2019

Navigating the Closet: A Mixed Methods Approach to Assessing the Impact of Concealment on Psychological Outcomes for Sexual and Gender Minorities

James Michael M. Brennan
University of Montana, Missoula

NAVIGATING THE CLOSET:

A MIXED METHODS APPROACH TO ASSESSING THE IMPACT OF CONCEALMENT OF SEXUAL AND GENDER IDENTITY ON PSYCHOLOGICAL OUTCOMES

By

JAMES MICHAEL BRENNAN

Bachelor of Arts, College of the Holy Cross, Worcester, Massachusetts, 2008

Thesis

presented in partial fulfillment of the requirements

for the degree of

Master of Arts

in Clinical Psychology

The University of Montana

Missoula, MT

April 2019

Approved by:

Scott Whittenburg, Dean of The Graduate School

Graduate School

Bryan Cochran, PhD, Chair

Department of Psychology

David Schuldberg, PhD

Department of Psychology

Jingjing Sun, PhD

Department of Teaching & Learning

Brennan, James Michael, M.A., May 2019 Clinical Psychology

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Chairperson: Dr. Bryan Cochran, PhD

Abstract

Background: Sexual and gender minority (SGM) individuals suffer at disproportionate rates of depression, anxiety, and substance use, among other mental and physical health outcomes, compared to heterosexual individuals. Concealment of non-heterosexual sexual identity and/or non-cisgender gender identity may be a key contributor to these disparities. Many SGM individuals engage in concealment as a means to avoid victimization, or because of negative perceptions of their own identity. Concealment as a construct has been conceptualized as comprising cognitive, affective, and behavioral components, each of which individually has been demonstrated to have negative health impacts. Additionally, concealment occurs over time between the intrapersonal recognition of an identity and first interpersonal disclosure. In the current study, a fully-integrated convergent mixed methods design was employed. I hypothesized that more extensive past concealment of gender and sexual identity - through the endorsement of cognitive, affective, and behavioral components implicated in concealment – would be associated with greater present mental health impact (as indicated by current depression and anxiety symptomatology and substance use). I anticipated that this relationship would be mediated by the length of time an individual concealed their identity. The qualitative data was assessed to identify aspects related to concealment that emerge, and the qualitative and quantitative databases were compared for convergence and divergence.

Methods: SGM participants (N = 640; Mage = 24.36, SD = 7.51) were predominantly white (92%) and highly diverse with respect to sexual orientation and gender. For the purpose of this study, a new measure of concealment was devised to assess for cognitive, affective, and behavioral components of concealment of both gender and sexual identity. Each participant completed a survey that included an identity milestone questionnaire, the extent of concealment measure, qualitative questions, and measures testing the outcome variables. The qualitative sample (N = 61; Mage = 23.85, SD = 6.85) was proportionally representative of the larger sample in regard to identity.

Results: Based on a Principal Component Analysis, a three-component structure of concealment was not borne out with the current sample. However, based on quantitative response rates as well as qualitative analyses, evidence suggested that concealment experiences included cognitive, affective, and behavioral aspects. Additional aspects of concealment also qualitatively emerged, indicating that the measure of concealment may not have comprehensively captured the construct of concealment. In regard to hypothesis 1, as predicted, the more individuals concealed their identity, the more severe their current level of depression and anxiety symptomatology, and the more intense their current alcohol and drug use. Furthermore, some of these psychological impacts of concealment were further supported based on participants' self-report of struggles with depression, anxiety, and suicidality. Finally, despite minor relationships with depression and anxiety symptomatology, the duration of concealment of both gender and sexual identity failed to predict any of the other outcome variables on its own (hypothesis 2). Therefore, duration of concealment did not mediate the relationship between concealment and the outcomes (hypothesis 3).

Discussion: Based on a fully-integrated convergent mixed methods analysis, these findings highlight that concealment is a common phenomenon in the lives of SGM individuals, and that the experience of concealment includes engagement in a variety of internal and external behaviors. These behaviors include tightly intertwined psychological processes. Notably, concealing a sexual and/or gender identity is associated with significant mental health impacts, including depression, anxiety, and substance use. Based on the findings of this study, which diverge from limited past research, these impacts do not seem to be predicted by the length of time an individual is closeted about their gender and/or sexual identity.

Keywords: concealment, gender minority, sexual minority, depression, anxiety, substance use

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Introduction

In 2016, the director of the National Institute of Minority Health and Health Disparities (NIMHD) designated sexual and gender minorities (SGM) as a public health disparity population (Perez-Stable, 2016). This designation was the culmination of years of study of the disproportionate rates of physical and psychiatric morbidity among SGM individuals. It is theorized that this disparity results from the impact of minority stress, the potentially unique effects of the lived experience of SGM individuals on health outcomes (Meyer, 1995, 2003). Many SGM individuals conceal their non-heterosexual sexual identity or non-cisgender gender status as a means to evade the external contributors to minority stress, such as victimization, discrimination, and social opprobrium (Meyer, 2003; Pachankis, 2007). This concealment is often referred to as "being in the closet" (Drescher, 2012), and is a unique characteristic of the lives of many SGM individuals that distinguishes them from their heterosexual and cisgender counterparts. Therefore, concealment is conceptualized as a key proximal stress process in the minority stress model (Meyer, 2003). Although this period of being "closeted" may serve initially as a protective factor, extant literature on secrecy and concealable stigmas indicates that long-term deployment of multiple concealment strategies may have deleterious health consequences (Kosciw, Palmer, & Kull, 2015; Pachankis, 2007). Given this evidence, concealment may serve to explain, at least partially, the disparate health outcomes evidenced in SGM populations.

Concealment is a multidimensional construct, comprising cognitive, affective, and behavioral components. Despite the fact that each of these components has been studied discretely and extensively in both SGM and non-SGM populations, much of the work on SGM populations either focuses on one aspect of present concealment (e.g., concealment behaviors) or has used "outness" (i.e., the extent to which an individual has disclosed their sexual or gender identity to important others) as a proxy variable representing the inverse of concealment (Mohr & Fassinger, 2000). These approaches fail to capture the

complex phenomenon that is concealment given its multiple dimensions. To our knowledge, no work has explicitly explored concealment as a multidimensional construct unto itself, nor has there been work on the interplay of cognitive, affective, and behavioral components that are implicated in concealment. Likewise, concealment has not been studied as a way of being and behaving that operates as a mechanism for stress processes impacting mental health and other psychological variables, nor as a set of behaviors that may intensify psychiatric morbidity as a function of its deployment over time. This present study aimed to address the gap in this literature by focusing on the specific and unique impacts of concealment on mental health outcomes, as mediated by the persistent deployment of concealment behaviors over time (i.e., duration of concealment). The hope was that this work could inform population-specific interventions to mitigate the impact of concealment on long-term health consequences and other threats to the well-being of SGM individuals.

Through the integration of quantitative and qualitative methods, this mixed methods design offered the opportunity to explore a complex construct and to elucidate more clearly the role concealment plays as a key stress process in the minority stress model. This study investigated the components of concealment and their effect on multiple outcomes related to well-being in a sample of SGM individuals. It also assessed the impact of time on these outcomes. The first phase of the study developed a new measure intended to integrate disparate components involved in concealment, such as cognitive, affective, and behavioral components. A key aim in developing this instrument was to ensure cultural sensitivity and relevancy to the SGM population, as well as to establish the construct validity of concealment.

The second phase featured a fully-integrated convergent mixed methods design used to collect quantitative and qualitative data in parallel, to analyze these data separately, and then to integrate data into the final findings. The quantitative data were used to test the hypothesis that the more extensive past concealment, through the endorsement of cognitive, affective, and behavioral components implicated in concealment, the more severe present mental health impact (as indicated by current depression and anxiety symptomatology and substance use). A mediation model explored whether the relationship between extent of concealment and mental health symptomatology was mediated by the duration of

concealment. The qualitative data, obtained through open-ended survey questions, explored additional cognitive, affective, and behavioral components involved in concealment. Additional open-ended questions investigated respondents' motivations for concealment. Collecting both quantitative and qualitative data optimized the level of insight into the concealment phenomenon. Likewise, a mixed methods approach proved useful in uncovering vital information that could be used to formulate behavioral interventions for SGM individuals that reduce the impact of concealment behaviors over the long-term and enable these individuals to flourish in their identities from an early age.

In summary, SGM individuals suffer at disproportionate rates of depression, anxiety, and substance use, among other mental and physical health outcomes. As a unique proximal stress process for many SGM individuals, concealment may play a key role in impacting these disparities, intensified by the extent and duration over time of concealment behaviors. Concealment has not been adequately studied as a multidimensional construct unto itself, nor have its specific and unique contributions to particular outcomes. The current study therefore had several aims: 1) to develop a context-specific and culturally-relevant instrument to test concealment as a construct with cognitive, affective, and behavioral elements; 2) to use the instrument to assess the extent of SGM concealment in an SGM sample; 3) to test the relationship between extent of concealment and depression symptomatology, anxiety (generalized and social anxiety disorders) symptomatology, and substance use; 4) to understand whether these relationships are mediated by the duration of concealment; and finally, 5) to explore additional aspects of concealment behaviors qualitatively and to assess for convergence or divergence between the quantitative and qualitative results.

Literature Review

Health Disparities in Sexual and Gender Minority Populations

Sexual and gender minority (SGM) individuals are at greater risk for developing a range of mental health symptomatology compared to non-SGM individuals. The label "sexual minority" describes any individual who identifies their sexual identity as non-heterosexual. They may adopt identity labels such as lesbian, gay, bisexual, queer, or pansexual (among other self-identifiers), or may engage in same-

sex sexual behaviors, have same-sex attractions or fantasies, or display other same-sex emotional or social preferences (Sell, 1997). "Gender minority" refers to individuals who identify as non-cisgender, that is, their gender identity does not align with the sex they were assigned at birth (James et al., 2016). They may identify along a gender spectrum as transgender, intersex, nonbinary, gender nonconforming, or genderqueer, etc. For sexual minority (SM) individuals, there may be as much as two times the likelihood of developing psychiatric morbidity than their heterosexual counterparts (Meyer, 2003). Epidemiological studies have concluded that gay and bisexual men are three times more likely to meet criteria for major depressive disorder than heterosexual men (Cochran, Sullivan, & Mays, 2003). There is evidence to suggest that men who engage in same-sex sexual behavior may experience episodes of depression earlier, and are more likely to meet criteria for dysthymia and to present with suicide symptoms (Cochran & Mays, 2000a). In one sample, women who engaged in same-sex sexual behavior were nearly two times as likely to endorse criteria for major depressive disorder than those with exclusively other-sex sexual behavior (Cochran & Mays, 2000b). In a study of transgender adults, almost 50 percent of participants endorsed depressive symptomatology, and over 40 percent reported experiencing anxiety (Budge, Adelson, & Howard, 2013). Prevalence rates in a 12-month period showed higher rates of generalized anxiety disorder for lesbians and bisexual women (Cochran et al., 2003). Men who engaged in same-sex behavior were twice as likely to endorse generalized anxiety symptoms than their opposite-sex counterparts (Cochran & Mays, 2000b). Sexual minority individuals are at increased risk for alcohol use, especially among lesbians and bisexual women (Hatzenbuehler, 2009; Hatzenbuehler, Corbin, & Fromme, 2008). Men who engaged in same-sex behavior were 1.5 times more likely to endorse alcohol dependency and two times more likely to endorse drug dependency than those men who only engaged in heterosexual behavior (Cochran & Mays, 2000b).

Minority stress model. The minority stress model attempts to explain the health disparities evidenced in SGM populations when compared to non-SGM populations, outlining a potential etiology of higher levels of stress for SGM individuals (Meyer, 1995, 2003). The exact causal mechanism of these health disparities is still not largely understood, although the experience of stigma undoubtedly factors

large (Sandfort, Bakker, Schellevis, & Vanwesenbeeck, 2009). SGM individuals continue to be subject to institutional and interpersonal stigmatization as a result of their SGM identities, and these experiences appear to have real health consequences. A study by Hatzenbuehler and colleagues (2014) found that sexual minorities living in communities with higher-levels of anti-gay prejudice had a shorter life expectancy of approximately twelve years.

The minority stress model attempts to link an SGM identity with negative health outcomes, perhaps caused by SGM-specific stigma. A stigma is a personal attribute(s) that socially discredits an individual, categorizing them as *other* and *less than* when compared to the dominant social category in question (Goffman, 1963). In the case of SGM individuals, the *discreditable* attribute in question is a non-heterosexual sexuality and/or non-cisgender gender identity (Goffman, 1963). This attribute or self-information pertains to foundational aspects of the individual's self, and therefore has personal significance, made potentially all the more salient by the prospect of external evaluation and possible social repercussions (Goffman, 1963; Pachankis, 2007). This awareness could result from exposure to media representations and established cultural values; from *in vivo* experiences of witnessing victimization, discrimination, or social opprobrium of SGM individuals; or simply from the recognition of an implicit difference between one's self and dominant societal norms (Bem, 1996; Cohen & Savin-Williams, 1996). Herein, heterosexual sexual and romantic relations are indicative of normative sexuality, and societal norms establish these relations as socially preferable; likewise, cisgender gender identity is normative, and any inconsistency between an individual's assigned sex at birth and their gender identity should not exist and would be considered unnatural.

Stigmatization creates an aversive social reality and burdens the stigmatized individual with social stress (Meyer, 2003). The minority stress model demarcates this social stress into two categories: distal and proximal stress processes (Meyer, 2003). Both categories comprise stressors that are unique to SGM populations, and both theoretically contribute to health disparities. The distal stress processes include explicit prejudice events, such as discrimination and victimization. The proximal stress processes include internalized homophobia/transphobia (referred to going forward as *internalized stigma*),

expectations of rejection, and concealment. The minority stress model theorizes that the higher level of stress among SGM individuals results from a combination of these distal and proximal stressors. A newer mediation framework expands the minority stress model to incorporate general psychological processes that are shared by both SGM and non-SGM populations and that may mediate the relationship between stigma-related stress and the development of mood and anxiety-related disorders, as well as other psychopathology (Hatzenbuehler, 2009). Therefore, the conception of minority stress includes both the impacts of unique SGM stressors and general psychological processes that are implicated in psychiatric morbidity, and gives a sense of how the experience of stigma translates into negative health outcomes.

Concealment as a key proximal stress process. In the minority stress model, concealment is categorized as a proximal stress process for SGM individuals, thereby theorized to be a key component and contributor to the link between an SGM status and deleterious health disparities. Concealment refers to the active, conscious, and purposeful withholding of information about a non-heterosexual sexual and/or non-cisgender gender identity from their peers, families, and communities, often out of fear of reprisal or a sense of shame (Diamond & Savin-Williams, 2009; Meyer, 1995, 2003). For instance, a young transgender female may have a sense of her own gender identity (female), yet continues to wear clothes consonant with the sex she was assigned at birth (male). Or, a concealed gay man may refer to his boyfriend with female pronouns in a conversation with coworkers in order to insinuate he is part of a heterosexual couple. In both cases, the individual actively, consciously, and purposefully conceals possibly revelatory information from others.

As noted, there is an implicit rationale to concealment, and a compelling interest for SGM individuals to conceal. Unlike those with other common stigmas that have outwardly visible markers (e.g., physical disabilities, and racial or ethnic affiliation), SGM individuals can potentially avoid the repercussions of stigma through concealment. This is due to the fact that sexual and gender identities are *concealable stigmas*, that is, they are similar to visible stigmas in that they, too, are discredited by society, but different in that they are not necessarily outwardly perceptible to others (Goffman, 1963; Pachankis, 2007; Quinn, Weisz, & Lawner, 2017). Since having an SGM identity continues to be stigmatized in

many contemporary societies, concealment serves to avoid overt stigmatization as well as additional possible and probable negative outcomes like familial rejection or strife. Therefore, concealment may initially serve a protective role against the impact of stigmatization (Hoy-Ellis, 2016; Legate, Ryan, & Weinstein, 2012; Meyer, 2003). Concealment may offset some of the deleterious consequences that discrimination and victimization have on openly SGM populations, as well as those perceived to be SGM, throughout the world. In fact, studies have shown a negative relationship between concealment and experiences of sexual-orientation-specific victimization and discrimination (Edwards & Sylaska, 2013; Puckett, Surace, Levitt, & Horne, 2016).

Concealment behaviors may be protective against discrimination and victimization for SGM individuals; yet, there is another reality that belies the protective aspect of concealment: the ability to avoid detection does not imply a concomitant reduction in psychological distress. This distress is the result of several factors. Firstly, engagement in concealment behaviors indicates an awareness among SGM individuals of the stigma associated with their latent identity. They may also be aware of the specter of stigmatization. This awareness is naturally distressing to the stigmatized individual. For instance, individuals may speculate as to the responses of others to the reality of their SGM identity, and anticipate rejection or worse from their families and peers should they disclose their identity. Thus, as stated in the minority stress theory, concealment is a process aimed at modulating the stress of stigma by avoiding the potential negative consequences of disclosure, such as victimization and discrimination (Meyer, 2003). Yet avoidance of specific recrimination does not imply avoidance of the reality of that stigma, so awareness of one's discreditable difference may be stress-inductive in and of itself (Pachankis, 2007).

Secondly, this awareness magnifies how personally and socially distressing the content of the concealment is, thereby invoking shame and other negative emotions (or "anticipated stigma"; Quinn et al., 2014). When assessing concealment behaviors across a variety of samples, researchers have found that the more distressing the personal information is, the greater the imperative to conceal, and the more likely the individual is to do so (Larson & Chastain, 1990). Since it is often deployed in response to the

existence of distal stressors like victimization, concealment may be both in response to an external, environmental threat, as well as in response to difficulty accepting a stigmatized core aspect of oneself (Mohr & Kendra, 2011).

