual identity. *International Journal of Transgenderism*, 17(2), 93–104. <https://doi.org/10.1080/15532739.2016.1189373>
- Galupo, M. P., Mitchell, R. C., & Davis, K. S. (2015). Sexual minority self-identification: Multiple identities and complexity. *Psychology of Sexual Orientation and Gender Diversity*, 2(4), 355–364. <https://doi.org/10.1037/sgd0000131>
- Gibson, P. (1989). Gay male and lesbian youth suicide. *Prevention and Intervention in Youth Suicide (Report to the Secretary’s Task Force on Youth Suicide, Vol. 3)*.
- Glenn, C. R., Kleiman, E. M., Cha, C. B., Deming, C. A., Franklin, J. C., & Nock, M. K. (2018). Understanding suicide risk within the Research Domain Criteria (RDoC) framework: A meta-analytic review. *Depression and Anxiety*, 35(1), 65–88. <https://doi.org/10.1002/da.22686>

- Goldston, D. B., Erkanli, A., Daniel, S. S., Heilbron, N., Weller, B. E., & Doyle, O. (2016). Developmental trajectories of suicidal thoughts and behaviors from adolescence through adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry, 55*(5), 400–407.
- Gordon, A. R., & Meyer, I. H. (2008). Gender nonconformity as a target of prejudice, discrimination, and violence against LGB individuals. *Journal of LGBT Health Research, 3*(3), 55–71.
- Graham, R., Berkowitz, B., Blum, R., Bockting, W., Bradford, J., de Vries, B., & Makadon, H. (2011). The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding. *Washington, DC: Institute of Medicine.*
- Green, K. E., & Feinstein, B. A. (2012). Substance use in lesbian, gay, and bisexual populations: An update on empirical research and implications for treatment. *Psychology of Addictive Behaviors, 26*(2), 265–278. <https://doi.org/10.1037/a0025424>
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271.
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*(2), 348–362. <https://doi.org/10.1037/0022-3514.85.2.348>
- Haas, A. P., Eliason, M., Mays, V. M., Mathy, R. M., Cochran, S. D., D’Augelli, A. R., ... Clayton, P. J. (2010). Suicide and suicide risk in lesbian, gay, bisexual, and transgender populations: Review and recommendations. *Journal of Homosexuality, 58*(1), 10–51. <https://doi.org/10.1080/00918369.2011.534038>

- Hamza, C. A., Stewart, S. L., & Willoughby, T. (2012). Examining the link between nonsuicidal self-injury and suicidal behavior: A review of the literature and an integrated model. *Clinical Psychology Review, 32*(6), 482–495. <https://doi.org/10.1016/j.cpr.2012.05.003>
- Hamza, C. A., Willoughby, T., & Heffer, T. (2015). Impulsivity and nonsuicidal self-injury: A review and meta-analysis. *Clinical Psychology Review, 38*, 13–24. <https://doi.org/10.1016/j.cpr.2015.02.010>
- Hannesdóttir, D. K., Doxie, J., Bell, M. A., Ollendick, T. H., & Wolfe, C. D. (2010). A longitudinal study of emotion regulation and anxiety in middle childhood: Associations with frontal EEG asymmetry in early childhood. *Developmental Psychobiology, 52*(2), 197–204.
- Hasking, P., Whitlock, J., Voon, D., & Rose, A. (2017). A cognitive-emotional model of NSSI: using emotion regulation and cognitive processes to explain why people self-injure. *Cognition and Emotion, 31*(8), 1543–1556. <https://doi.org/10.1080/02699931.2016.1241219>
- Hatzenbuehler, M. L. (2009). How does sexual minority stigma “get under the skin”? A psychological mediation framework. *Psychological Bulletin, 135*(5), 707–730. <https://doi.org/10.1037/a0016441>
- Hatzenbuehler, M. L. (2017). Advancing research on structural stigma and sexual orientation disparities in mental health among youth. *Journal of Clinical Child & Adolescent Psychology, 46*(3), 463–475. <https://doi.org/10.1080/15374416.2016.1247360>
- Hatzenbuehler, M. L., Bellatorre, A., Lee, Y., Finch, B. K., Muennig, P., & Fiscella, K. (2014). Structural stigma and all-cause mortality in sexual minority populations. *Social Science & Medicine, 103*, 33–41. <https://doi.org/10.1016/j.socscimed.2013.06.005>