The experience of concealment may generate distress (Meyer, 2003). Compared to other proximal stress processes in the minority stress model, such as internalized stigma, concealment has received less research attention. Nonetheless, there is an argument to be made for the critical role that concealment plays in the internalization process of stigma, in which stress becomes ingrained in maladaptive patterns of behavior. Leleux-Labarge and colleagues (2015) argue that concealment supports the internalization and entrenchment of the stigma. In this process, an individual not only conceals to protect themselves but also begins to believe in the merit of the stigma; thereby, concealment exacerbates the impact of stigma through internalization (Leleux-Labarge, Hatton, Goodnight, & Masuda, 2015). An example of this might be a SM adolescent who conceals their SM identity at school to evade being bullied by peers, yet also is wracked with shame for having such an identity. As such, evasion of detection does not mitigate the stress effects of the drive underlying, and the active behaviors required for, concealment.

Likewise, concealment and concealment maintenance may require a range of behavioral strategies that may have cognitive, affective, physiological, and sociocultural impacts (Lane & Wegner, 1995; Pachankis, 2007; Pennebaker, 1985; Pennebaker & Beall, 1986; Wegner & Lane, 1995). Taken together, their impact on health outcomes may be additive and concurrent. Engagement in behavioral strategies to conceal an SGM identity also implicates more general psychological processes, as laid out by Hatzenbuehler and colleagues (2014). Implicating these processes may intensify concealment's impact on outcomes. For instance, there is tremendous overlap between these psychological processes, maladaptive patterns, and safety behaviors associated with a variety of forms of psychopathology not necessarily connected to responses to stigma (Lane & Wegner, 1995). Therefore, we can anticipate stigma-specific and more general psychological impacts as a result of concealing a stigma. Individuals with concealable stigmas, as well as those who conceal more generally, exhibit higher rates of psychopathology and physical health effects when compared to the general population (Cochran & Mays,

2000a; Cochran et al., 2003; Cole, Kemeny, Taylor, & Visscher, 1996; Cole, Kemeny, Taylor, Visscher, & Fahey, 1996; Gilman et al., 2001; Herrell et al., 1999; Larson & Chastain, 1990; Pachankis, 2007; Pennebaker, 1985; Sandfort, Graaf, Bijl, & Schnabel, 2001; Ullrich, Lutgendorf, & Stapleton, 2003). These effects appear to be above and beyond the impact of the stigma itself (Pachankis, 2007). Furthermore, individuals with concealable stigmas seem to have worse physical and psychological outcomes than those with visible stigmas (Frable, Platt, & Hoey, 1998; Pachankis, 2007).

Concealment may serve a protective factor against discrimination and victimization; however, it is inherently distressing as a result of the awareness of the potential for anti-SGM stigmatization and due to the internalization of that stigma. Psychiatric morbidity in SGM populations may have roots in concealment-related distress, and warrants further exploration of the mechanisms and impact of concealment.

Prevalence of concealment among sexual and gender minority individuals. Concealment is prevalent among SGM individuals. For SGM individuals, "coming out of the closet" (publicly disclosing an SGM identity) serves as a rite of passage, and stories of individuals' experiences coming out are ubiquitously proliferated in SGM communities. A population-based estimate on the proportion of SGM individuals who conceal, or have concealed, does not exist, and such an estimate would be difficult to calculate accurately. First, the secret nature of concealment complicates real-time measurement, and studies often recruit individuals who are not completely "closeted." Nonetheless, these studies include measures that assess *current* concealment as opposed to *past* concealment behaviors, thus missing both the extent of past concealment as well as the full range of concealment behaviors at their peak. How participants conceal presently is most likely drastically different than how they concealed in the past. Second, studies about concealment often target "outness" as opposed to concealment – "outness" being the extent to which an individual has disclosed their sexual or gender identity to significant others in their lives (Mohr & Fassinger, 2000; Pachankis & Hatzenbuehler, 2013). Using the inverse of outness as a measure of concealment conflates empirically distinct constructs, treating them erroneously as two sides of the same coin (Jackson & Mohr, 2016). Third, most prevalence research has been conducted on

cisgender individuals; thus, there is limited data on rates of concealment among GM populations (Rood et al., 2017). Lastly, research on proximal stressors related to gender minority identities has lagged behind that of sexual minority individuals, and no empirical studies have assessed for concealment of gender identity in a gender minority sample (Testa, Habarth, Peta, Balsam, & Bockting, 2015).

What we do know is that ten million Americans (4.1 percent of the population of the United States) self-identified as lesbian, gay, bisexual, or transgender (LGBT) as of 2016, and this is an increase from 3.5 percent in 2012 (Gates, 2017). Based on the commonness of notions of "the closet" and the percentage of samples with participants who endorse varying levels of concealment, it is safe to assume that a majority of SGM individuals conceal or have concealed their sexual or gender identity in their lives. For instance, 53 percent of a sample of LGBT workers indicated they conceal at work, even if they are mostly "out of the closet" in their personal lives (Human Rights Campaign, 2014). This prevalence could be even greater. In one sample of over 700 SGM individuals, 88 percent of participants retrospectively reported over a year of concealment of their sexual orientation (M_{years}= 6.12), calculated from when they first acknowledged their SM status to when they first disclosed their identity to another person (Brennan, Livingston, & Cochran, 2017). Eighteen percent of the sample identified as gender minority and also endorsed concealment; however, this endorsement was based on a self-report of concealment of sexual identity and not gender identity. In one survey, more than half of the transgender respondents endorsed concealment to avoid victimization (Beemyn & Rankin, 2011). By some estimates, a majority of youth who engage in same-sex sexual behavior identify as heterosexual, and they report the same for their same-sex partners (D'Augelli, 2006; Diamond & Savin-Williams, 2009). Presumably, a portion of those youth came to identify as non-heterosexual later in life, thus pointing to a degree of identity concealment at the time of the survey.

Summary. SGM individuals exhibit worse health outcomes compared to their non-SGM counterparts. As laid out in the minority stress model, these health disparities may result from the combination of general psychological processes and stressors unique to the SGM experience. Concealment of sexual and/or gender identity looms large in this experience as a key proximal stress

process emerging from the awareness of stigma. Many sexual and gender minority (SGM) individuals report experiences of concealment. The ostensibly adaptive nature of concealment may partially explain why concealment behaviors are so common. Yet, concealment is also responsible for high levels of distress. This reality, combined with the prevalence of concealment behaviors among SGM populations, make it a key focus of concern.

Concealment as a Multidimensional Construct

SGM individuals adopt certain adaptive behaviors to avoid discovery – adaptive in that they are conducive to concealment and may potentially mitigate victimization or discrimination that could result from discovery of the concealable stigma (Legate et al., 2012; Pachankis, Cochran, & Mays, 2015). These behaviors can include strategizing ways to maintain a hidden status, assessing each social interaction in light of the potential for disclosure, and isolating oneself from situations that may be compromising or individuals whose company prompts questions (Pachankis, 2007). These behaviors also depend on key cognitive and affective processes.

In SGM research, little work has been done to specify the components of concealment, and how they may individually and cumulatively contribute to concealment as a stress process associated with mental health outcomes. This study seeks to highlight the specific impact of concealment on health outcomes by merging the work that has been done on the individual mechanisms in the extant literature with the theoretical foundation of the minority stress model. I propose to do so by constructing a measure to quantify both the individual impacts of cognitive, affective, and behavioral components of concealment as well as the cumulative impact, referred to henceforth as the *extent of concealment*, as they pertain to mental health morbidity.

A comprehensive cognitive-affective-behavioral process model of concealable stigma. There are competing and parallel theories explaining the mechanism by which concealment impacts mental and physical health and well-being. Each of these theories provides examples of strategies that individuals employ to conceal and maintain concealment, and implicate cognitive, affective, and behavioral processes. Concealment, therefore, is a multidimensional construct deserving of special attention. More

recently, Pachankis (2007) developed a cognitive-affective-behavioral model to organize theories on concealment, namely communication privacy management, strategic perception management, identity management theory, and cognitive theories of secrecy, all of which deal with the cognitive, emotional, and social processes of information concealment and disclosure. This work builds upon the work done by Pachankis (2007), specifying it for an SGM sample and expanding it to include additional aspects of concealment. These factors will be explored in turn below.

Cognitive component. Concealment involves a wide range of cognitive processes: preoccupation, self-regulation, and vigilance. Constant activation of these processes may lead to depletion of cognitive resources, and thus produce a vulnerability for depression and anxiety symptomatology and substance use. Firstly, preoccupation is implicated in concealment. The preoccupation model of concealment posits that individuals concealing a secret engage in thought suppression, often resulting in thought intrusion and hyperaccessibility of the subject of secrecy (Lane & Wegner, 1995). In an attempt to put the secret out of their minds, individuals, in fact, become more preoccupied with it and exert greater cognitive resources attending to the intrusive thoughts (Uysal, Lin, & Knee, 2010). Thought intrusion may also be associated with a failure to process one's concealable stigma, and may also be connected to rumination (Major & Gramzow, 1999).

Critcher and Ferguson (2014) theorize that preoccupation may not result simply from thought suppression and the resulting thought intrusion, but preoccupation may also be necessary for the purposes of being vigilant. An SGM individual may self-monitor the content of their speech so as not to verbalize anything that might compromise concealment, such as the gender of the person they're attracted to, or the gender nonconforming behaviors to which they may secretly be drawn. Preoccupation may have stress effects in the form of increased physiological responses and cognitive overload (Pachankis, 2007; Pennebaker, Hughes, & O'Heeron, 1987), and has been linked to negative psychological and physical health outcomes (Major & Gramzow, 1999; Pennebaker & Susman, 1988; Wegner & Lane, 1995).

Secondly, cognitive self-regulation is an additional cognitive process implicated in concealment. Self-regulatory cognitive processes employed to ensure and maintain concealment may lead to cognitive

depletion, which may in turn inhibit future self-regulation (Cortopassi, Starks, Parsons, & Wells, 2017; Critcher & Ferguson, 2014). To isolate the impact of concealment on cognitive depletion from stigma, heterosexual undergraduates attempted to conceal their sexual orientation during an interview that consisted of questions geared at eliciting implicit and explicit indicators of their sexual orientation (Critcher & Ferguson, 2014). Compared to controls, the experimental participants demonstrated cognitive depletions on a block-counting task and a Stroop interference measure, and those tasked with both self-monitoring and altering their speech (to conceal the gender of their partner) reported more active concealment (Critcher & Ferguson, 2014).

Thirdly, cognitive depletion may also result from vigilant attention to others. A concealed individual may attend to and monitor those with whom they interact in order to detect any hints that the other person has perceived their concealable stigma (Pachankis, 2007). In one experimental study, individuals with a concealable status demonstrated a refined ability to take on the perspective of another and to recall what the other person said when compared to those with a visible status (Frable, Blackstone, & Scherbaum, 1990). This finding may correspond with the development of "gaydar," a colloquialism referring to a greater sensitivity, shown in some research, that SM individuals may have in identifying others' sexual orientation without verbal cues (Levounis & Anson, 2012; McAdams-Mahmoud et al., 2014). Vigilance may also overlap with paranoid social cognition resulting from concealment as demonstrated in one experimental study in which women role-played concealing a lesbian identity (Santuzzi & Ruscher, 2002).

In summary, individuals with a concealable stigma may experience cognitive overload and depletion as a result of preoccupation, excessive self-regulation, and exorbitant vigilance to others. These effects have been demonstrated experimentally, and appear to have specific relevance to concealment of sexual orientation (Critcher & Ferguson, 2014). Likewise, the association between cognitive depletion and the development of psychopathology has been strongly established (Bedrosian & Beck, 1980).

Affective component. In addition to the cognitive impacts of concealment, there also appears to be an emotional cost to secret-keeping (Kelly, 2002; Pachankis, 2007). This cost may be measured by

negative affect (Goffman, 1963; Nouvilas-Pallejà, Silván-Ferrero, Apodaca, & Molero, 2017; Pachankis, 2007), such as shame (Mereish & Poteat, 2015; Pineles, Street, & Koenen, 2006), guilt (Chaudoir & Quinn, 2016), frustration (McAdams-Mahmoud et al., 2014), or repressed anger (Hendy, Joseph, & Can, 2016). In one experiment involving lesbian, gay, and bisexual Dutch individuals, the experimental group reported less positive affect and more negative affect after recalling a past experience of concealing their sexual identity in the workplace compared to the control group, which was asked to recall revealing one's identity at work instead (Newheiser, Barreto, & Tiemersma, 2017).

Negative affect may result in negative self-perceptions (Pineles et al., 2006), or rejection-sensitivity (Dyar, Feinstein, Eaton, & London, 2016; Mohr & Fassinger, 2000; Pachankis, 2007). Self-perception theory outlines a direct link between concealment and self-perception. Negative attributions about the self increase with shame and guilt as an individual feels less able to disclose something about themselves (Bem, 1972). For instance, heterosexual participants who concealed the gender of their partner reported feeling less truthful in general than participants in the other experimental groups (Critcher & Ferguson, 2014). The impact of this process is borne out in rates of lower self-esteem and greater negative affect among students with a concealable stigma (Uysal et al., 2010).

In summary, concealment may cause an increase in negative affect for SGM individuals, especially if it includes a generalized tendency to avoid expression of emotion (Cole, 2006). Furthermore, the degree to which a stigma can be concealed may moderate the direct link between the stigma and negative affect (Pachankis, 2007). This reality has repercussions for health as the relationship between negative affect and the development of psychopathology is well-documented (Greenberg, 2008). Negative affect mediates the relationship between concealment, health concerns, and mental health symptomatology, such as post-traumatic stress disorder (PTSD) symptoms (Hendy et al., 2016). Likewise, both negative self-perceptions and rejection-sensitivity could contribute to mental health symptomatology, such as depression and social anxiety (Goffman, 1963; Pachankis, 2007).

Behavioral component. The cognitive and affective components explored above both result from and facilitate the concealment behaviors discussed herein. These concealment behaviors can be

categorized into three main types: inhibition, counterfeiting, and avoidance (Cain, 1991; Jackson & Mohr, 2016; Pennebaker, 1985). The behavioral inhibition model of concealment theorizes that concealment is a form of coping in the face of sensitive, and perhaps shameful, information about one's self (Pennebaker, 1985). Individuals who engage in such coping have a propensity to conceal, actively do so, and are ready to dissimulate when asked about the sensitive information (Pennebaker, 1985). SGM individuals may engage in behavioral inhibition as a means of coping with their concealable stigma. They may also decline to disclose other aspects of themselves, such as personal details, or inhibit expression of attraction to others (Cole, Kemeny, Taylor, & Visscher, 1996).

Self-silencing is a form of behavioral inhibition that consists of a reticence to be emotionally expressive and to be open about one's true self within close relationships (Lattanner & Richman, 2017). Higher levels of self-silencing are associated with greater concealment of mental health status (Lattanner & Richman, 2017). SGM individuals may self-silence in different ways. For instance, respondents in one qualitative study of concealing Norwegian gay and lesbian individuals claimed to be adept at steering the conversation away from revealing topics, such as whether they were seeing anyone romantically (Malterud & Bjorkman, 2016).

Speech alterations may also be a common example of behavioral inhibition. A speech alteration involves deliberate modification of speech content in order to maintain concealment (Critcher & Ferguson, 2014). SGM individuals engage in speech alterations to maintain concealment of their SGM status (Omurov, 2017). These may include using the opposite gender pronouns for a romantic partner, or making the gender of a partner ambiguous, in order to conceal the true gender, so as not to reveal a same-sex romantic partnership; or, intentionally avoiding correcting someone who wrongly assumed them to be heterosexual by misgendering the individual's partner (Malterud & Bjorkman, 2016). GM individuals may also avoid correcting others who misgender them, or by using pronouns that are inconsistent with their gender identity but align better with their external gender presentation (Perry, Chaplo, & Baucom, 2017).

The final aspect of behavioral inhibition is a readiness to lie when necessary in order to maintain concealment. A majority of LBGT employees who completely conceal at work went beyond concealment and lied to coworkers about their personal lives (Human Rights Campaign, 2014). In some cases, these deceptive responses and speech alterations may occur instinctively without conscious awareness. Respondents in one qualitative study of concealing Norwegian gay and lesbian individuals claimed to deny that they were gay instinctively when explicitly questioned about their sexual identity (Malterud & Bjorkman, 2016). Some research indicates that expectations of rejection may increase a minority individual's tendency towards inauthentic expression (Cook, Arrow, & Malle, 2011).

Speech alterations span both behavioral inhibition and counterfeit-type concealment behaviors. As demonstrated, concealment does not simply imply non-disclosure (Kahn & Hessling, 2001). Individuals may also engage in counterfeit behaviors, that is, deceptive or compensatory behaviors that go beyond concealment in order to create the appearance that the SGM individual is, in fact, straight and/or cisgender (Carragher & Rivers, 2002). These behaviors could seek to reinforce prototypical behavior of heterosexual individuals or gender norms (Anderson, Croteau, Chung, & DiStefano, 2001; Money, Clarke, & Mazur, 1975). For instance, a gay male or a transgender female may actively participate in activities, such as sports and athletics, which appear to be consistent with conventional male gender norms. Likewise, SM individuals may date members of the opposite sex, and SGM individuals may dress in particular ways to "blend" in (Rood et al., 2017).