- Hatzenbuehler, M. L., McLaughlin, K. A., & Nolen-Hoeksema, S. (2008). Emotion regulation and internalizing symptoms in a longitudinal study of sexual minority and heterosexual adolescents. *Journal of Child Psychology and Psychiatry, 49*(12), 1270–1278.  
<https://doi.org/10.1111/j.1469-7610.2008.01924.x>
- Hatzenbuehler, M. L., Nolen-Hoeksema, S., & Dovidio, J. (2009). How does stigma “get under the skin”? The mediating role of emotion regulation. *Psychological Science, 20*(10), 1282–1289.
- Hatzenbuehler, M. L., Phelan, J. C., & Link, B. G. (2013). Stigma as a fundamental cause of population health inequalities. *American Journal of Public Health, 103*(5), 813–821.
- Hendricks, M. L., & Testa, R. J. (2012). A conceptual framework for clinical work with transgender and gender nonconforming clients: An adaptation of the Minority Stress Model. *Professional Psychology: Research and Practice, 43*(5), 460–467.  
<https://doi.org/10.1037/a0029597>
- Herd, G., & McClintock, M. (2000). The magical age of 10. *Archives of Sexual Behavior, 29*(6), 587–606.
- Hershberger, S. L., & D’Augelli, A. R. (1995). The impact of victimization on the mental health and suicidality of lesbian, gay, and bisexual youths. *Developmental Psychology, 31*(1), 65.
- Hilt, L. M., Cha, C. B., & Nolen-Hoeksema, S. (2008). Nonsuicidal self-injury in young adolescent girls: Moderators of the distress-function relationship. *Journal of Consulting and Clinical Psychology, 76*(1), 63–71. <https://doi.org/10.1037/0022-006X.76.1.63>

- Himmelstein, K. E. W., & Bruckner, H. (2011). Criminal-justice and school sanctions against nonheterosexual youth: A national longitudinal study. *Pediatrics, 127*(1), 49–57.  
<https://doi.org/10.1542/peds.2009-2306>
- Hottes, T. S., Gesink, D., Ferlatte, O., Brennan, D. J., Rhodes, A. E., Marchand, R., & Trussler, T. (2016). Concealment of sexual minority identities in interviewer-administered government surveys and its impact on estimates of suicide ideation among bisexual and gay men. *Journal of Bisexuality, 16*(4), 427–453.  
<https://doi.org/10.1080/15299716.2016.1225622>
- Hussong, A. M., Curran, P. J., Moffitt, T. E., Caspi, A., & Carrig, M. M. (2004). Substance abuse hinders desistance in young adults' antisocial behavior. *Development and Psychopathology, 16*(04). <https://doi.org/10.1017/S095457940404012X>
- Insel, T., Cuthbert, B., Garvey, M., Heinssen, R., Pine, D. S., Quinn, K., ... Wang, P. (2010). *Research domain criteria (RDoC): Toward a new classification framework for research on mental disorders*. Am Psychiatric Assoc.
- Jackson, K. M., & Schulenberg, J. E. (2013). Alcohol use during the transition from middle school to high school: National panel data on prevalence and moderators. *Developmental Psychology, 49*(11), 2147–2158. <https://doi.org/10.1037/a0031843>
- James, S. E., Herman, J. L., Rankin, S., Keisling, M., Mottet, L., & Anafi, M. (2016). The Report of the 2015 U.S. Transgender Survey. *Washington, DC: National Center for Transgender Equality*.
- Janulis, P., Birkett, M., Phillips, G., & Mustanski, B. (2015). Substance use network characteristics and drug and alcohol use behaviors among young men who have sex with

- men (YMSM). *Drug and Alcohol Dependence*, 157, 188–191.  
<https://doi.org/10.1016/j.drugalcdep.2015.10.003>
- Janulis, P., Feinstein, B. A., Phillips, G., Newcomb, M. E., Birkett, M., & Mustanski, B. (2018). Sexual partner topologies and the association between drug use and sexual risk behavior among young men who have sex with men. *Archives of Sexual Behavior*, 47(1), 259–271.  
<https://doi.org/10.1007/s10508-016-0909-x>
- Katz-Wise, S. L., & Hyde, J. S. (2012). Victimization experiences of lesbian, gay, and bisexual individuals: A meta-analysis. *Journal of Sex Research*, 49(2–3), 142–167.  
<https://doi.org/10.1080/00224499.2011.637247>
- Katz-Wise, S. L., Rosario, M., Calzo, J. P., Scherer, E. A., Sarda, V., & Austin, S. B. (2017). Endorsement and timing of sexual orientation developmental milestones among sexual minority young adults in the Growing Up Today Study. *The Journal of Sex Research*, 54(2), 172–185. <https://doi.org/10.1080/00224499.2016.1170757>
- Keenan, K., Hipwell, A. E., Stepp, S. D., & Wroblewski, K. (2014). Testing an equifinality model of nonsuicidal self-injury among early adolescent girls. *Development and Psychopathology*, 26(03), 851–862. <https://doi.org/10.1017/S0954579414000431>
- Kerridge, B. T., Pickering, R. P., Saha, T. D., Ruan, W. J., Chou, S. P., Zhang, H., ... Hasin, D. S. (2017). Prevalence, sociodemographic correlates and DSM-5 substance use disorders and other psychiatric disorders among sexual minorities in the United States. *Drug and Alcohol Dependence*, 170, 82–92. <https://doi.org/10.1016/j.drugalcdep.2016.10.038>
- Kessler, R. C., Berglund, P., Borges, G., Nock, M., & Wang, P. S. (2005). Trends in suicide ideation, plans, gestures, and attempts in the United States, 1990-1992 to 2001-2003. *JAMA*, 293(20), 2487–2495.