These counterfeit behaviors are employed in order "to pass," that is, to engage in deliberate dissimulation in order to project the perception that one is a heterosexual or cisgender; " to cover" by tailoring information to avoid any insinuation that one might not be heterosexual or cisgender (Anderson et al., 2001); or "blend" so as to be perceived as cisgender (Rood et al., 2017). Three-quarters of a sample of gay men reported attempting counterfeit behaviors (Pachankis & Goldfried, 2006). These behaviors can range from modifying the tone of their voice to the way that they walked in order to avoid detection of their sexual orientation and to prevent anticipated rejection (Omurov, 2017; Pachankis & Goldfried, 2006). Even after transition, some transgender women reported that they continued to wear masculine

clothing and to refrain from wearing makeup only when visiting their families in order to conceal their gender identity (Money et al., 1975).

Other counterfeiting behavior may go further, as concealed SGM individuals go to greater lengths to distance themselves from any association with openly SGM individuals. This could include engaging in discriminatory behavior like telling homophobic/biphobic/transphobic jokes and other emotional, physical, or sexual harassing behavior aimed at actual or perceived SGM individuals (Carragher & Rivers, 2002). Pachankis and Hatzenbuehler (2013) theorized that some gay males overcompensate in achievement-related domains in order to decrease the negative impact of disclosure and evade rejection. They found that the number of years of concealment from first acknowledgement to first disclosure predicted overcompensation in academic compensation, appearance, and competition (Pachankis & Hatzenbuehler, 2013).

Concealment behaviors could also be conceptualized as the avoidance of disclosure. Avoidance captures a wide range of behaviors. As stated in modified labeling theory, individuals are more likely to avoid situations that emphasize the devaluation of a particular attribute or identity, or where actual devaluation is anticipated (Corrigan, Kosyluk, & Rüsch, 2013). They may also avoid situations that may heighten the risk for victimization in order to ensure self-preservation (Carragher & Rivers, 2002). For most SGM individuals, it is reasonable to assume that they will either be devalued in some way or subject to victimization at some point in their lives, and therefore they are more likely to engage in avoidant-type concealment behaviors. Among a sample of gay males from the US and UK who retrospectively described their self-preservation behaviors in high school, participants indicated that they socially isolated and withdrew (56% of the sample), feigned illness (34% of the sample), and engaged in increased truancy from classes and school (56% of the sample; Carragher & Rivers, 2002). In earlier work, Carragher (1999) found that 43% of the sample avoided extracurricular activities that may implicate or reveal their sexual identity in some way. SGM individuals may also avoid specific individuals, such as people from their past or those who may be particularly prejudicial. In a sample of trans women, several respondents ceased contact with past relationships after undergoing a gender-affirmative transition (Money et al.,

1975). These behaviors are also reflected among more contemporary samples as well (Katz-Wise & Budge, 2015; Rood et al., 2017).

In summary, SGM individuals may engage in a variety of types of concealment behaviors, including behavioral inhibition, counterfeiting, and avoidance. These behaviors are theorized to have deleterious mental and physical health consequences, mainly due to the fact that they require intensive physical and psychological activity (Cole, Kemeny, E. Taylor, & R. Visscher, 1996; Pennebaker, 1985). In experiments, speech alterations have been shown to require active self-monitoring, which causes depletions in cognitive performance and physical strength (Critcher & Ferguson, 2014). Pennebaker (1985) experimentally demonstrated associations between behavioral inhibition and autonomic activation, like skin conductance and heart rate. Other physiological impacts were also observed in these studies, including increased response latency, decreased eye contact, and cardiovascular and respiratory changes when individuals concealed (Pachankis, 2007; Pennebaker, 1985). Concealment behaviors may influence other nonconscious behaviors as well, such as help-seeking behaviors (Quinn et al., 2014), and unsafe sex practices (Frankis & Flowers, 2009; Frost, Parsons, & Nanín, 2007).

Social implications of concealment. The concealment behaviors described above are bound to have social implications, such as social avoidance and isolation. Individuals who conceal are deprived of many of the health benefits of social interaction and group affiliation, including stress reduction, coping, life satisfaction, and satisfaction with oneself (Bachmann & Simon, 2014; Jackson & Mohr, 2016). It is through the disruption of existing interpersonal interactions and the prevention of potential positive interactions that the behavioral implications of a concealable stigma are most evident, and may contribute to deleterious health outcomes. As demonstrated above, avoidant-type concealment behaviors compromise an individual's ability to participate authentically in relationships with others (Critcher & Ferguson, 2014). Even in instances where relationships may exist, true intimacy may be compromised by concealment (Pachankis, 2007). The stress and coping social support theory clearly outlines the ways in which social support can serve as a buffer against the negative impacts of stress (Barrera, 1986; Hu, Wang, & Wu, 2013). Social support can buffer the impact of stress among stigmatized populations (Hu et

al., 2013). For one thing, positive group-based attributions can serve a self-protective function against stigma for individuals affiliated with that group (Pachankis, 2007). Concealment as an isolating behavior deprives individuals of the opportunity for this essential support.

The social-cognitive processing model outlines a process by which those who conceal or who feel constrained in discussing their sexual orientation, as well as those reticent to share traumatic events or medical diagnoses like cancer, miss out on obtaining essential social support (S.J. Lepore, 2001; Lewis, Milletich, Mason, & Derlega, 2014). As a result, these individuals may be deprived of the opportunity to process their experiences and responses cognitively and emotionally (Lewis et al., 2014). In a sample of older lesbians (M_{age} = 54), the more the women concealed their sexual identity, the more constrained they felt in talking to friends and family (Lewis et al., 2014). The level of concealment predicted this difficulty with interpersonal expression above and beyond other proximal minority stressors (internalized homophobia and stigma consciousness), and indirectly was related to psychological distress, mediated by reticence disclosing to family as well as rumination (Lewis et al., 2014). In this same study, stigma consciousness predicted greater social constraints in talking with both friends and family. This is important to note because it denotes the awareness of stigma, and the social effects of such awareness.

Concealment can compromise the quality of relationships. Cooperative group processes and social cohesion were compromised by sexual orientation concealment amongst members of a military unit (Moradi, 2009), as was a sense of belonging for concealed SM workers in the workplace (Newheiser, Barreto, & Tiemersma, 2017). For the individuals concealing, concealment was negatively associated with peer affiliation, support, and satisfaction (Moradi, 2009). Some of these social consequences of concealment may be due to attendant negative affective processes. In an email-writing task, participants who were asked to conceal their sexual orientation wrote angrier, less polite emails than controls, potentially as a result of the interpersonal deficits caused by concealment (Critcher & Ferguson, 2014).

Other maladaptive relational behaviors may also develop. For instance, there may be a practice affect due to concealment (Miller & Major, 2000). Or, individuals who conceal tend to attribute greater weight to interpersonal feedback. Lacking positive self-regard and self-perception, individuals with

concealable identities may rely on others as the arbiters of their self-worth (Pachankis, 2007). Since an SGM identity has both personal and social relevance through personal and group identification, building positive self-regard may be more difficult without group affiliation, and lack of self-regard may be intensified by internalized stigma (Potoczniak, Aldea, & DeBlaere, 2007). In other words, an SGM individual's lack of self-regard may be exacerbated by stigma they hold towards the SGM community, making them less likely to seek affiliation with that group. In one study, individuals who were more motivated to conceal their sexual identity and were less "out" to others reported lower self-worth derived from their affiliation with the SGM community (Jackson & Mohr, 2016).

In summary, concealing an SGM identity is driven by external concerns, such as fear of victimization, and internal concerns, such as shame. Fundamentally, concealment stems from social considerations as individuals make concealment decisions based on the social costs and benefits of disclosure to others (Pachankis, 2007). Concealment is also an ironic process in that it avoids immediate danger, but also deprives individuals of the social support and group affiliation they need to thrive (Major & Gramzow, 1999). Therefore, not only do concealment behaviors have health consequences, but also these consequences are only further exacerbated by the deprivation of social support and group affiliation that occurs as a result of concealment.

The extent of concealment. The Comprehensive Cognitive-Affective-Behavioral Process Model of Concealable Stigma is an attempt to merge extant literature on concealment into a unified theory that can explain the nature and impact of concealable stigmas (Pachankis, 2007). As explored above, there are ample studies that explore the main effects of cognitive, affective, or behavioral components of concealment on outcomes, yet none have investigated the cumulative interaction between these components. As such, research focused on the impact of concealment on SGM populations has failed to account for the multidimensional nature of the construct of concealment, instead focusing on individual components of the model, only one of the three major components in the model, or simply relying on "outness" as a proxy variable representing the inverse of concealment. Furthermore, this framework has

not been applied cohesively to an SGM sample. Thus, the field has been unable, or merely has not tried, to measure the full extent of the impact of concealment on health outcomes for SGM individuals.

As a result, concealment as a proximal minority stress process has gotten lost in the mix, and its impact gone underappreciated. Most notably, the cognitive, affective, and behavioral components might not be discrete; instead, they may be additive, or perhaps synergistic. It is likely that the extent of deployment of concealment behaviors most likely intensifies the cognitive and affective processes described above. Therefore, to measure concealment as a construct, and to assess its impact more accurately, there is a need to consider the interplay of the three components and quantify the extent of concealment. The Extent of Concealment measure (see Figure 1) makes an initial attempt to rectify this situation by assessing SGM individuals' experiences of concealment on all three components to approximate the construct better and to determine its associations with health outcomes more accurately.

Concealment as a Prolonged, Proximal Stress Process

Duration of concealment. Besides the multidimensional nature of concealment, another key aspect of concealment that has been overlooked in research is its duration over time. Duration is a key factor in concealment because concealment behaviors often commence as early as within the first decade of the lifespan. For SGM youth, recognition of differences from their peers usually happens around age 8, with self-labeling and self-identification around age 13 for sexual minorities and transgender women and age 15 for transgender men (Grace & Wells, 2015). This reality may be critical to concealment's impact. Lattanner and Richmann (2017) conceptualized concealment as a "chronic form of stigma distress" given its deployment over time. Since concealment has negative health effects when tested as a binary variable, then it follows that sustained concealment over time could lead to worse outcomes. This could result from the entrenchment of maladaptive and aversive behaviors as well as prolonged and harmful psychological and physiological activation. Some studies have indicated that longer periods of concealment of a concealable stigma may negatively impact psychological well-being (Meyer, 2003; Miller & Major, 2000; Smart & Wegner, 1999). In other groups, such as those with a mental health diagnosis, duration of having such a concealable stigma negatively correlated with internalized stigma,

avoidance goals, and self-silencing (Lattanner & Richman, 2017). Targeting concealable stigmas at key periods in the developmental process, and reducing duration of concealment, may serve to mitigate the effects of a concealable stigma has on well-being.

Concealment as a developmental process: stage models of sexual and gender identity development. The major stage models of sexual and gender identity development often include concealment as a normative aspect of development for SGM individuals. This concealment occurs in early developmental periods, and persists over time until later developmental stages. These models outline stages in the development of sexual and gender identity, positioning a composite identity as the ideal and final stage in which an individual finds alignment and coherency amongst their social self, internal self, and behavior (Cass, 1984; Coleman, 1982; Lev, 2004; Levitt & Ippolito, 2014b; Rood et al., 2017; Troiden, 1988). Concealment is a *de facto* state in the first few stages, as individuals move from early identification and awareness to identity consolidation and public disclosure. This period of time has been previously referred to colloquially as "being in the closet." During this period, SGM individuals may conceal inklings of a non-heterosexual and/or cisgender identity, same-sex sexual behaviors and attractions, or gender nonconformity (i.e., behaviors not consonant with the gender norms of your assigned sex), from others (K. M. Cohen & Savin-Williams, 1996; Diamond & Savin-Williams, 2009; Lev, 2004).

Typically, in these first stages, individuals may experience *identity awareness* (Lev, 2004), or *identity confusion* (Cass, 1984) during which an individual realizes that their internal sense of their gender does not match their assigned-sex-at-birth, or that homosexuality holds relevance for them in some way. This difference gains significance as a result of *identity comparison* as they begin to notice differences from the majoritarian population (Cass, 1984; Coleman, 1982). In one qualitative study, participants noted the pressure to conform to traditional gender norms of their assigned sex, both to avoid both transphobic and homophobic slurs (Levitt & Ippolito, 2014b). This developmental moment paves the way for a concealment response as awareness of the difference also reveals the stigmatized aspects of that difference, or as Lev (2004) frames it, the "socially despised aspects of self" (p. 232).

Concealment as a developmental process: dimensional models of sexual and gender identity development. The dimensional approach to identity development models focuses less on a linear, chronological stage model and more on the idea that identity is comprised of discrete dimensions that predicate identity perception and development throughout the lifespan (Feldman & Wright, 2013). Some of these discrete dimensions are: same-sex attraction, questioning assumed heterosexuality, same-sex behavior, and gender dysphoria (Cohen & Savin-Williams, 1996; Lev, 2004).

The dimensional approach recognizes that there may be no concrete delimitation of time that counts as "being in the closet," or a predetermined chronology of developmental events in SGM development. "Being in the closet" could refer to the period of time between multiple milestones in sexual and gender identity development, such as between the first inklings of feeling different from other same- or opposite-gender peers, and first acknowledgement or first self-identification; or, it could refer to the time until first disclosure, or perhaps until the first behavioral explorations of an individual's SGM identity (Cohen & Savin-Williams, 1996; Lev, 2004). In these models, concealment may operate less as a blanket reality that covers several stages, and more as a strategy that is situationally deployed. In other words, for SGM individuals, concealment components and behaviors may be most prevalent during a specific developmental period, although it is common for individuals to utilize them even after publicly claiming an SGM status.

Sustained concealment over the lifespan. Concealment is not just limited to early developmental stages. There is growing evidence that the dichotomy between "being in the closet" and "being out of the closet" is a false one; in reality, SGM individuals may be largely open about their sexual and/or gender identities yet may continue to conceal their identity selectively throughout the lifespan, depending on the situation (Legate, Ryan, & Rogge, 2017; Legate et al., 2012; Pachankis, 2007; Ragins, Singh, & Cornwell, 2007). It is also not uncommon, especially in older cohorts, that concealment might stretch far into adulthood. Individuals may make concealment or disclosure decisions based on a variety of factors in a situation, including considerations of safety and salience of their identity (Pachankis, 2007). For instance, an SM individual may feel the salience of their identity and therefore be more prone to conceal

when attending a heterosexual wedding. In this instance, the salience of their non-heterosexual identity is underscored by the celebration of heterosexual matrimony. This situational dependence calls into question the more established theory that the "closet" is a discrete period of time. Concealment, therefore, is not a one-time event, but a series of events that may last from months to decades, and may even continue to a greater or lesser degree throughout the lifespan. Despite this reality, concealment behaviors often emerge from a period of more concentrated concealment in youth and adolescence. The impact of this period, which is delimited as the time between first acknowledgement and first disclosure, is the primary focus of this study.

Duration of concealment as a key mediator of health outcomes for SGM individuals. Concealment is a normal aspect in developmental models that attempt to describe common experiences of sexual and gender identity development for SGM individuals. Yet the normalization of the experience of concealment belies the disruption it may cause. The persistence of a concealable stigma may disrupt key aspects of development for SGM individuals, especially during adolescence, when identity formation and the formation of consistent and fulfilling sexual and gender identities are particularly salient (Erikson, Paul, heider, & Gardner, 1959; Grace & Wells, 2016).

Even though concealment has been conceptualized as a component part of sexual and gender identity development in SGM populations, few studies have operationalized its developmental and prolonged aspects (Morgan, 2013). Pachankis and Hatzenbuehler (2013) note that little attention has been paid to the duration of concealment, despite the fact that concealment behaviors often endure over time and often occur during a particularly critical time of early development. In their study of how concealment might impact SM men's self-worth-seeking behaviors, Pachankis and Hatzenbuehler (2013) anticipated that the longer the period of time an individual concealed (calculated as the difference in ages between first awareness of same-sex attractions and first disclosure of a non-heterosexual identity), the more likely that individual would attribute their self-worth as contingent upon achievement-related domains (i.e., academic competence, competitive success, and appearance), as opposed to other contingencies of self-worth, such as virtue and external appraisal (by their family or others). The

researchers were also interested in how negative affect, social isolation, and other behavioral outcomes (e.g., cheating, dishonesty, and arguing) might co-vary with self-worth, which they collected through the administration of a daily measure across nine days. The SM men in the sample (n = 136) were included in the analysis of the relationship between length of concealment and the outcome variables. After controlling for demographic factors, length of concealment predicted the achievement-related contingencies of self-worth noted above. All three contingencies predicted emotional distress, as well as a combination of other behavioral outcomes, like cheating, dishonesty, and social isolation (Pachankis & Hatzenbuehler, 2013).

This is the only study as far as I know to measure length of concealment and its impact on future behaviors. Although this study did not assess how length of concealment impacted negative affect and social isolation, length of concealment predicted achievement-related contingencies of self-worth, which in turn predicted negative affect across the board, and social isolation discriminately. Both negative affect and social isolation are of interest to this study as key components of the concealment experience.

The authors of this study also note that regardless of external stigma, the recognition of same-sex attraction is a process that occurs in isolation, and that ambiguous self-information can impact a sense of self-worth (Pachankis & Hatzenbuehler, 2013). Similar impacts have been noted during the process of gender identity development among GM individuals (Katz-Wise & Budge, 2015). To better understand the impact of deployment over time of concealment behaviors as well as the potential developmental consequences of concealment, this study seeks to isolate a particularly important time frame in the lives of many SGM individuals. I have opted to emulate the work of Pachankis and Hatzenbuehler (2013), as well as D'Augelli (2002), by isolating the impact of the time frame that begins with the first awareness of a possible SGM status to the first time that individual disclosed their SGM status to someone else. We call the number of years between these milestones the "duration of concealment." The duration of this time period in conjunction with the extent of concealment may predict mental health later in life. As the duration increases, so too do the deleterious consequences on outcomes and well-being.