- Keuroghlian, A. S., Shtasel, D., & Bassuk, E. L. (2014). Out on the street: A public health and policy agenda for lesbian, gay, bisexual, and transgender youth who are homeless. *American Journal of Orthopsychiatry*, *84*(1), 66–72. <https://doi.org/10.1037/h0098852>
- Keyes, K. M., Li, G., & Hasin, D. S. (2011). Birth cohort effects and gender differences in alcohol epidemiology: A review and synthesis. *Alcoholism: Clinical and Experimental Research*, *35*(12), 2101–2112. <https://doi.org/10.1111/j.1530-0277.2011.01562.x>
- King, C. A., Eisenberg, D., Zheng, K., Czyz, E., Kramer, A., Horwitz, A., & Chermack, S. (2015). Online suicide risk screening and intervention with college students: A pilot randomized controlled trial. *Journal of Consulting and Clinical Psychology*, *83*(3), 630–636. <https://doi.org/10.1037/a0038805>
- King, C. A., & Merchant, C. R. (2008). Social and interpersonal factors relating to adolescent suicidality - A review of the literature. *Archives of Suicide Research*, *12*(3), 181–196. <https://doi.org/10.1080/13811110802101203>
- Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Sloan, S. (1948). *Sexual behavior in the human male*. Philadelphia, PA: W. B. Saunders.
- Klika, J. B., & Herrenkohl, T. I. (2013). A review of developmental research on resilience in maltreated children. *Trauma, Violence, & Abuse*, *14*(3), 222–234.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9 - Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606–613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Kruks, G. (1991). Gay and lesbian homeless/street youth: Special issues and concerns. *Journal of Adolescent Health*, *12*(7), 515–518.

- Liu, R. T., & Mustanski, B. (2012). Suicidal ideation and self-harm in lesbian, gay, bisexual, and transgender youth. *American Journal of Preventive Medicine*, *42*(3), 221–228.  
<https://doi.org/10.1016/j.amepre.2011.10.023>
- Löwe, B., Wahl, I., Rose, M., Spitzer, C., Glaesmer, H., Wingenfeld, K., ... Brähler, E. (2010). A 4-item measure of depression and anxiety: Validation and standardization of the Patient Health Questionnaire-4 (PHQ-4) in the general population. *Journal of Affective Disorders*, *122*(1–2), 86–95. <https://doi.org/10.1016/j.jad.2009.06.019>
- Lynch, T. R., Trost, W. T., Salsman, N., & Linehan, M. M. (2007). Dialectical Behavior Therapy for borderline personality disorder. *Annual Review of Clinical Psychology*, *3*(1), 181–205.  
<https://doi.org/10.1146/annurev.clinpsy.2.022305.095229>
- Macapagal, K., Coventry, R., Arbeit, M. R., Fisher, C. B., & Mustanski, B. (2017). “I won’t out myself just to do a survey”: Sexual and gender minority adolescents’ perspectives on the risks and benefits of sex research. *Archives of Sexual Behavior*, *46*(5), 1393–1409.  
<https://doi.org/10.1007/s10508-016-0784-5>
- Magid, V., & Colder, C. R. (2007). The UPPS Impulsive Behavior Scale: Factor structure and associations with college drinking. *Personality and Individual Differences*, *43*(7), 1927–1937.
- Marshal, M. P., Dietz, L. J., Friedman, M. S., Stall, R., Smith, H. A., McGinley, J., ... Brent, D. A. (2011). Suicidality and depression disparities between sexual minority and heterosexual youth: A meta-analytic review. *Journal of Adolescent Health*, *49*(2), 115–123. <https://doi.org/10.1016/j.jadohealth.2011.02.005>
- Marshal, M. P., Friedman, M. S., Stall, R., King, K. M., Miles, J., Gold, M. A., ... Morse, J. Q. (2008). Sexual orientation and adolescent substance use: a meta-analysis and



- methodological review. *Addiction*, 103(4), 546–556. <https://doi.org/10.1111/j.1360-0443.2008.02149.x>
- Marshall, E., Claes, L., Bouman, W. P., Witcomb, G. L., & Arcelus, J. (2016). Non-suicidal self-injury and suicidality in trans people: A systematic review of the literature. *International Review of Psychiatry*, 28(1), 58–69. <https://doi.org/10.3109/09540261.2015.1073143>
- Martos, A. J., Nezhad, S., & Meyer, I. H. (2015). Variations in sexual identity milestones among lesbians, gay men, and bisexuals. *Sexuality Research and Social Policy*, 12(1), 24–33. <https://doi.org/10.1007/s13178-014-0167-4>
- May, A. M., & Victor, S. E. (2018). From ideation to action: Recent advances in understanding suicide capability. *Current Opinion in Psychology*, 22, 1–6. <https://doi.org/10.1016/j.copsyc.2017.07.007>
- McCabe, S. E., Hughes, T. L., Bostwick, W., Morales, M., & Boyd, C. J. (2012). Measurement of sexual identity in surveys: Implications for substance abuse research. *Archives of Sexual Behavior*, 41(3), 649–657. <https://doi.org/10.1007/s10508-011-9768-7>
- McClatchey, K., Murray, J., Rowat, A., & Chouliara, Z. (2017). Risk factors for suicide and suicidal behavior relevant to emergency health care settings: A systematic review of post-2007 reviews. *Suicide and Life-Threatening Behavior*, 47(6), 729–745. <https://doi.org/10.1111/sltb.12336>
- McKenzie, K. C., & Gross, J. J. (2014). Nonsuicidal self-injury: An emotion regulation perspective. *Psychopathology*, 47(4), 207–219. <https://doi.org/10.1159/000358097>
- McLaughlin, K. A. (2016). Future directions in childhood adversity and youth psychopathology. *Journal of Clinical Child & Adolescent Psychology*, 45(3), 361–382. <https://doi.org/10.1080/15374416.2015.1110823>

- McLaughlin, K. A., & Lambert, H. K. (2017). Child trauma exposure and psychopathology: mechanisms of risk and resilience. *Current Opinion in Psychology*, *14*, 29–34.  
<https://doi.org/10.1016/j.copsyc.2016.10.004>
- McLaughlin, K. A., & Sheridan, M. A. (2016). Beyond cumulative risk: A dimensional approach to childhood adversity. *Current Directions in Psychological Science*, *25*(4), 239–245.
- McNeil, J., Ellis, S. J., & Eccles, F. J. R. (2017). Suicide in trans populations: A systematic review of prevalence and correlates. *Psychology of Sexual Orientation and Gender Diversity*, *4*(3), 341–353. <https://doi.org/10.1037/sgd0000235>
- Mereish, E. H., Goldbach, J. T., Burgess, C., & DiBello, A. M. (2017). Sexual orientation, minority stress, social norms, and substance use among racially diverse adolescents. *Drug and Alcohol Dependence*, *178*, 49–56. <https://doi.org/10.1016/j.drugalcdep.2017.04.013>
- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, *129*(5), 674–697. <https://doi.org/10.1037/0033-2909.129.5.674>
- Meyer, I. H., Brown, T. N., Herman, J. L., Reisner, S. L., & Bockting, W. O. (2017). Demographic characteristics and health status of transgender adults in select US regions: Behavioral Risk Factor Surveillance System, 2014. *American Journal of Public Health*, *107*(4), 582–589.
- Miranda-Mendizábal, A., Castellví, P., Parés-Badell, O., Almenara, J., Alonso, I., Blasco, M. J., ... Alonso, J. (2017). Sexual orientation and suicidal behaviour in adolescents and young adults: systematic review and meta-analysis. *British Journal of Psychiatry*, *211*(02), 77–87. <https://doi.org/10.1192/bjp.bp.116.196345>

- Mustanski, B., Andrews, R., Herrick, A., Stall, R., & Schnarrs, P. W. (2014). A syndemic of psychosocial health disparities and associations with risk for attempting suicide among young sexual minority men. *American Journal of Public Health, 104*(2), 287–294.
- Mustanski, B., Andrews, R., & Puckett, J. A. (2016). The effects of cumulative victimization on mental health among lesbian, gay, bisexual, and transgender adolescents and young adults. *American Journal of Public Health, 106*(3), 527–533.
- Mustanski, B., & Fisher, C. B. (2016). HIV rates are increasing in gay/bisexual teens. *American Journal of Preventive Medicine, 51*(2), 249–252.  
<https://doi.org/10.1016/j.amepre.2016.02.026>
- Mustanski, B., Garofalo, R., Herrick, A., & Donenberg, G. (2007). Psychosocial health problems increase risk for HIV among urban young men who have sex with men: preliminary evidence of a syndemic in need of attention. *Annals of Behavioral Medicine, 34*(1), 37–45.
- Mustanski, B., & Liu, R. T. (2013). A longitudinal study of predictors of suicide attempts among lesbian, gay, bisexual, and transgender youth. *Archives of Sexual Behavior, 42*(3), 437–448. <https://doi.org/10.1007/s10508-012-0013-9>
- Mustanski, B., Newcomb, M. E., Du Bois, S. N., Garcia, S. C., & Grov, C. (2011). HIV in young men who have sex with men: A review of epidemiology, risk and protective factors, and interventions. *Journal of Sex Research, 48*(2–3), 218–253.  
<https://doi.org/10.1080/00224499.2011.558645>
- Mustanski, B., Van Wagenen, A., Birkett, M., Eyster, S., & Corliss, H. L. (2014). Identifying sexual orientation health disparities in adolescents: analysis of pooled data from the Youth Risk Behavior Survey, 2005 and 2007. *American Journal of Public Health, 104*(2).