Duration of concealment of sexual identity. As noted, concealment behaviors are common among SGM individuals, and these behaviors often persist over time. In one study, researchers found that gay male participants concealed for over five years on average, from first awareness of their sexual orientation at age 11 to first disclosure at age 16 (Pachankis & Hatzenbuehler, 2013). In another sample of over 700 SM, those who identified as gay concealed the longest (M_{years} = 9.25) compared to those identifying as lesbians (M_{years} = 6.05), bisexual (M_{years} = 3.91), and "other" (e.g., pansexual, queer, etc.; M_{years} = 4.03), measured from first acknowledgement of SM identity to first disclosure (Brennan et al., 2017). These findings are consistent with other work documenting the significant differences that exist in duration of concealment across SM populations (Cohen & Savin-Williams, 1996; Mansh et al., 2015). Among SM women, individuals who identify as bisexual, queer, or lesbian/gay differ in their report of duration of concealment, with non-lesbian or non-gay-identified women endorsing a greater likelihood of concealment (Puckett, Maroney, Levitt, & Horne, 2016).

Differences in duration of concealment of sexual identity based on gender. In addition, gender seems to play a role in differences in concealment. In regard to sexual minorities, SM men tend to conceal longer than SM women (Cramer, Burks, Golom, Stroud, & Graham, 2017; Cramer et al., 2018; D'augelli, 2002; Lewis, Kholodkov, & Derlega, 2012; Oliveira, Lopes, Costa, & Nogueira, 2012). In addition to concealing longer than women, self-identified men concealed significantly longer than transgender and other-identified (e.g., genderqueer) SM respondents (Brennan et al., 2017). In this study, concealment of gender identity was not queried. Other studies have shown similar differences between males and females in terms of duration of concealment (D'Augelli, Rendina, Sinclair, & Grossman, 2007; Lewis et al., 2014; Martos, Nezhad, & Meyer, 2015; Pachankis & Goldfried, 2006).

Duration of concealment of gender identity. Much less research has been conducted around concealment of gender identity. Furthermore, concealment can look differently for gender minorities than for sexual minorities in that a GM individual may conceal their true gender identity (conforming, instead, to the gender consonant with their assigned sex at birth), or they may conceal the fact that they are, in fact, transgender, particularly after they undergo gender-affirmative transitional services (Levitt &

Ippolito, 2014b, 2014a; Rood et al., 2017). Despite key differences in the purpose for concealment between sexual and gender minorities, the reality is that both groups do conceal, may deploy similar concealment behaviors, and often do so over time. Gender minorities may be more likely to conceal, and to do so for longer. One study found that nearly four times as many older transgender adults reported concealment of their gender identity compared to older sexual minorities, indicating that concealment may commonly persist later in life for gender minorities (Fredriksen-Goldsen, Cook-Daniels, Kim, Erosheva, Emlet, Hoy-Ellis, Goldsen, & Muraco, 2013). Conversely, concealment may be less of an option for gender minority individuals, especially those with non-binary identities or who are currently undergoing transitions, given that gender is a primary characteristic determining interpersonal interactions and thus eminently "observed" and "assessed" by others (Testa et al., 2015).

Differences in duration of concealment based on cohort. The latter study also points to the possibility of significant cohort differences that may exist in terms of the tendency to conceal and the duration of concealment. Up until the past decade, announcement of an SGM identity to familial and school communities was relatively unheard of before age 18, indicating the expectation that most individuals would conceal until at least that age. One such study did not even consider recruiting a cohort under 18 years of age (Grov, Bimbi, Nanin, & Parsons, 2006). This is demonstrated in studies where older cohorts report concealment until much later in life, sometimes upwards of ten years later than the next younger cohort (Frederikson et al., 2013; Grov, Bimbi, Nanin, & Parsons, 2006). For men, the difference was five years for coming out to self between the youngest and oldest cohorts and nearly eight years for coming out to others between those same groupings (Grov et al., 2006). These findings were consistent across race and ethnicity.

The Mental Health Impacts of Concealment: Depression Symptomatology, Anxiety Symptomatology, and Substance Use

Given the nature of the strategies to navigate and maintain an SGM concealable stigma, there may be a relationship between their utilization and the parallel cognitive, affective, and behavioral aspects of depression, anxiety, and substance use. This may serve to partially explain the evidence that overall, in

comparison to non-SGM populations, SGM individuals are at increased risk for depression, anxiety, and substance use, as shown by early epidemiological studies of mental health disparities between these populations (Bostwick, Boyd, Hughes, & McCabe, 2010; Hatzenbuehler, 2009; Meyer, 2003).

The minority stress model outlines the unique stress burden faced by SGM individuals, and identifies concealment as a key stress process. As mentioned above, there is tremendous overlap between the general psychological processes implicated in mood and anxiety-related disorders and the cognitive, affective, and behavioral strategies employed to navigate a concealable stigma and to maintain concealment, such as rumination, increased vigilance, or self-monitoring (Hatzenbuehler, 2009). As with mood and anxiety-related disorders, there is concordance between the psychological processes implicated in substance use and in concealable stigmas, such as having increased negative affect as well as seeking out behaviors that mitigate negative affect and discomfort (Hatzenbuehler, 2009). Furthermore, concealment may extend throughout the lifespan, and also may be differentially impactful for sexual and gender minorities (Fredriksen-Goldsen et al., 2014, 2013).

Depression and concealment. Sexual and gender minorities are at increased risk of mood disorders, perhaps as much as twice as likely compared to the non-SGM population, and concealment may play a key role in this disparity (Meyer, 2003). Evidence indicates that concealment is directly and indirectly related to and predictive of depression. This relationship has been shown in samples of SM adults (Frost & Bastone, 2008; Frost et al., 2007; Jackson & Mohr, 2016; Lehavot & Simoni, 2011; Pachankis et al., 2015; Talley & Bettencourt, 2011), SM veterans (Cochran, Balsam, Flentje, Malte, & Simpson, 2013), and SM male youth (Bruce, Harper, & Bauermeister, 2015a), as well as older transgender adults (Fredriksen-Goldsen et al., 2014).

In one study of 200 SM adolescent and emerging-adult cisgender males, concealment stress had direct effects on major depression (Bruce et al., 2015a). In this study, the researchers devised their own retrospective, self-report measure for "concealment stress" as opposed to using "outness" as the inverse proxy for concealment. The authors also ensured that the concealment stress measure comprised several important factors of concealment. These factors included feeling uncomfortable in one's own body,

feeling isolated, feeling inhibited, and fearing the judgments of others. The eight items loaded on one single factor, which accounted for over half of the total variance (Bruce et al., 2015a). Based on a summation of concealment stress, those with higher variable levels of concealment stress had four times the likelihood of experiencing major depression. In addition, concealment stress also predicted internalized homophobia, which also positively correlated with major depressive symptoms (Bruce et al., 2015a). In another study, concealment accounted for 13 percent of the variability in depression among sexual minority adults (Frost & Bastone, 2008). Combined with other minority stressors, concealment helped to predict as much as 56 percent of the unique variance in depression and anxiety problems for sexual minority women (Lehavot & Simoni, 2011).

Concealment also has indirect effects on depression. There is evidence to suggest that concealment mediates both the relationship between depression and stigma in adult gay men (Frost et al., 2007). Concealment also mediated the relationship between depression, and other mental health factors, in addition to social-psychological resources, such as social support and spirituality among sexual minority women (Lehavot & Simoni, 2011). Perry, Chaplo, and Baucom (2017) speculate that concealment may play a role in mediating the relationship between rejection sensitivity and depression among gender minorities. These mediations underscore the aspects of concealment that are conducive to depressed mood, and overlap with qualifying criteria for depressive disorders, such as social isolation.

In other samples, the relationship between concealment and depression has not been replicated. Yet, difficulty replicating may have resulted from the fact that researchers used "openness" as a proxy for concealment in a sample of SM individuals (Cohen, Blasey, Barr Taylor, Weiss, & Newman, 2016), theorized that concealment inoculated closeted men from minority stressors (Pachankis et al., 2015), and found that the impact of concealment on depression was offset by the positive impact of other resiliency factors among a non-US sample of men who have sex with men (MSM) in Brazil (Dunn, Gonzalez, Costa, Nardi, & Iantaffi, 2014). The inconsistent findings in the study of Brazilian MSM may also be the product of cultural differences.

Anxiety and concealment. Concealment may also be implicated in higher anxiety-related symptomatology. In comparison to a non-SGM population, SM women were upwards of twice as likely to experience an anxiety disorder in the past year, with bisexual women experiencing a greater rate of anxiety than either lesbian women or women who were unsure of their sexual identity (Bostwick et al., 2010). Individuals with concealable stigmas (not necessarily sexual identity related) endorsed higher negative affect and anxiety than those without a concealable stigma (Frable et al., 1998). Bisexual men also show elevated rates of anxiety beyond other SGM populations (Bostwick et al., 2010). These findings appear consistent with theories that there is unique stigma associated with being bisexual stemming separately from heterosexual and exclusively gay or lesbian communities (Bostwick et al., 2010).

For SGM individuals, social anxiety disorder may be particularly prevalent given the cognitive, affective, and behavioral demands of concealment (Burns, Kamen, Lehman, & Beach, 2012; Pachankis & Goldfried, 2006; Puckett, Maroney, et al., 2016). Cohen and colleagues (2016) found that concealment predicted social phobia and panic disorder, but not generalized anxiety disorder in a sexual minority sample. In a sample of SM youth, individuals indicated higher levels of social anxiety than their heterosexual peers (Hetrick & Martin, 1987; Safren & Pantalone, 2006), and higher levels of social anxiety may be a function of lower social support (Potoczniak, Aldea, & DeBlaere, 2007). Concealment was positively associated with social anxiety, and negatively associated with both social support and quality of life (Meidlinger & Hope, 2014).

Anxiety may continue to impact SGM individuals, even after first disclosure. Pachankis, Cochran, and Mays (2015) found no significant differences between sexual minority men and women who were closeted versus out in terms of rates of generalized anxiety disorder. SM men who recently came out, however, did report more GAD than those who were closeted (Pachankis et al., 2015).

Substance use and concealment. Duration of concealment predicted alcohol use in a mixed sample of 649 SGM individuals (Brennan et al., 2017). The researchers calculated duration of concealment as the difference between first questioning of a SM identity and first disclosure. After

controlling for demographic variables, personality factors that are predictive of impulsive drinking (i.e., openness, agreeableness), and sexual minority stressors, duration of concealment was a significant predictor of alcohol use as measured by the Alcohol Use Disorders Identification Test (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The longer SM individuals concealed, the greater their risk of current alcohol use (Brennan et al., 2017).

Concealment may deplete cognitive resources required for self-regulatory behavior, such as the moderation of substance use, and thus influence substance use patterns among SGM individuals (Burns et al., 2012; Cortopassi et al., 2017). One study found that impulsive drinking may be more common for those who conceal personal information apart from sexual or gender identity (Hartman et al., 2015). In this study, researchers wanted to test the relationship between parental authority and self-concealment, as well as between self-concealment and alcohol use behaviors, among a sample of university students (sexual identity was not specified). They used the definition of self-concealment as proposed by Larson and Chastain (1990), which operationalizes the construct as the tendency to be secretive, particularly about things that are personally distressing, and to avoid disclosure of compromising personal information. Results provided evidence that self-concealment positively predicted impaired control over drinking behaviors. In addition, self-concealment predicted the quantity and frequency of alcohol use and alcohol-related problems as measured by the Problems with Alcohol Use measure (Hartman et al., 2015). Given these results, a positive relationship between concealment and impaired control of substance use may exist in SGM populations as well, and perhaps to a greater degree given rates of substance use in SGM communities (Hughes & Eliason, 2002). There is evidence to suggest that closeted sexual minority individuals use substances at higher rates than uncloseted peers (Stall et al., 2001).

In one study of SM women, perceived sexual minority discrimination predicted proximal minority stress (including public identification as a lesbian), which in turn predicted psychological distress and drinking behaviors (i.e., drinking to cope and hazardous drinking; Lewis, Mason, Winstead, Gaskins, & Irons, 2016). Lower socioeconomic status (SES), a white racial status, and a lesbian sexual identity were all associated with hazardous drinking (Lewis et al., 2016). Pachankis, Westmaas, and

Dougherty (2011) found that as concealment behaviors increased in one day, so too did negative health behaviors such as cigarette smoking. Concealment, therefore, may also be an indicator of rising stress levels and coping-related substance-use. For a one standard deviation increase in concealment, for example, smoking increased by nearly 25 percent (Pachankis, Westmaas, & Dougherty, 2011). Concealment indirectly affected substance use for SM women (Lehavot & Simoni, 2014)

Implications of concealment for other psychological variables. Concealment also has a demonstrated association with a variety of other psychological variables that are implicated in specific disease processes that may serve to exacerbate outcomes for depression, anxiety, and substance use among SGM. For instance, concealment mediated the relationship between perceived stress and health outcomes for older transgender individuals (Fredriksen-Goldsen et al., 2014). An experiment with gay men revealed that those who concealed might also engage in more physiological work due to managing higher levels of baseline psychophysiological activation on average (Pérez-Benítez, O'Brien, Carels, Gordon, & Chiros, 2007). The gay men were invited to speak about difficulties they experienced concealing their sexual orientation from others. A number of physiological measurements were collected, such as heart rate, stroke volume, cardiac output, and blood pressure. The researchers hypothesized that there would be interaction between the level of concealment and disclosure in the task. Participants with higher levels of concealment in their lives (as measured by the Outness Inventory; Mohr & Fassinger, 2000) and higher levels of disclosure exhibited better recovery in psychophysiological activation. This was theorized to result from reduction in behavioral inhibition (Pérez-Benítez et al., 2007). Finally, higher concealment is associated with lower life satisfaction (Bachmann & Simon, 2014; Hu et al., 2013; Jackson & Mohr, 2016).

Concealment appears to have behavioral and sociocultural impacts as well, which can serve to worsen health outcomes. Empirical studies have demonstrated that higher rates of smoking among concealing gay men (Pachankis & Hatzenbuehler, 2013), never being tested for HIV among concealing Italian MSM (Prati et al., 2014), and engagement in avoidance goals among SM adults (Jackson & Mohr,

2016). More generally, there is evidence that concealment is associated with dissatisfaction in group membership, mediated by shame (Becker & Tausch, 2014).

Summary. In summary, there are higher rates of depression and anxiety symptomatology and substance use among SGM individuals compared to their heterosexual counterparts. Concealment may partially explain these health disparities. The association between concealment and depression, anxiety, and substance use is well-established, demonstrating that concealment is an important psychosocial variable to consider in explaining SGM health disparities.

The Current Study

Given its prevalence among SGM individuals and its role as a proximal stress process in the minority stress model, concealment deserves more in-depth study. The current study intended to expand our knowledge of concealment as a multidimensional construct; to quantify the direct effects of the extent of concealment on present depression and anxiety symptomatology, and substance use; and to assess whether the duration of concealment mediated these direct effects. The study posed the following research questions: 1) is concealment a multidimensional construct with cognitive, affective, and behavioral components? 2) What is the impact of past concealment on current mental health outcomes? 3) If there is such a relationship, is that relationship affected by the duration of concealment?

Hypotheses

This study tested the following quantitative hypotheses:

1. Greater extent of concealment - defined as the overall score on a measure assessing the deployment of cognitive, affective, and behavioral strategies to maintain concealment – will be associated with more mental health symptomatology (depression, generalized anxiety disorder, social anxiety disorder, and substance use).
2. Longer duration of concealment from first self-acknowledgement of a SGM identity to first disclosure of a sexual or gender minority identity will be associated with more severe mental health symptomatology (depression, generalized anxiety disorder, social anxiety disorder, and substance use).

3. Duration of concealment will mediate the relationship between the extent of concealment and mental health symptomatology (depression, generalized anxiety disorder, social anxiety disorder, and substance use), explaining the increased impact of concealment practices over a longer period of time on worse mental health outcomes (see Figure 2).

Given the study's mixed methods design, the following qualitative research questions were also posed with the intention of converging qualitative and quantitative data:

1. Among the qualitative responses, what are the themes relative to concealment?
    a. Among those themes, can we explicitly identify cognitive, affective, and behavioral components in the qualitative data?
    b. What other components of concealment emerge from the data?

Method

The proposed study employed a cross-sectional, mixed methods survey methodology to achieve the goals of instrument development and testing, provide convergent comparison of qualitative and quantitative data, and contribute to adequate prediction of the outcome measures. A fully-integrated convergent design is a mixed-methods design which seeks to deepen understanding of the research problem by obtaining and comparing quantitative and qualitative data on the same topic (Creswell & Plano-Clark, 2017). By comparing quantitative date with qualitative data, this design promotes the cultural sensitivity of the instrument, and is particularly useful for use with stigmatized populations (Creswell & Plano Clark, 2017).

Participants

Sampling procedures consisted of nonprobabilistic, purposive sampling of this population in order to collect data on the phenomenon in question, which is common among SGM populations. Individuals were recruited online via social media – Facebook, in particular. In the first phase of data collection, which lasted between January 9, 2019 and January 31, 2019, the PI and a research assistant posted a recruitment post for the study (see Appendix A for general recruitment text) on LGBT-relevant

Facebook groups and pages. In the second phase of data collection from January 31, 2019 to February 12, 2019, the PI created a Facebook page describing the study and encouraging page visitors to participate, and then paid to boost the page using Facebook's Ads Manager. The advertisement targeted Facebook users who had expressed interest in six LGBT interest areas ("bisexual community," "gay pride," "lesbian pride," "LGBT community," "Pride, and "transgender activism"). Users were further targeted based on age and location.

To be included in the survey, participants had to be at least 18 years old, and currently residing in the United States. They had to meet criteria for an inclusive definition of sexual minority and gender minority status. To qualify as a sexual minority participant, individuals could either identify as lesbian, gay, bisexual, pansexual, queer, questioning, and any other non-heterosexual identities in an open-response category; or, they could endorse non-heterosexual attractions, sexual behavior, or romantic configurations. To qualify as a gender minority participant, individuals could indicate a gender identity that did not correspond to their assigned sex at birth, or identify as genderqueer, agender, non-binary, or another gender indicated through an open-response category. Inclusion as a sexual or gender minority was conducted separately, allowing for heterosexual gender minority individuals to be invited to participate in the study. Individuals not invited to participate in the study were excluded on the basis of being under 18, living outside the United States, and reporting that they identify as cisgender and exclusively heterosexual.

As mentioned, recruitment began in January 2019 and ended in February 2019. A total of 1116 individuals completed the prescreening survey, and 1115 of those consented to participate in the survey. One-hundred forty-six participants did not qualify based on exclusion criteria. Another 443 participants failed to complete the survey, and an additional 33 individuals were excluded based on random responding. The remaining participants (N=640) comprise the final eligible participant pool. This final sample size surpasses the roughly 400 participants needed based on a power analysis using moderate effect size (f^2 = .15-.35) for a mediation model that meets the Causal-Steps Test devised by Baron and Kenny (1986). For this sample estimate, *beta* was set at .80 with *alpha* set at $p < .05$ (Fritz &

MacKinnon, 2007). In addition, this sample size is also sufficient for the principal component analysis to be conducted (Jolliffe, 2002).

Among the final pool of participants, ages ranged from 18 to 72 (*Mage* = 24.36, *SD* = 7.51). The sample was geographically diverse, residing in 49 of the 50 states (with the exception of Hawaii) as well as the District of Columbia. In regard to gender identity, 159 individuals identified as men (25.00%, 55.00% of those men were assigned male at birth), 265 identified as women (41.41%, 94.71% of those women were assigned female at birth), 106 identified as non-binary (16.60%), 45 as genderqueer (7.0%), 20 as agender (3.10%), two identified as intersex (.31%), and 43 as another gender (e.g., Quariwarmi, genderfluid, transmasculine, demiguy/demiboy/demigirl, bigender, androgynous, gender nonconforming, gender neutral, gender fae, agenderflux, fluid flux, or questioning; 6.70%). In regard to sexual identity, 48 individuals identified as asexual (7.50%), 159 as bisexual (24.84%), 87 as gay (13.59%), 75 as lesbian (11.71%), seven as straight/heterosexual (1.09%), 122 as pansexual (19.06%), 105 as queer (16.41%), eight as questioning (1.25%), and 29 as another sexual identity (e.g., demisexual, omnisexual, aceflux, panromantic, biromantic, gynesexual, gray-ace, homoflexible, or questioning; 4.53%). For those who identified as straight or heterosexual, one participant identified as non-cisgender and heterosexual, and the remaining six participants, despite being heterosexually-identified, were not exclusively heterosexual across multiple dimensions of sexuality (attraction, sexual behavior, and romantic relationships). In regard to ethnicity, the breakdown of the sample is as follows: 17 identified as Black/African-American (2.66%), 26 as Asian or Pacific Islander (4.06%), 588 as White/European-American (91.88%), 48 as Latino/Hispanic or Chicano (7.50%), 23 as Native American/American-Indian (3.59%), eight as Middle Eastern (1.25%), 33 as multi-racial (5.16%), and five as another ethnicity (e.g., French, Jewish, and Sami; <1.0%).

Selection for the Qualitative Sample. A subsample was selected for qualitative analysis using stratified purposive sampling and extreme-case sampling (Creswell & Plano-Clark, 2017). In stratified purposive sampling, the total sample was stratified into two groups based on whether the participant qualified as cisgender or had a gender minority identity. It was determined that 30 cisgender participants

and 30 gender minority participants would be selected from the larger sample. Each of these groups was further stratified so that the qualitative sample was proportional to the total sample in terms of the breakdown of gender and sexual identities. From both the cisgender and gender minority sample, participants were randomly selected using a random-number generator. Among the cisgender sample (*n*=30), participants were selected based on their sexual identity. Among this qualitative sample of cisgender women (*n*=17), seven women who identified as lesbian, four as bisexual, two as pansexual, one as asexual, one as both bisexual and asexual, one as queer, and one as questioning. For the cisgender men (*n*=13), five identified as bisexual, four as gay, two as pansexual, and two as queer. Among the gender minority sample (*n*=30), there was a diverse range of gender identities: 10 transmen, six non-binary individuals, five genderqueer individuals, two transwomen, two transmasculine individuals, as well as one androgynous individual, one self-identified demigirl, one gender neutral person, one genderfluid person, and one intersex individual. Each of these participants was also selected based on their sexual identity. Based on their representation in the sample, eight individuals identified as pansexual and eight as queer. Among those who identified as pansexual, they also identified their gender identity as non-binary (*n*=2), genderqueer (*n*=2), intersex (*n*=1), demigirl (*n*=1), gender neutral (*n*=1), and as a transman (*n*=1). Among queer individuals, their gender identities included non-binary (*n*=3), genderqueer (*n*=3), transmasculine (*n*=1), and as a transman (*n*=1). Five individuals identified as bisexual, three of whom also identified as a transman, one as non-binary, and one as androgynous. Three identified as asexual, one of whom also identified as agender and two others who identified as transmen. Both individuals who identified as lesbians also identified as transwomen. One gay-identified participant also identified as transmasculine, one bisexual and asexual participant identified as genderfluid, one straight/heterosexual participant identified as a transman, and one questioning participant also identified as a transman. In addition, using extreme case sampling, two additional individuals were identified with the highest and lowest average scores on the extent of concealment measure to provide potentially unusual and informative cases. The participant with the highest average score had already been selected based on the

above criteria, and the individual with the lowest average score identified as a bisexual, cisgender man. Thus, the final qualitative sample consisted of 61 participants.

Procedure

Individuals over the age of 18, who resided in the United States, and who identified as a sexual or gender minority or denied being both cisgender and exclusively heterosexual were eligible for this study. A wide range of sexual and gender identities were included in the current study, as were individuals who denied being exclusively heterosexual on account of non-heterosexual attractions, sexual behavior, or romantic relationships. Eligibility was determined through an online Qualtrics survey, and the prescreen was designed to take under two minutes to determine eligibility. Prescreening questions included a demographic and social history questionnaire (Appendix B), inquiring after age, whether or not the individual currently resides in the US, assigned sex at birth, gender identity, relationship status, race, ethnicity, and sexual orientation across several dimensions (identity, attraction, sexual behavior, and romantic relationships).

Upon eligibility determination, participants were asked to complete a survey comprised of 217 individual questions. Not all questions were posed to all respondents (e.g., differing versions were dependent on gender identity, or alcohol and drug use). Participants had up to a week from the day they initiated the survey to complete it. Upon exclusion from the survey or upon its completion, they were eligible to enter a drawing to win one of 10 gift cards at a value of $20 each to Amazon.com. If they chose to do so, they were directed to a separate and non-linked survey in order to provide their email addresses for the drawing.

Measures. The survey consisted of three sections: demographic and social history, quantitative and qualitative concealment indices, and outcome measures. These sections and their attendant measures are described in detail below.

Identity milestones questionnaire. This questionnaire queried around the age of specific gender and sexual identity milestones (Appendix C). These questions spanned several milestones, including first wondering about an identity [*"At what age did you first wonder whether you might be different from your*

peers regarding your sexuality (i.e., you might have same-sex or nonheterosexual attractions) and/or gender (i.e., you might be transgender or gender nonconforming)?"; adapted from Dirkes, Hughes, Ramirez-Valles, Johnson, & Bostwick (2016)], first acknowledgement of an identity (*"At what age did you first acknowledge to yourself that you might not be heterosexual and/or cisgender?"*; adapted from Savin-Williams & Diamond, 2000), and first disclosure of an identity (*"At what age did you first tell someone about your nonheterosexual sexuality and/or gender identity?"*; adapted from Dirkes et al., 2016). For those individuals who were categorized as sexual minority participants, they were also asked about additional milestones: first memories of attractions (*"Thinking about your first memories of being attracted to girls or boys, how old were you? These memories need not have been interpreted as sexual in nature at the time."*) and first sexual behavior ["*For those of you who identify as nonheterosexual: at what age, did you first have sex (defined as "genital contact on the part of either you, your partner, or both") with someone of the same sex as you or another LGBTQIA+ person?"*]. Both of these items were adapted from Savin-Williams and Diamond (2000). Despite querying adults about the age of events that may have occurred in childhood and adolescence, previous research has concluded that there is sufficient reliability for questions like these (Dirkes et al., 2016). The validity and reliability of questions aimed at sexual behavior or gender identity are further improved through the method of collection, that is, computer-administered and anonymous self-report.

Extent of concealment. The purpose of this measure is to assess the ways in which individuals actively conceal their sexual and/or gender identities across cognitive, affective, and behavioral domains with the intention to then relate concealment in these domains to mental health outcomes. Previous research on concealment has tested each of these domains independently and associated them with psychological and physical health outcomes. As of yet, none has assessed these dimensions together. The instrument was developed using standard scale construction, although without first being administered to a development sample (Worthington & Whittaker, 2006). The extent of concealment measure (Appendix D) used compiled validated items from preexisting measures as well as items derived from previous qualitative analyses of concealment to construct three subscales: cognitive, affective, and

behavioral components of concealment. By using existing items, the new measure reflects a strong grounding in empirically-supported theory with explicit application to a SGM sample, while also providing novel and holistic insight into the phenomena at hand (Creswell & Plano Clark, 2017; Worthington & Whittaker, 2006).

In terms of format, the items were placed on a five-point Likert scale assessing the extent to which individuals engaged in these behaviors (1 = *never*, 5 = *frequently*). A larger score on the complete measure indicated concealment to a greater extent. Relevant psychometric data is reported below.

Procedure for scale development. To construct the scale, a comprehensive search was conducted in PsycINFO to look for articles that pertained to concealment ("concealment", "self-concealment", "secrecy", "closet*", "disclosure OR outness OR coming out", "concealable stigma") in relation to several other dimensions including mental health, sexual orientation and gender identity, identity development, stigma, as well as cognitive, affective, and behavioral components of concealment. This search rendered 857 quantitative and qualitative articles, which became the comprehensive list for the literature review. During the course of the literature review, additional sources were added iteratively based on citations referenced in the original source list. The final list included 960 articles.

A portion of these 960 articles (80.0%) were sampled when developing the item pool. These articles were isolated based on an earlier rating system developed and assessed by the PI. As articles were reviewed for the literature review, the PI rated them according to their relevance to the research questions (1 = *not relevant*, 2 = *concealment-related, yet not minority-stress specific*, 3 = *theoretically related*, 4 = *concealment of sexual identity and/or gender identity*). Only those articles rated 2-4 were included in the sample of articles.

Once the sample of articles was compiled, the PI and a research assistant reviewed each of these articles for either quantitative measures used to assess concealment or for qualitative data that might inform item content. Items from quantitative measures or qualitative data determined to be related to concealment, that is, items that addressed the cognitive, affective, and behavioral components of concealment, were collected in an item pool. If items were not enumerated in the article, the research

team tracked down the original measure, either in the original empirical article that developed the measure or through an online search. If neither of these attempts surfaced the items, the PI contacted the original authors. If an article used the Outness Inventory (Mohr & Fassinger, 2000) or an outness measure as its sole measure of concealment, these articles were disregarded. Of the 776 articles reviewed, 92 articles contained items or qualitative data relevant to concealment and a total of 579 individual items were collected.

Once the items were collected into a database, the PI did an initial review in order to classify: 1) items as pertinent to cognitive, affective, or behavioral components of concealment; 2) by subtype of each component (e.g., "preoccupation" for cognitive, "negative self-perceptions" for affective, or "counterfeiting" for behavioral, etc.); and 3) whether the item was potentially relevant to the concealment experiences of sexual minority individuals, gender minority individuals, or both. In addition, the PI made an initial determination as to whether to include, exclude, or set aside for further consideration. Items were included if they were relevant to any of the three components of concealment. Items were excluded if the items were not related to concealment, if they were not pertinent to concealment during the period in question (operationalized as between first acknowledgement/first coming out), if they were not pertinent to contemporary concealment (i.e., were deemed antiquated), if they seemed to have a low likelihood of endorsement, or if they were more related to other minority stress processes (e.g., internalized heterosexism/cisgenderism). As a result of this review, an additional 168 items were excluded.

The remaining items were then compared by subtype by the PI, retaining only items that were non-redundant or which captured the phenomenon in question (e.g., if two items addressed the same type of concealment, a decision was made to keep the one that captured it more clearly or relevantly). This process resulted in the elimination of an additional 139 items. A list of 153 items (150 "yes's" and 3 "maybe's") were separated into an overall concealment list intended to address concealment of both gender and sexual identity as well as a concealment of gender identity list. Both of these lists were subject to review by a team of researchers at the University of Montana with expertise in LGBT health to

assess for item redundancy, clarity, and usefulness for the main research questions, utilizing rational item generation (Creswell & Plano Clark, 2017; Worthington & Whittaker, 2006). They were asked to classify the items according to the cognitive, affective, and behavioral components of concealment and to make a determination as to whether the item merited inclusion or exclusion from the measure. Inclusion considerations were based on the relevance of the item to the study, the likelihood of the particular concealment behavior, its relevance to both sexual and gender minority individuals, and the commonness of the item, especially considering cohort differences. The researchers also provided justification for exclusion. For those items deemed acceptable, the research team provided alternative wording for items that needed further refinement (for clarity and consistency, or using up-to-date terminology).

Analyzing the condensed list, the PI compared the results across four reviewers for convergence in regard to inclusion/exclusion judgments and classification across the three components of concealment. For those items determined to be redundant, the PI discarded the redundant item or combined similar but slightly different items into a comprehensive item. For those items over which there was disagreement regarding classification, the item was either excluded because it did not clearly demonstrate one of the components, or the item was edited to more clearly fit within the confines of a specific component. Finally, the PI cross-checked remaining items to ensure all subtypes of each component were still represented among the items. Items were further edited for consistency in tense and language. Given the lack of quantitative measures assessing for gender minority concealment, items were adapted to encompass the experience of concealment of gender identity.

In developing a new instrument, there are several potential threats to validity, such as failure to capture the construct or to create a rigorous quantitative measure (Creswell & Plano Clark, 2017; Worthington & Whittaker, 2006). To avoid these threats, the measure was subjected to a principal component analysis (outlined below). In addition, the sampling of items from existing concealment measures was done systematically and comprehensively, and item selection was determined according to a standardized rubric (as outlined above). The quantitative measure was further designed in accordance

with established psychometric principles. A key consideration was to include validation items while also maintaining appropriate instrument length as well (Worthington & Whittaker, 2006).

Qualitative portion. The qualitative portion of the study (Appendix E) posed the question of what themes exist relative to concealment of gender and sexual identity. This was assessed via five qualitative questions on the survey: 1) *Explain to the best of your ability why you hid the fact that you were LGBTQIA+*; 2) *How did you know to hide your identity?*; 3) *In what ways did you hide your identity?*; 4) *How did it feel to hide your identity?* 5) *What were common thoughts you had while hiding your identity?* Additionally, two research questions were posed: *is it possible to identify cognitive, affective, and behavioral components explicitly in the qualitative data?* and *what other components of concealment emerge?* The aim of asking these qualitative questions was to compare this exploratory qualitative data with the outcome quantitative data measured on the extent of concealment measure. In so doing, we confirmed or disconfirmed the quantitative data derived from the extent of concealment measure. The qualitative section of the measure preceded the quantitative items as a means to inspire participants to reflect on their concealment experiences without the interference and influence of the items on the quantitative measure.

Dependent variable measures. The third part of the survey collected data on the dependent variables: mental health symptomatology. This section enabled the analysis of the main effects amongst the Extent of Concealment and the mental health outcomes, as well as the individual factors of concealment and the mental health outcomes. In addition, the duration of concealment variable was devised to be included in a mediation model as a potential mediator between concealment variables and mental health outcomes.

Depression anxiety stress scale (DASS). The Depression Anxiety Stress Scales (DASS) (Appendix E) is a set of three self-report instruments designed to measure the negative emotional states of depression, anxiety and stress (Lovibond, 2014). The three scales assess Depression, Anxiety, and Stress and each contains 14 items. Each item is placed on a 4-point severity and frequency scale. In this sample, internal consistency reliability for the entire measure was $\propto = .97$. The Depression scale assesses

dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. Internal consistency reliability of this subscale was ∝ = .96 for the entire sample and ranged between ∝ = .91-.96 across specific clinical samples (Lovibond, 2014). For this sample, internal consistency reliability on the depression subscale was ∝ = .97. The Anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. Internal consistency reliability of this subscale was ∝ = .89 for the entire sample and averaged ∝ = .89 across specific clinical samples (Brown, Chorpita, Korotitsch, & Barlow, 1997). For this sample, internal consistency reliability on the anxiety subscale was ∝ = .91. The Stress scale is sensitive to levels of chronic non-specific arousal. Internal consistency reliability of this subscale was ∝ = .93 for the entire sample and ranged between ∝ = .88-.94 across specific clinical samples (Brown et al., 1997). For this sample, internal consistency reliability on the stress subscale was ∝ = .94. As noted, these scales have been shown to have high internal consistency and to yield meaningful discriminations in a variety of settings. Across nonclinical samples, internal consistency reliability was ∝ = .91 for the Depression scale, ∝ = .81 for the Anxiety scale, and ∝ = .89 for the Stress scale (Lovibond & Lovibond, 1995).