- Nadal, K. L., Whitman, C. N., Davis, L. S., Erazo, T., & Davidoff, K. C. (2016). Microaggressions toward lesbian, gay, bisexual, transgender, queer, and genderqueer people: A review of the literature. *The Journal of Sex Research, 53*(4–5), 488–508. <https://doi.org/10.1080/00224499.2016.1142495>
- Newcomb, M. E., & Mustanski, B. (2010). Internalized homophobia and internalizing mental health problems: A meta-analytic review. *Clinical Psychology Review, 30*(8), 1019–1029. <https://doi.org/10.1016/j.cpr.2010.07.003>
- Nock, M. K., Borges, G., Bromet, E. J., Cha, C. B., Kessler, R. C., & Lee, S. (2008). Suicide and suicidal behavior. *Epidemiologic Reviews, 30*(1), 133–154. <https://doi.org/10.1093/epirev/mxn002>
- Nock, M. K., Holmberg, E. B., Photos, V. I., & Michel, B. D. (2007). Self-Injurious Thoughts and Behaviors Interview: Development, reliability, and validity in an adolescent sample. *Psychological Assessment, 19*(3), 309–317. <https://doi.org/10.1037/1040-3590.19.3.309>
- Nock, M. K., Hwang, I., Sampson, N. A., & Kessler, R. C. (2010). Mental disorders, comorbidity and suicidal behavior: Results from the National Comorbidity Survey Replication. *Molecular Psychiatry, 15*(8), 868–876. <https://doi.org/10.1038/mp.2009.29>
- Nolen-Hoeksema, S., & Watkins, E. R. (2011). A heuristic for developing transdiagnostic models of psychopathology: Explaining multifinality and divergent trajectories. *Perspectives on Psychological Science, 6*(6), 589–609. <https://doi.org/10.1177/1745691611419672>
- O’Carroll, P. W., Berman, A. L., Maris, R. W., Moscicki, E. K., Tanney, B. L., & Silverman, M. M. (1996). Beyond the Tower of Babel: A nomenclature for suicidology. *Suicide and Life-Threatening Behavior, 26*(3), 237–252.

- O'cleirigh, C., Safren, S. A., & Mayer, K. H. (2012). The pervasive effects of childhood sexual abuse: Challenges for improving HIV prevention and treatment interventions. *Journal of Acquired Immune Deficiency Syndromes (1999)*, *59*(4), 331.
- Pachankis, J. E. (2015). A transdiagnostic minority stress treatment approach for gay and bisexual men's syndemic health conditions. *Archives of Sexual Behavior*, *44*(7), 1843–1860. <https://doi.org/10.1007/s10508-015-0480-x>
- Pachankis, J. E., Goldfried, M. R., & Ramrattan, M. E. (2008). Extension of the rejection sensitivity construct to the interpersonal functioning of gay men. *Journal of Consulting and Clinical Psychology*, *76*(2), 306–317. <https://doi.org/10.1037/0022-006X.76.2.306>
- Pachankis, J. E., Hatzenbuehler, M. L., Rendina, H. J., Safren, S. A., & Parsons, J. T. (2015). LGB-affirmative cognitive-behavioral therapy for young adult gay and bisexual men: A randomized controlled trial of a transdiagnostic minority stress approach. *Journal of Consulting and Clinical Psychology*, *83*(5), 875–889. <https://doi.org/10.1037/ccp0000037>
- Paul, E., Tsypes, A., Eidlitz, L., Ernhout, C., & Whitlock, J. (2015). Frequency and functions of non-suicidal self-injury: Associations with suicidal thoughts and behaviors. *Psychiatry Research*, *225*(3), 276–282. <https://doi.org/10.1016/j.psychres.2014.12.026>
- Pechtel, P., & Pizzagalli, D. A. (2011). Effects of early life stress on cognitive and affective function: an integrated review of human literature. *Psychopharmacology*, *214*(1), 55–70.
- Posner, K., Brown, G. K., Stanley, B., Brent, D. A., Yershova, K. V., Oquendo, M. A., ... others. (2011). The Columbia–Suicide Severity Rating Scale: Initial validity and internal consistency findings from three multisite studies with adolescents and adults. *American Journal of Psychiatry*, *168*(12), 1266–1277.

- Prinstein, M. J., Boergers, J., & Vernberg, E. M. (2001). Overt and relational aggression in adolescents: Social-psychological adjustment of aggressors and victims. *Journal of Clinical Child & Adolescent Psychology, 30*(4), 479–491.  
[https://doi.org/10.1207/S15374424JCCP3004\\_05](https://doi.org/10.1207/S15374424JCCP3004_05)
- Puckett, J. A., & Levitt, H. M. (2015). Internalized stigma within sexual and gender minorities: Change strategies and clinical implications. *Journal of LGBT Issues in Counseling, 9*(4), 329–349. <https://doi.org/10.1080/15538605.2015.1112336>
- Raifman, J., Moscoe, E., Austin, S. B., & McConnell, M. (2017). Difference-in-difference analysis of the association between state same-sex marriage policies and adolescent suicide attempts. *JAMA Pediatrics, 171*(4), 350.  
<https://doi.org/10.1001/jamapediatrics.2016.4529>
- Reinert, D. F., & Allen, J. P. (2007). The alcohol use disorders identification test: An update of research findings. *Alcoholism: Clinical and Experimental Research, 31*(2), 185–199.
- Reisner, S. L., Conron, K. J., Scout, Baker, K., Herman, J. L., Lombardi, E., ... Matthews, A. K. (2015). “Counting” transgender and gender non-conforming adults in health research: Recommendations from the Gender Identity in US Surveillance Group. *TSQ: Transgender Studies Quarterly, 2*(1), 34–57. <https://doi.org/10.1215/23289252-2848877>
- Reisner, S. L., Katz-Wise, S. L., Gordon, A. R., Corliss, H. L., & Austin, S. B. (2016). Social epidemiology of depression and anxiety by gender identity. *Journal of Adolescent Health, 59*(2), 203–208. <https://doi.org/10.1016/j.jadohealth.2016.04.006>
- Reisner, S. L., Poteat, T., Keatley, J., Cabral, M., Mothopeng, T., Dunham, E., ... Baral, S. D. (2016). Global health burden and needs of transgender populations: a review. *The Lancet, 388*(10042), 412–436. [https://doi.org/10.1016/S0140-6736\(16\)00684-X](https://doi.org/10.1016/S0140-6736(16)00684-X)