Social interaction anxiety scale (SIAS). The Social Interaction Anxiety Scale (Mattick & Clarke, 1998) (Appendix F) contains 20 items geared toward a self-report assessment of fear of social situations in which the individual may incur scrutiny. Items are scored on 5-point scale (0 = *not at all characteristic of me*, 5 = *extremely characteristic of me*). The measure has high internal consistency (∝ = .90 for a community sample, ∝ = .94 for the total sample, and ∝ = .93 for a clinical sample) and test-retest reliability (.92 after four and twelve weeks), as well as evidence suggesting high discriminant validity (Mattick & Clarke, 1998). For this sample, internal consistency reliability was ∝ = .94.

Alcohol use disorders identification test (AUDIT). The Alcohol Use Disorders Identification Test (AUDIT) (Appendix H) is a 10-item screening tool to assess alcohol consumption, drinking behaviors, and alcohol-related problems (WHO, 2001). The version that will be used will be the self-report version. The AUDIT has been validated across multinational and multicultural samples, specifically assessing

cisgender men and women, by the World Health Organization (WHO, 2001). The AUDIT's cutoff value demonstrates sensitivities across problematic drinking behaviors of .90 and above (WHO, 2001). Internal consistency reliability surpassed $\propto$ = .80, depending on the domain tested: psychological reactions ($\propto$=.83) and drinking behaviors ($\propto$ = .91; Saunders et al., 1993). For this sample, internal consistency reliability was $\propto$ = .84.

Drug Abuse Screening Test (DAST-10). The Drug Abuse Screening Test (DAST-10) (Appendix I) is a 10-item brief self-report screening tool to assess drug use in the past twelve months (Addiction Research Foundation, 1982). Each question requires a "yes" or "no" response. The DAST-10 is a derivative of the DAST-20, and correlates very highly (r = .98) with the original measure. It also demonstrates high internal consistency reliability at $\propto$ = .92 for a total sample, and $\propto$ = .74 for a sample exhibiting drug abuse behaviors (Skinner, 1982). For this sample, internal consistency reliability was $\propto$ = .80.

Data Handling and Analytic Strategy

Data collection was done via Qualtrics, and results were converted to SPSS files. Data cleaning, variable computation, and descriptive statistics were carried out in SPSS Version 25 (IBM Corporation, 2017). Figures were generated in Google Sheets.

Two versions of the survey were distributed, one of which was designed to be compatible with screen readers for the visually-impaired. An inaccessible version was made available so as to make completion of the survey more expedient for those participants not requiring accessibility. For each of the variables of interest, data from the accessible and inaccessible versions were merged. Items were rescored according to predetermined scales, or reverse scored for particular items as necessary.

Dependent variables for this study included a measure of overall depression and anxiety symptomatology and stress, social anxiety symptomatology, non-alcohol-related substance use, and alcohol use. Average scores were calculated for each scale (depression, anxiety, and stress; social anxiety; drug use; and alcohol use) or subscale (depression, anxiety, stress, as well as alcohol

consumption, dependency, and problematic use). These scores were tabulated for those participants that completed at least 90% of the items in a given scale.

The proposed mediating variable – duration of concealment – was calculated by taking the difference between the age at which the participant first wondered they might have a noncisgender gender identity or non-heterosexual sexual identity and the age at which they first disclosed their minority gender and/or sexual identity to another person. Given that these events were conceptualized as occurring chronologically (i.e., first wondering had to precede first disclosure), any negative calculations were removed. The data indicated a range of durations of concealment, and duration of concealment of gender identity indicated a positively skewed distribution that exceeded the standard for assuming a normal distribution. For both duration of concealment of gender and sexual identity, kurtosis also surpassed this standard. Thus, both were square-root log transformed, due to positive skew and presence of zero values, to approximate a normal distribution of duration of concealment.

Preliminary data analyses. Preliminary data analyses were run to examine descriptives related to age, gender, sexual orientation, and other demographic variables of interest such as race/ethnicity, relationship status, and level of education. Table 1 summarizes the descriptive statistics.

In tabulating the extent of concealment independent variable, the PI calculated the average score for the extent of concealment measure for those who completed at least 90% of the measure. For the duration of concealment measure, the PI calculated the difference between the first wondering about a non-cisgender and/or non-heterosexual identity and the first disclosure of that identity. After an analysis of skewness and kurtosis, these variables were log transformed (sqrt) to approximate a normal distribution. Correlations and hierarchical regressions were run to assess the relationship between the duration of concealment variable for both gender and sexual identity as well as each of the outcome variables.

The dependent variables, with the exception of the AUDIT subscales, were all calculated as average scores for each scale and subscale, but only for those participants who completed at least 90% of the items in each measure. For the three subscales (i.e., consumption, dependence, and alcohol-related

problems), summative scores were tabulated given that each subscale only had three or four items. Each outcome variable was then assessed for normality using the Shapiro-Wilkes test as well as for skewness and kurtosis. Results from the alcohol use and drug use measures were skewed; however, when comparing the original data with log transformations, the patterns in skew did not dramatically diverge. Thus, we have conducted the following analyses with the non-log transformed data.

Before running the hierarchical regression models, the PI tested whether the assumptions of these models were satisfactorily met. Those demographic variables acting as covariates in the hierarchical regression models included age, a binary variable indicating a cisgender or noncisgender gender identity, and a binary variable indicating a white or non-white race/ethnicity. For those analyses aimed solely at gender minority individuals, only age and the binary ethnicity variables were included as covariates. The PI entered the covariates and the three main predictors (extent of concealment, duration of concealment of gender identity, and duration of concealment of sexual identity) into a regression analysis to determine whether they were significant predictors of any of the dependent variables.

Tests of the assumptions are as follows: firstly, there were more than 20 cases per predictor variable. Secondly, each of the outcome variables were assessed for normality. Although, none of the dependent variables were normally distributed per the Shapiro-Wilkes test, meaning that the Shapiro-Wilkes test resulted in negative values, all, except for the alcohol use and drug use outcomes, satisfied normality according to an assessment of skewness and kurtosis (Denis, 2018). Thirdly, the PI assessed for multicollinearity amongst the predictor variables (including the covariates) and the outcome variables. No correlations between predictor variables exceeded .7, thus satisfying the assumption. Fourthly, correlations between the extent of concealment and the outcome variable were above .3 for total depression, anxiety, and stress scores as well as for depression and anxiety on their own. It was .297 for stress, and .266 for social anxiety. For the substance use outcomes, none of the correlations exceeded .2.

Fifthly, the PI analyzed residuals of all the relationships between the predictor variables and the dependent variables. Except for the substance use outcomes, all relationships approximated a straight-line linear relationship. For the substance use outcomes, the maximum standard residual exceeded +4 for

all substance use outcomes, indicating the presence of outliers. Sixthly, Cook's distance was below one for all outcome variables.

For the duration of concealment variables, there were more than 20 cases per predictor variable. After being log transformed (sqrt), the Shapiro-Wilkes test resulted in negative values, but standards of skewness and kurtosis were satisfied (Denis, 2018). Multicollinearity was tested amongst the predictor variables (including the covariates) and the outcome variables and were satisfied, that is, correlations between predictor variables did not exceed .7. Correlations between the duration of concealment variables did not have a correlation above .3 for any of the outcomes. An assessment of the standard residual showed that residuals were within an appropriate range (-3 to +3). Cook's distance was below one for all outcome variables.

Principal component analysis of the extent of concealment measure. The Extent of Concealment measure was subjected to a principal component analysis (PCA). The purpose of this analysis was to compute the principal components, that is, those components that account for a portion of the variance of the total measure, in order to extract and highlight the most relevant data from the dataset. A PCA helps to simplify analysis of the dataset through statistically compressing it to its principal components, and relating the principal components to each other through comparison of their eigenvalues and eigenvectors (Abdi & Williams, 2010). A PCA, as opposed to an EFA, was chosen for this study because it was theorized that the behavioral, cognitive, and affective components comprise a larger and singular theoretical construct; thus, conducting a factor analysis investigating communality between the factors does not capture the distinction that exists amongst the components. Each component is theorized to be distinct from the other two as would be represented by the orthogonal relationships amongst components represented in a PCA.

Data screening. Using listwise deletion, the analytic sample of the Principal Component analysis (PCA) was 351, thus satisfying the minimum amount for factor analysis.

Factor analysis. Before the PCA was run, several steps were taken to assess the factorability of the Extent of Concealment measure. Firstly, 60 out of the 64 items had at least one correlation of .3 or

above with at least one other item, which indicates sufficient factorability. Secondly, the data was subjected to two tests to determine sampling adequacy - the Kaiser-Meyer-Olkin measure and the Bartlett's test of sphericity. The Kaiser-Meyer-Olkin measure of sampling adequacy was .946, surpassing the recommended cutoff value of .6 and thus satisfying sampling adequacy. Bartlett's test of sphericity was significant ($\chi^2(2016)=12994.37$, $p<.01$), indicating that the variables sufficiently covary and correlate to warrant a factor analysis. Thirdly, all communalities but one were above .3, indicating covariance among almost all of the items. Considering all of these indicators, all 64 items were subjected to the PCA.

Hypothesis 1. Two-stage hierarchical regression models were used to test the degree to which the extent of concealment predicted depression and anxiety symptomatology, social anxiety symptomatology, and alcohol and drug use. The first stage included three covariates: age, ethnicity, and whether participants were cisgender or noncisgender. At the second stage, the extent of concealment became a predictor in the model.

Hypothesis 2. Two-stage hierarchical regression models were used to test the relationship between duration of concealment of either gender or sexual identity on mental health symptomatology. Model specification and covariates are identical to those explicated in hypothesis 1 with the exception of the binary cisgender/noncisgender gender identity variable which is rendered moot in the model for duration of concealment of gender identity since only gender minority (i.e., noncisgender) participants were asked this question. The first stage included three covariates: age, ethnicity, and whether participants were cisgender or noncisgender. For the models of duration of concealment of gender identity, the only covariates were age and ethnicity. At the second stage, the duration of concealment of either gender or sexual identity was added.

Hypothesis 3. To test whether duration of concealment of either gender or sexual identity mediates the relationship between the extent of concealment and the mental health symptomatology, an initial set of regression models were run to determine whether a mediation model was practicable based on statistical fit. The mediation model must meet the following four standards, as determined by the

Causal Steps-Test (Baron & Kenny, 1986): 1) there must be a significant direct effect of extent of concealment on each of the dependent variables, 2) there must be a significant direct effect between extent of concealment and duration of concealment, 3) there must be a significant effect of duration of concealment on each of the dependent variables when controlling for extent of concealment, and 4) the main effect of extent of concealment on each of the dependent variables must be nonsignificant when adjusted for duration of concealment (Fritz & MacKinnon, 2007). Fifthly, if the model has appropriate fit, then inferential tests will be run, and effect sizes calculated. Thus, firstly, using the model specification and covariates described above, extent of concealment was regressed on each of the outcome variables to determine significant relationships. Secondly, duration of both gender and sexual identity was regressed on extent of concealment and each of the outcome variables. Given that this analysis did not satisfy the requirements of a mediation analysis, analysis ceased at this step.

Convergent mixed methods analysis. Given that this study used a fully-integrated convergent mixed methods design, the extent of concealment measure was supplemented by exploratory qualitative inquiries in order to expand our understanding of this multidimensional construct. This approach is particularly called for given the limited measurement of concealment as a construct among SGM individuals. This convergent design, with parallel collection of quantitative and qualitative data from identical samples, enabled capture of the multidimensional nature of the phenomenon in question and efficient comparability (Creswell & Plano Clark, 2017).

Qualitative analysis. As noted above, the qualitative sample was stratified and selected to be representative of the total sample. Data was compiled for analysis.

A qualitative codebook was devised to guide coding (see Appendix J). The primary codes were rationally-derived based on existing literature on concealment of gender and sexual identity as well as the three major components of concealment reflected in the extent of concealment measure. This was done to ensure that the components were comprehensive, that each was qualitatively distinct, and that the individual items were culturally-sensitive and context-specific. Likewise, the subcodes represented more specific cognitive and affective processes as well as behaviors identified in the literature. The cognitive

subcodes consisted of preoccupation, self-monitoring, and vigilance. The affective subcodes were negative affect and negative self-perceptions. Behavioral subcodes included inhibition, counterfeiting, and avoidance. In addition to these codes and subcodes, a code and subcode for each component were developed to provide for emerging themes that either did not fit into any of the preexisting codes or subcodes. A mental-health related code was created as were codes for gender identity and sexual orientation in order to differentiate experiences of concealment based on the identity being concealed (i.e., either gender identity or sexual orientation).

After data was collected, the PI and a research assistant coded an initial dataset and compared the results for training purposes. After determining convergent results between the two ratings, the rest of the qualitative entries was coded. All of the above steps were done according to standards for ethical research and optimal researcher training, a key validation strategy (Creswell & Plano-Clark, 2017).

Validation of results. The codes and subcodes from ten participants were assessed for interrater reliability using Cohen's Kappa after determining of satisfaction of the following assumptions: the use of nominal and mutually exclusive variables, the presence of paired observations of the same responses, the same number of categories for each variable, the independence of each rater, and each rater coded for each observation. An assessment of Cohen's κ determined moderate agreement between the two raters' judgments, $\kappa = .573$ (95% CI, .300 to .886), $p < .001$. This was one of several methods used to validate the data and the results.

Other strategies were also used to validate the results (Creswell & Plano-Clark, 2018). Besides those mentioned above, the accuracy of the account was confirmed based on several inclusion criteria, such as completion of the survey, non-random responding, completion of at least 90% of the extent of concealment measure, and thematic relevance of the responses to the qualitative questions posed. The researcher also employed multiple triangulation procedures: a) methods triangulation in which multiple data collection methods were used to gain complementary insights into the same phenomenon and to assess for consistency in findings between the data collection methods; b) triangulation of sources by stratifying the qualitative sample to compare individuals with different identities and different

perspectives on the same phenomenon in order to check for consistency among the results from different data sources within the qualitative method; and c) analyst triangulation through the use of two analysts in order to illuminate potential observer bias and make room for multiple interpretations of the same data. The final validation strategy included reporting on extreme-cases in order to assess for disconfirming evidence that might challenge prior conclusions.

Fully-integrated convergent analysis. Integration of these datasets included an assessment for convergence and divergence between the sets, and what the confirmatory or disconfirmatory analysis indicated for the results (Creswell & Plano Clark, 2017). The researcher interpreted how well these databases compared, and how relevant the quantitative measure was to the experiences of SGM individuals. This analytic plan to converge the data included several steps. The first step included comparison of the convergence of components empirically-derived from the data using a principal component analysis and the top-level codes in the guidebook for qualitative coding. The aim was to match the themes and codes related to specific elements of concealment to the quantitative results from the Extent of Concealment measure. Both convergent and divergent results were reported. The second step compared the subcodes from the qualitative analysis with the subcomponents of each component (e.g., preoccupation for cognitive, negative affect for affective, and inhibition for behavioral, etc.). The third and final step looked at emerging themes and how they related to the extent of concealment measure.

Results

Extent of Concealment

The final Extent of Concealment Scale consisted of 64 items that covered each of the three components of concealment. In the cognitive concealment subscale, there were 20 items, 18 items in the affective concealment subscale, and 26 items in the behavioral concealment subscale. For a breakdown of items and the studies from which they were derived, please see Table 2.

Psychometric data. Average scores were calculated for each of the four scales (i.e., total, affective, behavioral, and cognitive) for those participants who answered at least 90% of the items in the

overall scale as well as each of the subscales. Higher average scores indicated higher endorsement of the items related to concealment and each of its components. For the total scale, both skewness and kurtosis were well within a tolerable range to assume a normal distribution. The affective subscale was endorsed the most among the subscales as indicated by higher average scores, with a negatively skewed distribution just within the limits of a tolerable range (i.e., between -.80 and .80) to assume a normal distribution. The cognitive subscale was the second-most endorsed and the behavioral subscale was the third-most. All of the subscales showed sufficient skewness and kurtosis to assume a normal distribution. Descriptive statistics are presented in Table 3.

Reliability. For the entire scale of 64 items, internal consistency reliability was satisfactory (Cronbach's α = .96). A review of whether removing any items would increase internal consistency revealed that no item would improve or diminish reliability more than a thousandth of a point (range of Cronbach's α = .963-.965). The average inter-item correlation was .30, and the average inter-item covariance was .48.

Reliability was also computed for each of the rationally-derived subscales. For the 18-item affective concealment scale, internal consistency reliability was sufficient (Cronbach's α = .90). A review of whether removing any items would increase internal consistency revealed that only one item (*"There was nothing specifically I was afraid of, but I dreaded coming out.")* decreased the reliability from .911 to . 897. The average inter-item correlation was .33, and the average inter-item covariance was .46. For the 26-item behavioral concealment subscale, internal consistency reliability was sufficient (Cronbach's α = .90). A review of whether removing any items would increase internal consistency revealed no item would improve reliability. The average inter-item correlation was .26, and the average inter-item covariance was .47. For the 20-item cognitive concealment subscale, internal consistency reliability was the strongest among the subscales (Cronbach's α = .94). A review of whether removing any items would increase internal consistency revealed that removing one item (*"I tried to think about my identity."*) would have improved reliability to .95. As this item was a reverse-scored item, its lower consistency with

the other items may be indicative of confusion based on the alternative wording. The average inter-item correlation was .42, and the average inter-item covariance was .68.