Remafedi, G. (1999). Sexual orientation and youth suicide. *JAMA*, 282(13), 1291–1292.

<https://doi.org/10.1001/jama.282.13.1291-JMS1006-6-1>

Roberts, A. L., Rosario, M., Slopen, N., Calzo, J. P., & Austin, S. B. (2013). Childhood gender nonconformity, bullying victimization, and depressive symptoms across adolescence and early adulthood: An 11-year longitudinal study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(2), 143–152.

Roley-Roberts, M. E., Zielinski, M. J., Hurtado, G., Hovey, J. D., & Elhai, J. D. (2017).

Functions of nonsuicidal self-injury are differentially associated with suicide ideation and past attempts among childhood trauma survivors. *Suicide and Life-Threatening Behavior*, 47(4), 450–460. <https://doi.org/10.1111/sltb.12306>

Rood, B. A., Reisner, S. L., Surace, F. I., Puckett, J. A., Maroney, M. R., & Pantalone, D. W.

(2016). Expecting rejection: Understanding the minority stress experiences of transgender and gender-nonconforming individuals. *Transgender Health*, 1(1), 151–164.

Rotheram-Borus, M. J., Hunter, J., & Rosario, M. (1994). Suicidal behavior and gay-related

stress among gay and bisexual male adolescents. *Journal of Adolescent Research*, 9(4), 498–508.

Russell, S. T., Clarke, T. J., & Clary, J. (2009). Are teens “post-gay”? Contemporary adolescents’

sexual identity labels. *Journal of Youth and Adolescence*, 38(7), 884–890.

<https://doi.org/10.1007/s10964-008-9388-2>

Russell, S. T., & Fish, J. N. (2016). Mental health in lesbian, gay, bisexual, and transgender

(LGBT) youth. *Annual Review of Clinical Psychology*, 12(1), 465–487.

<https://doi.org/10.1146/annurev-clinpsy-021815-093153>

- Rutter, M. (2013). Annual Research Review: Resilience - clinical implications. *Journal of Child Psychology and Psychiatry*, 54(4), 474–487. <https://doi.org/10.1111/j.1469-7610.2012.02615.x>
- Rutter, P. A. (2008). Suicide protective and risk factors for sexual minority youth: Applying the cumulative factor model. *Journal of LGBT Issues in Counseling*, 2(1), 81–92. <https://doi.org/10.1080/15538600802077681>
- Ryan, C., Huebner, D., Diaz, R. M., & Sanchez, J. (2009). Family rejection as a predictor of negative health outcomes in white and Latino lesbian, gay, and bisexual young adults. *Pediatrics*, 123(1), 346–352. <https://doi.org/10.1542/peds.2007-3524>
- Savin-Williams, R. C. (1994). Verbal and physical abuse as stressors in the lives of lesbian, gay male, and bisexual youths: associations with school problems, running away, substance abuse, prostitution, and suicide. *Journal of Consulting and Clinical Psychology*, 62(2), 261.
- Savin-Williams, R. C. (2001). Suicide attempts among sexual-minority youths: Population and measurement issues. *Journal of Consulting and Clinical Psychology*, 69(6), 983–991. <https://doi.org/10.1037//0022-006X.69.6.983>
- Savin-Williams, R. C. (2006). Who's gay? Does it matter? *Current Directions in Psychological Science*, 15(1), 40–44.
- Savin-Williams, R. C., & Ream, G. L. (2007). Prevalence and stability of sexual orientation components during adolescence and young adulthood. *Archives of Sexual Behavior*, 36(3), 385–394. <https://doi.org/10.1007/s10508-006-9088-5>
- Schäfer, J. Ö., Naumann, E., Holmes, E. A., Tuschen-Caffier, B., & Samson, A. C. (2017). Emotion Regulation Strategies in Depressive and Anxiety Symptoms in Youth: A Meta-