Principal component analysis. The PCA initially identified fourteen components; however, only one primary component stood out as distinct from the others, accounting for 33.90% of the variance. After this component, there was a significant drop-off to the next component, which accounted for 5.10% of the variance. In a second trial, an imposed three-component solution was enforced, but did not substantively change the nature of the results. Upon reviewing the items loadings, the items that loaded onto the second component appeared to be the reverse-scored items. Therefore, it is theorized that this accounts less for the presence of a distinctive second component and more for changes in response patterns that may have resulted from confusion about the item and how to scale it, or a failure to observe the change in the question root. In both trials, the PCA was run again using both varimax and oblique rotations to account for correlations amongst the components, and each of these tests procured similar results to the first two trials: one major component, a major drop off in the proportion of variance accounted for, and multiple components accounting for under 5.00% of the variance independently. The identified component did not correspond with any of the rationally-derived subscales. See Table 4 for the results and the scree plot in Figure 3.

Given that the PCA did not identify the theorized three components of concealment, the data were subjected to an exploratory factor analysis to identify any latent variables in the data. Fifteen latent factors were identified. However, like the PCA, only one major latent factor was identified, accounting for 32.90% of the variance. Again, there was a significant drop-off in variance accounted for between the first latent factor and the second (accounting for 4.30% of the variance). Secondly, since these three components are currently only theoretically grounded and the Extent of Concealment measure would not have been tested on an exploratory sample, conducting a confirmatory factor analysis is not advised (Worthington & Whittaker, 2006). See Table 5 and Table 6 for the results of the EFA.

Hypothesis 1. Results of these analyses provided support for the first hypothesis that greater extent of concealment predicted greater mental health symptomatology across each of the dependent

variables. The extent of concealment variable positively and significantly predicted overall depression, anxiety, and stress scores, as well as social anxiety. It also positively and significantly predicted overall alcohol use as well as alcohol consumption and problematic alcohol use. It only marginally predicted alcohol dependence. Finally, overall drug use scores were positively and significantly predicted by the extent of concealment overall score.

Predicting depression, anxiety, and stress from extent of concealment. Correlations and multiple hierarchical regression analyses were performed to assess the relationship between the extent of concealment and overall depression, anxiety, and stress (DASS) scores. Table 7 summarizes the results of the analysis. A two-stage hierarchical regression model was conducted with DASS scores as the dependent variable. The first model included three covariates: age, ethnicity, and whether participants were cisgender or noncisgender. This was done to control for known influences on stress levels as well as depression and anxiety symptomatology. At the second stage, the average extent of concealment score was added.

The results of the hierarchical regression model indicated that the covariates contributed significantly to the regression model, $F(3, 636)=28.61$, $p<.001$, and contributed to 11.90% of the variance in DASS scores. In the second stage, the extent of concealment predictor accounted for an additional 9.60% of the variance in DASS scores and this change in R^2 was significant, $F(4, 635)=43.36$, $p<.001$. Each of the DASS scores was positively and significantly predicted by the extent of concealment IV, indicating that as participants engaged in concealment more, they tended to experience higher levels of stress and more severe depression and anxiety symptomatology.

Predicting depression scores from extent of concealment. After testing for overall DASS scores, the relationship between the extent of concealment IV and each of the DASS subscales was conducted. The first of these is the depression subscale, assessing for dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. The two-stage hierarchical regression model is the same as described above. In the first stage of the model, the covariates predicted 9.10% of the variation in depression scores, $F(3, 636)=21.17$, $p<.001$. Adding the extent of concealment

predictor further accounted for 7.60%, $F(4, 635)=31.67$, $p<.001$. These results indicate that higher levels of concealment are associated with more severe depression symptomatology. Table 8 summarizes the results of the analysis.

Predicting anxiety scores from extent of concealment. The second subscale of the DASS is the anxiety subscale, which evaluates the level of autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. Again, the two-stage hierarchical regression model is the same as described above. The covariates in the first stage accounted for 11.6% of the variance in anxiety scores, $F(3, 636)=27.91$, $p<.001$. Adding extent of concealment in the second stage was associated with an additional 9.60% of the variation in anxiety scores, which was statistically significant, $F(4, 635)=42.69$, $p<.001$. Based on these results, more present anxiety symptoms are positively associated with a greater extent of concealment of gender and/or sexual identity. Table 9 summarizes the results of the analysis.

Predicting stress scores from extent of concealment. The stress subscale of the DASS assesses for levels of chronic non-specific arousal. Using the hierarchical regression model described above, the first stage accounted for 9.30% of the variance, $F(3, 636)=21.63$, $p<.001$. With the extent of concealment predictor in stage 2, an additional 7.00% of the variance was accounted for, $F(4, 635)=30.71$, $p<.001$. Participants who concealed more also endorsed higher levels of stress. Table 10 summarizes the results of the analysis.

Predicting social anxiety scores from extent of concealment. Correlations and multiple hierarchical regressions were performed to assess the relationship between the extent of concealment and social anxiety scores. Table 11 summarizes the analysis results. A two-stage hierarchical regression model was conducted with social anxiety scores as the dependent variable. The first model included three covariates: age, ethnicity, and whether participants were cisgender or noncisgender. This was done to control for known influences on social anxiety symptomatology. At the second stage, the average extent of concealment score was added.

The results of the hierarchical regression model indicated that the covariates contributed significantly to the regression model, $F(3, 635)=30.57$, $p<.001$, and contributed to 12.60% of the variance in DASS scores. In the second stage, the extent of concealment predictor accounted for an additional 5.00% of the variance in social anxiety scores and this change in R^2 was significant, $F(4, 634)=33.87$, $p<.001$. Each of the social anxiety scores was positively and significantly predicted by the extent of concealment IV, indicating that as participants engaged in concealment more, they tended to experience higher levels of social anxiety symptomatology.

Alcohol Use. Correlations and multiple hierarchical regressions were performed to assess the relationship between the extent of concealment and overall alcohol use. Additional analyses were also conducted on the subscales, investigating the relationship between extent of concealment and alcohol consumption, alcohol dependence, and alcohol-related problems scores.

Predicting overall alcohol use from extent of concealment. A two-stage hierarchical regression model was conducted with average overall alcohol use scores as the dependent variable. The first model included three covariates: age, ethnicity, and whether participants were cisgender or noncisgender. This was done to control for known influences on alcohol use. At the second stage, the average extent of concealment score was added.

The model predicts alcohol use better with the inclusion of the average extent of concealment than if it were not included. In the first stage, the covariates on their own did not predict alcohol use scores, $F(3, 636)=2.285$, $p<.078$, and accounted for 1.10% of the variation in scores. With the addition of extent of concealment predictor in the second stage, 1.40% of the variation in scores is predicted, $F(4, 636)=3.97$, $p<.003$. When we increase concealment by one-unit, we can expect, on average, an increase in current alcohol use by .12 units ($p=.003$), given the inclusion of all other predictors in the model. Thus, for SGM individuals, the greater concealment of their identities is associated with higher levels of alcohol use. Table 12 displays the results of the analysis.

Predicting alcohol consumption from extent of concealment. The alcohol consumption scale assesses for alcohol intake above recommended levels as well as in dangerous situations. In a

hierarchical regression analysis, alcohol consumption scores served as the dependent variable and were regressed on by the three covariates in the first stage with the addition of the extent of concealment in the second stage. Alcohol consumption was also predicted better when extent of concealment was included in the model versus not, $F(4, 635)=4.90$, $p<.001$. The covariates in stage 1 also significantly predicted the outcome, $F(3, 636)=4.40$, $p<.004$. The first stage accounted for 2.00% of the variance in alcohol consumption, and the second stage accounted for an additional 1.00%. Alcohol consumption appears to be higher for those individuals who conceal their gender identity and/or sexual identity more. Table 13 displays the results of the analysis.

Predicting alcohol dependence from extent of concealment. The second AUDIT subscale is the alcohol dependence subscale, which evaluates difficulty controlling drinking and preoccupation with drinking alcohol. In this hierarchical regression model, alcohol dependence served as the dependent variable. In the first stage, the covariates did not significantly predict alcohol dependence, accounting for only .60% of the variance in scores, $F(3, 636)=1.27$, $p<.28$. When extent of concealment was added as a predictor in the second model, it marginally predicted alcohol dependence, $F(4, 635)=1.71$, $p<.07$, accounting for an additional .70% of the variation. Individuals with higher rates of concealment seem to experience marginally more alcohol dependence. Table 14 displays the results of the analysis.

Predicting alcohol-related problems from extent of concealment. The alcohol-related problems subscale of the AUDIT assesses for problems related to alcohol use, such as injuries as well as interpersonal concerns and impacts. The first stage of the model was not significant, $F(3, 636)=.56$, $p<.64$, accounting for only .30% of the variance in scores. With the extent of concealment predictor, the second stage of the model accounted for an additional 1.30% of the variation in scores, $F(4, 635)=2.50$, $p<.04$. Problems related to drinking alcohol may be more prevalent for those SGM individuals who conceal or have concealed their gender identity and/or sexual orientation to a greater extent. Table 15 displays the results of the analysis.

Predicting drug use from extent of concealment. As in the models above, correlations and hierarchical regressions were computed to assess the relationship amongst the covariates, the primary

predictor (i.e., extent of concealment), and the dependent variable (average overall drug use). Overall, the model predicts drug use better with the inclusion of the average extent of concealment than if it were not included given that $F(4, 636)=2.99$, $p=.02$. In the first stage of the model, the covariates failed to predict the outcome, $F(3, 636)=1.02$, $p=.39$, and accounted for less than 1.00% of the variance in drug use scores. The second stage accounted for an additional 1.4% of the variation in drug use scores. When we increase concealment by one-unit, we can expect, on average, an increase in drug use by .12 units ($p=.003$), given the inclusion of all other predictors in the model. This relationship indicates that higher drug use may be more common among those individuals who conceal their identities more. Results are displayed in Table 16.

Hypothesis 2. In an analysis of the duration of concealment of gender identity variable, 294 participants were included after participants with negative or missing values were excluded. On average, among the sample, participants concealed their gender identity for an average of five years ($M = 5.24$, $SD = 7.22$) from the age of first wondering about being noncisgender to the age of first disclosure of a noncisgender gender identity. Participants' duration of concealment of gender identity ranged from zero years to as many as 45.

Six-hundred and twenty-eight participants qualified for the calculation of duration of concealment of sexual identity after removal of participants with negative values or missing values. On average, participants indicated over four years of concealment of their sexual identity ($M = 4.33$, $SD = 4$ .49) from first wondering about their identity to first disclosure to another person. Participants ranged from zero years of concealment to as many as 45. For a summary of the results, see Table 17.

There is limited support for the relationship between duration of concealment of either gender identity or sexual identity on the mental health symptomatology which were assessed. Thus, only successful relationships are summarized here. For complete results from the hierarchical regression models, please see Tables 18-31.

Predicting of overall depression, anxiety, and stress scores from duration of concealment. The first model to be run was to analyze the relationship between duration of concealment of gender identity

and overall depression, anxiety, and stress scores (DASS). Overall, the model predicts overall DASS scores better with the inclusion of the duration of concealment of gender identity variable than if it were not included given that $F(3, 290)=9.59$, $p<.001$. In the first stage of the model, the covariates significantly predicted the outcome, $F(2, 291)=11.48$, $p<.001$, and accounted for 7.30% of the variance in DASS scores. The second stage accounted for an additional 1.70% of the variation in DASS scores. When we increase the duration of concealment by one-unit, we can expect, on average, an increase in overall DASS score of .15 units ($p<.02$), given the inclusion of all other predictors in the model. This relationship indicates that the longer an individual conceals their gender identity, the higher their stress levels and the more severe their depression and anxiety symptomatology. See Table 18 for a complete display of results.

The amount of time an individual conceals their sexual identity also appears to be associated with higher levels of stress and more severe depression and anxiety symptomatology. Regressing duration of concealment of sexual identity on DASS scores indicate that the model predicts the outcome variable better with the inclusion of the duration variable than without, $F(4, 623)=23.86$, $p<.001$. The first stage of the model also significantly predicts DASS scores, $F(3, 624)=29.95$, $p<.001$, accounting for 12.60% of the variance in these scores. Adding duration of concealment of sexual identity accounts for an additional .70% of the variation in DASS scores. The results of the regression are displayed in Table 19.

The primary driver of this relationship between DASS scores and the duration variables appears to be depression symptomatology, and not anxiety or stress. When a two-stage hierarchical regression model was constructed to include the covariates in the first stage and duration of concealment of gender or sexual identity, the model did a better job of predicting depression symptomatology with the inclusion of both duration variables than without.

For the hierarchical regression model testing the association between duration of concealment of gender identity and depression, the first stage with only the covariates was significant, $F(2, 291)=6.27$, $p<.002$, and accounted for 4.10% of the variance in the depression scores. Adding the duration of concealment of gender identity, an additional 2.9% of the variance was accounted for, $F(3, 290)=7.32$,

$p<.001$. It appears that longer duration of concealment of gender identity is associated with more severe depression symptomatology. See Table 20 for results.

In assessing the relationship between duration of concealment of sexual identity and depression symptomatology, the first stage of the hierarchical regression model was significant, $F(3, 624)=24.02$, $p<.001$, and accounted for 10.40% of the variance in depression scores. In the second stage of the model, the duration of concealment of sexual identity variable further accounted for 1.60% of the variation in scores, $F(4, 623)=21.22$, $p<.001$. Given this relationship, we can conclude that the longer a sexual minority individual conceals their identity, the more depression symptoms they may experience. Table 21 summarizes the results of this analysis.

Hypothesis 3. Using the method prescribed by Baron and Kenny (1986) to determine the presence of a mediational relationship, the PI assessed the relationships amongst the extent of concealment, duration of concealment (of both gender and sexual identity), and the outcome variables. Only the relationships with overall depression, anxiety, and stress symptomatology as well as depression symptomatology on its own potentially fulfilled the requirements for mediation after controlling for age, cisgender/noncisgender, and ethnicity. However, additional correlations were calculated to examine relationships between the three variables intended for the mediation analysis, and duration of concealment of sexual identity did not significantly correlate with either extent of concealment or the outcome variables. Duration of concealment of gender and sexual identity correlated positively with extent of concealment but not with either of the outcome variables, as displayed in Tables 32 and 33. Given this initial analysis, and further corroborated by the results of regression analyses of the direct effect controlling for the mediator, an effect pathway is unlikely.

Qualitative results. Sixty-one participants were selected from the larger sample and their responses to the qualitative prompts were coded. Responses included cognitive, affective, and behavioral aspects of concealment as well as emerging themes, and these are detailed below.

Cognitive themes. Participants endorsed a variety of cognitive processes involved in concealment. Empirical research has shown a cognitive component of concealment, implicating several

different processes such as preoccupation (e.g., Lane & Wegner, 1995), self-monitoring (e.g. Cortopassi et al., 2017), and vigilance (Pachankis, 2007). In addition, several other themes emerged from the data.

Preoccupation. The code for cognitive preoccupation was applied to qualitative data that referenced automaticity or incessancy of thoughts about an identity, an inability to stop thinking about an identity due to intruding thoughts, or attempts to distract oneself from thinking about one's identity. Eighteen respondents (29.50%) endorsed cognitive preoccupation while concealing their gender identity and/or sexual identity. One cisgender gay male described "constantly feeling watched," and a pansexual gender neutral participant said the experience was like "walking on eggshells" with the risk of being shunned with any misstep. Other participants described wondering what others might think if they knew about the participants' identities, or a pansexual non-binary individual justified concealment as a means of conforming and "[making] everyone's life easier." A genderqueer participant reported that in regard to their queer sexual identity that they had 'A desperate, constant thought that I needed to be "normal" in every way to mask this aspect.' Respondents repeatedly used "what if" phrasing when recounting thoughts they had while concealing. A bisexual cisgender female asked herself repeatedly: "what if someone found out?" Another (a lesbian cisgender female) asked "what if they're right" that LGBT individuals are an abomination. Participants explained that they became fixated on questions such as why they had to have their identity. A lesbian cisgender woman asked herself: "Why me? Why out of everyone in the world do I have to be like this?" Others expressed wishes for their life to be otherwise, namely to be heterosexual and/or cisgender. A questioning transman wrote that he often thought to himself: "I wish I was normal." A bisexual cisgender man said he wished that he could "do X, Y, and Z like everyone else" but that his identity prohibited this. Despite concealment, other participants indicated resistance to the reality of concealment and identification of how wrong it was. A gay transmasculine participant recounted a common thought that "no one should have to hide who they are."

Self-monitoring. Self-monitoring was coded for when responses pertained to mental checks of one's appearance, mannerisms, or speech content in order to prevent allusions to/indicators of a concealed identity. Eight respondents (13.10%) indicated cognitive self-monitoring involved in concealment of

their gender identity and/or sexual identity. Ways of self-monitoring included checking themselves to appear "normal," to make sure not to stand out, to conceal their attraction to certain people (e.g., not checking out individuals of the same gender or fellow SGM), and preventing accidental disclosures of their identity. A pansexual gender neutral participant described "[hyping] up my femininity so no one had doubt that I was a girl."

Vigilance. Vigilance denoted attending to and monitoring others' reactions and responses during an interaction in order to detect whether the other person had perceived the concealed identity. Eleven individuals (18.00%) had responses coded for vigilance. A gay cisgender man worried about how he was being seen by others. A bisexual cisgender man wondered whether others suspected his identity, and a lesbian transwoman said she hoped that no one could tell. A gay cisgender man and a lesbian cisgender woman described being vigilant for signs of tolerance/intolerance of LGBT identities. One reported intently observing a friend's reaction to "gay" things, and another indicated that they looked for "signals" that might imply their politics and homophobic/transphobic behaviors or attitudes. Likewise, participants remained vigilant for those who might be more tolerant or accepting. A queer cisgender female said she revealed her identity to friends first before her family, assured that they would be accepting.