- Analytic Review. *Journal of Youth and Adolescence*, 46(2), 261–276.  
<https://doi.org/10.1007/s10964-016-0585-0>
- Schneeberger, A. R., Dietl, M. F., Muenzenmaier, K. H., Huber, C. G., & Lang, U. E. (2014). Stressful childhood experiences and health outcomes in sexual minority populations: a systematic review. *Social Psychiatry and Psychiatric Epidemiology*, 49(9), 1427–1445.  
<https://doi.org/10.1007/s00127-014-0854-8>
- Schrijvers, D. L., Bollen, J., & Sabbe, B. G. C. (2012). The gender paradox in suicidal behavior and its impact on the suicidal process. *Journal of Affective Disorders*, 138(1–2), 19–26.  
<https://doi.org/10.1016/j.jad.2011.03.050>
- Scoville, S. L., Gardner, J. W., & Potter, R. N. (2004). Traumatic deaths during U.S. Armed Forces basic training, 1977–2001. *American Journal of Preventive Medicine*, 26(3), 194–204. <https://doi.org/10.1016/j.amepre.2003.11.001>
- Séguin, M., Beauchamp, G., Robert, M., DiMambro, M., & Turecki, G. (2014). Developmental model of suicide trajectories. *The British Journal of Psychiatry*, 205(2), 120–126.
- Séguin, M., Renaud, J., Lesage, A., Robert, M., & Turecki, G. (2011). Youth and young adult suicide: A study of life trajectory. *Journal of Psychiatric Research*, 45(7), 863–870.  
<https://doi.org/10.1016/j.jpsychires.2011.05.005>
- Selby, E. A., Anestis, M. D., Bender, T. W., Ribeiro, J. D., Nock, M. K., Rudd, M. D., ... Joiner, T. E. (2010). Overcoming the fear of lethal injury: Evaluating suicidal behavior in the military through the lens of the Interpersonal–Psychological Theory of Suicide. *Clinical Psychology Review*, 30(3), 298–307. <https://doi.org/10.1016/j.cpr.2009.12.004>
- Shalev, I., Heim, C. M., & Noll, J. G. (2016). Child maltreatment as a root cause of mortality disparities: A call for rigorous science to mobilize public investment in prevention and

- treatment. *JAMA Psychiatry*, 73(9), 897.  
<https://doi.org/10.1001/jamapsychiatry.2016.1748>
- Sheppes, G., Suri, G., & Gross, J. J. (2015). Emotion regulation and psychopathology. *Annual Review of Clinical Psychology*, 11(1), 379–405. <https://doi.org/10.1146/annurev-clinpsy-032814-112739>
- Shevlin, M., McElroy, E., & Murphy, J. (2017). Homotypic and heterotypic psychopathological continuity: a child cohort study. *Social Psychiatry and Psychiatric Epidemiology*, 1–11.
- Shields, J. P., Cohen, R., Glassman, J. R., Whitaker, K., Franks, H., & Bertolini, I. (2013). Estimating population size and demographic characteristics of LGBT youth in middle school. *Journal of Adolescent Health*, 52(2), 248–250.  
<https://doi.org/10.1016/j.jadohealth.2012.06.016>
- Shields, J. P., Whitaker, K., Glassman, J., Franks, H. M., & Howard, K. (2012). Impact of victimization on risk of suicide among lesbian, gay, and bisexual high school students in San Francisco. *Journal of Adolescent Health*, 50(4), 418–420.  
<https://doi.org/10.1016/j.jadohealth.2011.07.009>
- Silenzio, V. M., Pena, J. B., Duberstein, P. R., Cerel, J., & Knox, K. L. (2007). Sexual orientation and risk factors for suicidal ideation and suicide attempts among adolescents and young adults. *American Journal of Public Health*, 97(11), 2017–2019.
- Silva, C., Chu, C., Monahan, K. R., & Joiner, T. E. (2015). Suicide risk among sexual minority college students: A mediated moderation model of sex and perceived burdensomeness. *Psychology of Sexual Orientation and Gender Diversity*, 2(1), 22–33.  
<https://doi.org/10.1037/sgd0000086>

- Singer, M., Herring, D., Littleton, J., & Rock, M. (2011). Syndemics in global health. *A Companion to Medical Anthropology*, 159–179.
- Stotzer, R. L. (2009). Violence against transgender people: A review of United States data. *Aggression and Violent Behavior*, 14(3), 170–179.  
<https://doi.org/10.1016/j.avb.2009.01.006>
- Talley, A. E., Gilbert, P. A., Mitchell, J., Goldbach, J., Marshall, B. D. L., & Kaysen, D. (2016). Addressing gaps on risk and resilience factors for alcohol use outcomes in sexual and gender minority populations: Addressing gaps on risk and resilience factors. *Drug and Alcohol Review*, 35(4), 484–493. <https://doi.org/10.1111/dar.12387>
- Talley, A. E., Sher, K. J., & Littlefield, A. K. (2010). Sexual orientation and substance use trajectories in emerging adulthood: Sexual orientation and substance use. *Addiction*, 105(7), 1235–1245. <https://doi.org/10.1111/j.1360-0443.2010.02953.x>
- Teicher, M. H., & Samson, J. A. (2016). Annual research review: Enduring neurobiological effects of childhood abuse and neglect. *Journal of Child Psychology and Psychiatry*, 57(3), 241–266.
- Testa, R. J., Michaels, M. S., Bliss, W., Rogers, M. L., Balsam, K. F., & Joiner, T. (2017). Suicidal ideation in transgender people: Gender minority stress and interpersonal theory factors. *Journal of Abnormal Psychology*, 126(1), 125–136.  
<https://doi.org/10.1037/abn0000234>
- Timmins, L., Rimes, K. A., & Rahman, Q. (2017). Minority stressors and psychological distress in transgender individuals. *Psychology of Sexual Orientation and Gender Diversity*, 4(3), 328–340. <https://doi.org/10.1037/sgd0000237>

- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, 27(3), 247–259.
- Valderrama, J., Miranda, R., & Jeglic, E. (2016). Ruminative subtypes and impulsivity in risk for suicidal behavior. *Psychiatry Research*, 236, 15–21.  
<https://doi.org/10.1016/j.psychres.2016.01.008>
- Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner Jr, T. E. (2010). The Interpersonal Theory of Suicide. *Psychological Review*, 117(2), 575.
- Vance, S. R., Ehrensaft, D., & Rosenthal, S. M. (2014). Psychological and medical care of gender nonconforming youth. *Pediatrics*, 134(6), 1184–1192.  
<https://doi.org/10.1542/peds.2014-0772>
- Victor, E. C., & Hariri, A. R. (2016). A neuroscience perspective on sexual risk behavior in adolescence and emerging adulthood. *Development and Psychopathology*, 28(02), 471–487. <https://doi.org/10.1017/S0954579415001042>
- Volkow, N. D., Wang, G.-J., Fowler, J. S., & Tomasi, D. (2012). Addiction circuitry in the human brain. *Annual Review of Pharmacology and Toxicology*, 52(1), 321–336.  
<https://doi.org/10.1146/annurev-pharmtox-010611-134625>
- Voon, D., Hasking, P., & Martin, G. (2014). Change in emotion regulation strategy use and its impact on adolescent nonsuicidal self-injury: A three-year longitudinal analysis using latent growth modeling. *Journal of Abnormal Psychology*, 123(3), 487–498.  
<https://doi.org/10.1037/a0037024>
- Vrangalova, Z., & Savin-Williams, R. C. (2012). Mostly heterosexual and mostly gay/lesbian: Evidence for new sexual orientation identities. *Archives of Sexual Behavior*, 41(1), 85–101. <https://doi.org/10.1007/s10508-012-9921-y>

- Webb, T. L., Miles, E., & Sheeran, P. (2012). Dealing with feeling: A meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychological Bulletin, 138*(4), 775–808. <https://doi.org/10.1037/a0027600>
- Wichstrøm, L., & Hegna, K. (2003). Sexual orientation and suicide attempt: A longitudinal study of the general Norwegian adolescent population. *Journal of Abnormal Psychology, 112*(1), 144–151. <https://doi.org/10.1037/0021-843X.112.1.144>
- Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement, 73*(6), 913–934.
- World Health Organization (Ed.). (2014). *Preventing suicide: A global imperative*. Geneva: World Health Organization.
- Ylioja, T., Cochran, G., Woodford, M. R., & Renn, K. A. (2016). Frequent experience of LGBTQ microaggression on campus associated with smoking among sexual minority college students. *Nicotine & Tobacco Research, ntw305*.
- Zahn-Waxler, C., Shirtcliff, E. A., & Marceau, K. (2008). Disorders of childhood and adolescence: Gender and psychopathology. *Annual Review of Clinical Psychology, 4*(1), 275–303. <https://doi.org/10.1146/annurev.clinpsy.3.022806.091358>
- Zatti, C., Rosa, V., Barros, A., Valdivia, L., Calegario, V. C., Freitas, L. H., ... Schuch, F. B. (2017). Childhood trauma and suicide attempt: A meta-analysis of longitudinal studies from the last decade. *Psychiatry Research, 256*, 353–358. <https://doi.org/10.1016/j.psychres.2017.06.082>
- Zoccola, P., Manigault, A., Figueroa, W., Hollenbeck, C., Mendlein, A., Woody, A., ... Johnson, R. (2017). Trait rumination predicts elevated evening cortisol in sexual and gender

- minority young adults. *International Journal of Environmental Research and Public Health*, *14*(11), 1365. <https://doi.org/10.3390/ijerph14111365>
- Zucker, K. J. (2005). Gender identity disorder in children and adolescents. *Annual Review of Clinical Psychology*, *1*(1), 467–492.  
<https://doi.org/10.1146/annurev.clinpsy.1.102803.144050>
- Zucker, K. J., Lawrence, A. A., & Kreukels, B. P. (2016). Gender dysphoria in adults. *Annual Review of Clinical Psychology*, *12*, 217–247.
- Zucker, R. A., Heitzeg, M. M., & Nigg, J. T. (2011). Parsing the undercontrol-disinhibition pathway to substance use disorders: A multilevel developmental problem. *Child Development Perspectives*, *5*(4), 248–255. <https://doi.org/10.1111/j.1750-8606.2011.00172.x>