Emerging cognitive themes. In addition to the above codes, there were several emerging themes. Fifty-six participants (87.50%) had responses that qualified as emerging cognitive themes. The first comprised an intuitive sense of participants' difference from others, which they perceived as unacceptable and which resulted in the need to conceal. This difference was perceived based on an experience of their sexuality and gender that defied norms they were familiar with but did not connect to, as articulated by a bisexual and transgender participant:

> Considering how other kids talked about crushes and cooties, and how my family talked about me growing up to be a cheerleader, date a nice man, and get married and have kids, I knew something was wrong with me. I didn't connect to any of that stuff at all. I wanted to be the guy who married the girl, which confused me and left me feeling the need to conceal all of those feelings because they were such a bizarre mess.

Some participants described concealment as something they did beyond conscious choice. A gay cisgender male said that "I honestly don't know [how I knew to conceal], I just did."

A second theme that emerged was participants' ambivalence toward their own identities. This resulted from uncertainty about their own identity, confusion about their identity, the inability to explore their identity, or a lack of language to identify themselves. While concealing her identity, a queer cisgender female said she often thought: "what does it mean to be gay?" Not having any reference for what they were experiencing in terms of identity development, a pansexual gender neutral participant remembered thinking, "there's probably no such thing as the way I'm feeling (gender neutral, specifically)." A queer transman said he lacked confidence in "how sure" of his identity he was. Uncertainty and confusion about identity seemed to result from an inability to explore or seek information openly. Reflecting on their delayed identification as a sexual and gender minority, a queer genderqueer participant said that they did not "explore" what their clandestine sexual experiences with women and non-binary folks meant, "which also meant I did not get to come to terms with what terms I wanted to identify with or what was happening for my gender identity until much later." Uncertainty also emerged from resistance to acknowledging the reality of an identity. A bisexual cisgender male said he was "not ready to admit" his identity to himself. In addition, participants remarked on conflicts between their preexisting belief systems, particularly religious beliefs, and their emerging sexual and/or gender minority identity. Referencing their Christian faith, a bisexual and asexual genderfluid respondent indicated feeling guilt about how their identity conflicted with their religious belief system.

The third theme included anticipatory and catastrophic thoughts related to what might happen were they to disclose their identity. Participants anticipated rejection or disapproval from their families, friends, and communities. They described expectations of struggle, invalidation, increased victimization, ostracization, a lack of understanding, or subjection to conversion therapy. A transgender participant indicated that he concealed his gender identity, anticipating his parents' response: 'I never told my parents what I felt, because I'd be "crazy" or it's "just a phase."' If his identity became public knowledge, a bisexual cisgender male anticipated being "shunned or abused."

The fourth theme had to do with awareness of stigma. According to respondents, concealment resulted from awareness of stigma, discrimination, and societal prejudices. Participants learned of these from familial views, religious beliefs, community and regional attitudes, as well as from the media. A bisexual transman said he concealed because he lives in " a state well known for violence and discrimination against LGBT members." A lesbian transwoman said she knew to conceal "By the things my parents said and the vitrol I saw in television." Some participants indicated becoming more aware of stigma as a result of their own identity, and concealing based on an assessment of their own potential safety given LGBT-related views of their immediate and larger communities. At least two participants described concealment as a "necessary evil" for the purpose of self-preservation. A bisexual cisgender female reported not liking the reality, "But right now it's keeping me safe."

A fifth theme had to do with authenticity and concealment of an "authentic self." While concealing, participants bemoaned the fact that they were not being true to themselves, or that they were not presenting false selves to others. This awareness of incongruence between internal life and external representation has cognitive dimensions. Reflecting on their ability to be themselves, a non-binary pansexual individual claimed that they were not "able to be who I am at all times." A queer genderqueer person said they felt like they were "lying to everyone I was close to," and In addition, several remarked on lying to themselves about their identities. A lesbian transwoman wrote, "I'm just faking it, lying to myself." It's "not cool not being your authentic self," reflected one pansexual cisgender female. A pansexual cisgender man described concealment "Like I'm denying a piece of myself." Another bisexual cisgender man said his "entire life is built on a house of lies." Some hoped for the future, for that "one day I won't have to do this anymore and I can be me" as explained by a gay cisgender man. Another participant justified concealment despite despising it because "it's better than the alternative," presumably referring to victimization or rejection.

Divergent cognitive themes. A divergent theme also emerged in which participants diminished the need for or impact of concealment. One of the extreme cases sampled, a cisgender bisexual man,

reflected that he thought there was no compulsion to conceal nor to disclose. A pansexual gender neutral respondent wondered whether they were "making a mountain out of a molehill" about their identity.

Affective themes. Participants endorsed a variety of affective experiences related to concealment. Empirical research has shown an affective component of concealment, including negative affective (e.g., Nouvilas-Palleja et al., 2017) and negative self-perceptions (e.g., Pineles et al., 2006).

Negative affect. In the qualitative data, 44 participants (72.10%) described experiences of negative affect, such as fear, shame, guilt, sadness, anxiety, emotional withdrawal, frustration, jealousy, hopelessness, emptiness, loneliness, a sense of being lost, and a feeling of being unsafe. Participants described feeling fear of disappointing others, of receiving different treatment or disapproval from family and friends, of experiencing victimization, of changing relationships, of being excluded from their community. An asexual transman described being afraid of "being disowned by my family, of being bullied, of losing my friends. Being open terrified me." As a result of concealment, a gay cisgender man described shutting down "as a creative happy kid." Other participants were shamed into concealment, such as the queer genderqueer respondent who explained that "the shame I was made to feel by my friends, especially my female friends, let me know that there was something wrong with my feelings, and because I was also attracted to men, it was easier to just pretend to be straight."

Negative self-perceptions. A theme of negative self-perceptions also emerged from the qualitative data. Twenty-one participants (34.40%) described themselves as being cowardly or deceptive, or reported experiencing self-hatred as a result of their concealment. A lesbian cisgender female indicated that she felt that she was a coward and that she was "letting down my queer family" by concealing as well as "ignoring anti-queer comments." Another respondent, who identified as both queer and genderqueer, reported "a general feeling of self hatred" and shame for "keeping a secret that big from people you love." Another negative self-perception included whether the transmasculine participant could be loveable given his gender identity, which he believed to be "gross." A bisexual transman explained trying to accept the fact that he was "born without the ability to connect with other people." It appears that extrinsic prejudices against his identity may have caused him to believe that he was deficient in basic human ways.

Emerging affective themes. There were also several emerging themes from the qualitative data. Seventeen participants (27.80%) reported emerging affective themes of concealment. One of these themes was suppression. A bisexual transman described suppressing "everything to the point where I cauterized my sense of vulnerability." A second theme included hope for the time that participants could be open about their identity. A third theme was the thrill of concealment, which a queer transman described in this way: "when I was younger it did feel exhilarating at times to keep a secret and to get to explore who I was without telling people." Finally, the fourth theme included descriptions of somaticizing or physicalizing negative emotions while concealing. Participants described a heaviness ("as if there was an actual weight on me, or some kind of smothering force that surrounded me."), a feeling of suffocation, chronic tension, claustrophobia, a feeling of being trapped ("but I was feeling more and more trapped in the life I was living and my spiraling anxiety just continued to get worse."), and tired or sick ("I'm alive but I'm not living, I'm just going through the days feeling wrong and sick of myself.").

Behavioral themes. Participants endorsed a variety of behaviors related to concealment. Three types had previously been identified in the literature, including inhibition (e.g., Cole, Kemeny, Taylor, * Vischer, 1996), counterfeiting (e.g., Carragher & Rivers, 2002), and avoidance (e.g., Corrigan, Kosyluk, & Rüsch, 2013). These three types of concealment behaviors also emerged in the qualitative data.

Inhibition. In regard to inhibition, participants indicated that they self-silenced, altered their speech, and remarked on a readiness to lie in order to maintain concealment. At least forty participants (65.50%) explicitly indicated that they engaged in some sort of behavioral inhibition. Many reported that they simply did not comment on their identity, or disclose it to anyone. According to these self-reports, inhibition was done both by omission and commission. For instance, a bisexual cisgender man reported that "Me being bi just never came into conversation so I didn't mention it." While a queer genderqueer respondent discussed the difficulty of discussing their sexuality, thus concealing it – "It feels like something that is very intimate and personal, and also somewhat based in sexual acts, so not necessarily easy to discuss."

When others made assumptions about their identities, participants oftentimes inhibited themselves from correcting the record. A queer non-binary individual explained that they never corrected others who "made assumptions about my identity." In addition, they said they were "not open about my sexuality, spoke in gender neutral terms about previous partners…" Another lesbian cisgender female reported that she ignored "queerphobic things" so as not to bring attention to her identities. A bisexual transman reported that while not explicitly concealing, he was not necessarily being fully accepting of his identity. He remarked, "I didn't speak up or correct people when they assumed something of me. For the most part, I didn't do anything to hide my identity as much as I didn't do anything to embrace my identity. Instead of getting dressed, I stayed in the closet, so to speak."

Others indicated that they limited certain behaviors, mannerisms, ways of dress, or interests that might reveal their identity. A queer cisgender man described never playing "with toys others might perceive as feminine, [avoiding feminine-related things, especially colors and music" so as not "to be detected." A pansexual intersex individual denied ever introducing significant others to family and friends, claiming that they "never brought anyone home." Inhibiting particular gender presentations also emerged as exemplified by the report of one asexual transman who wrote that he "didn't present masculine like I wanted, pretended to be straight, wore feminine clothes, didn't talk about my identity." Inhibition included anything that might infer a particular identity. A lesbian cisgender female described not talking "about the things I'm most passionate about: my wife, shows with queer protagonists, queer rights, everyday moments that would reveal that I am queer."

Although inhibition generally pertained to the concealed identity, one gay cisgender man reported that his inhibition generalized to other behaviors. As a result of his concealment, he said that he "wouldnt let myself enjoy anything as I didnt want to show my excitement or feelings." For participants who transitioned to live as their gender identity, they refrained from disclosing their history from before the transition.

Counterfeiting. Counterfeiting behaviors were also commonly described by participants in the qualitative data. These behaviors referred to those that help to make participants seem or appear

heterosexual and/or cisgender, and can include passing, covering (i.e., tailoring information to avoid any insinuation that one might not be heterosexual and/or cisgender), distancing oneself from other LGBT people, and blending to be perceived as cisgender among gender minority individuals. Forty-one participants (67.20%) had responses that were categorized as counterfeiting. One respondent described themselves as a "great actor" to refer to the skillful deployment of counterfeiting behaviors to conceal their identities. A major counterfeiting behavior appears to be lying to others. Respondents reported lying either about their identity; their activities, especially those LGBT-related; or the "nature of relationships" that might be revealing about their sexual identity. Others denied that they were a sexual and/or gender minority when asked. A queer transman remarked that the habit of lying about his identities seemed to generalize to other areas of his life as well.

Participants reported conforming to a variety of societal standards so as not to stand out. A gay cisgender man said: "I conformed to things I had no interest in just to blend in as everyone else." Others cited specific examples of performing gender and sexual norms, such as one queer genderqueer person who described talking about boys with their female friends "to fit in" as early as age nine. A gay cisgender male reported that he "tried to feign romantic/sexual interest in girls when they came up in conversation with friends." Two cisgender lesbians reported having a "pretend" or a "fake" boyfriend. Another bisexual cisgender man claimed that he "acted as though I had no sexual interest." Respondents described going beyond conforming by "overperforming" societal norms, like one bisexual androgynous person who reported trying to "overly show my attraction to males." This individual also indicated that "if my mom asks I say bad things about [non-male-identified individuals] to hide the fact I find them attractive." Likewise, a pansexual cisgender man told 'stories anecdotally about when "I thought I was gay" as a defense." In the case of a gay cisgender male, he described acting "more masculine" in order to deter any suspicion of his sexual identity. A lesbian cisgender woman indicated that she surrounded herself with "a lot of heterosexual partners and friends."

Some respondents reported that they dated individuals of the opposite gender in order to appear straight or "to prove" they were straight. Not only was it important to perform heterosexuality for others,

some participants did so to convince themselves they were not a sexual minority. For instance, a queer genderqueer individual indicated that they dated "certain people to convince self" that they were straight. A queer genderqueer individual said they "kept trying to make myself like boys." Several bisexual and pansexual respondents noted that given their attractions to more than one gender, they found it easier to "pretend to be straight" by only pursuing relationships with the opposite gender openly. While outwardly engaging in "straight" relationships, participants noted that they had clandestine non-heterosexual sexual encounters.

Online individuals tried to cover their tracks in order to avoid detection of their identity. A queer non-binary individual described blocking queer content on their computer. In addition, a bisexual cisgender man admitted to using incognito mode on his browser when accessing content online in order to ensure no record of site visits that might reveal his identity. The internet provided access to information and sometimes a community. The anonymity of being online freed one queer cisgender man to disclose his identity to others.

For gender minority respondents, counterfeiting referred to behaviors engaged in for the purpose of concealing a true gender identity (and not the assigned sex at birth). Examples of these cited by respondents included dressing and acting in conventionally gendered ways that are consistent with the individual's assigned sex at birth rather than in accordance with their gender identity. A transman described experimenting "with different traditional and non-traditional female appearances (even tried to be butch for awhile) but never felt anything like I did moments after admitting the truth." Two non-binary individuals described using pronouns of their assigned sex at birth as opposed to those of their gender identity. Blending refers to the behaviors done to conceal the fact that an individual is not cisgender. One transmasc respondent indicated that upon transitioning, he engages in "over performing masculinity." A transwoman reported that she "never hid from peers" until she began transitioning.

Avoidance. Research shows that individuals avoid situations that might be revealing of their identities. In order to maintain concealment, they may isolate, withdraw from activities and relationships, feign illness, be truant, or not engage in extracurricular activities that may implicate or reveal their sexual

identity in some way. In addition, SGM individuals may also avoid specific individuals, such as people from their past or those who may be particularly prejudicial. Some respondents in this study (n=15) also endorsed avoidance behaviors. A transman reported having few friends "so nobody would think anything." Likewise, a bisexual cisgender man claimed that he did not "have any social life and no one would be attracted to me anyway so it wasn't too difficult to lie." Other respondents indicated that they avoided particular conversations that might be revealing, or in the case of a pansexual transman, he "openly refused (and still [does]) to meet family members [of his romantic partners]." Another respondent – a queer cisgender man – reported that he "avoided situations that were overtly masculine," such as playing sports.

Emerging behavioral themes. Additional behavioral themes emerged from the data. One respondent came out in early adolescence and then became closeted until college due to the negative reaction from friends. Others remarked that they concealed almost instinctively, such as one asexual cisgender female who said "I just did. I didn't have some magical way of knowing, it just didn't happen." A pansexual cisgender woman said that concealment is "what you do when you don't feel you can be your true self." A bisexual transman described being drawn to other closeted sexual and gender minority individuals before any of them came out of the closet. Finally, a common theme was an urge to leave the environment in which individuals felt forced to be closeted for more accepting environments.

Mental health theme. Eighteen participants noted the mental health impacts of concealment of gender identity and/or sexual identity. Principal among these impacts were suicidality, depression, anxiety, gender dysphoria, and stress. Suicidality emerged from a sense of hopelessness, no possible escape from the suffering of concealment, and the inevitability of death. A transman who is questioning his sexuality indicated that "it would be easier to die" than conceal and cope with its impacts, and another transman who identified as bisexual said he often wished for death. An asexual transman described being suicidal as "Constantly hoping that I would be myself in the future, all while hoping I could end my life so I'd never struggle on the path to get there." An individual who identified as queer and transmasculine said he felt like there was no more imagination to what life could be" outside of his severe depression and

current suffering. For others depression seemed to emerge from shame, self-hatred, and concern that something is "wrong" with them. Seemingly referencing a process of internalization of stigma, a pansexual cisgender man noted that he did not "know what I was doing to myself psychologically. I feel like I had some weird fucked up homophobia about myself." Another respondent described "spiraling anxiety" that "just continued to get worse." In regard to gender dysphoria, a bisexual transman recounted having no sense that gender dysphoria existed and thus had no way to explain what he was feeling. As one transman noted, he kept silent about his mental health concerns as well as his identities.

Convergent Analysis of Quantitative and Qualitative Data. After coding and validation of the results, the data were analyzed for convergence between themes emerging from the qualitative data as well as the rationally-derived components (i.e., cognitive, affective, and behavioral) and the subcomponents of each component (e.g., preoccupation for cognitive, negative affect for affective, and inhibition for behavioral, etc.). This analysis included an assessment of whether these themes appeared in the qualitative data. An assessment of divergence was also employed to identify emerging themes other than the primary components or the additional rationally-derived subcomponents.

Given the results of the PCA, the quantitative data do not satisfy the requirements for the proposed convergent analysis. This analysis sought to see how the qualitative data converged or diverged from the results of the component analysis in substantiating that there are three distinct components of concealment of gender identity and sexual identity. Despite the absence of three distinct components, the sample generally had a high rate of endorsement of the items on the extent of concealment measure, implying the relevance of those items to their experiences of concealment. Furthermore, the qualitative data, which were collected sequentially before the administration of the extent of concealment measure, largely substantiated the presence of cognitive, affective, and behavioral aspects of concealment for both sexual and gender minority individuals. The codes and subcodes derived from the literature and reflected in items on the extent of concealment measure were all applied to the qualitative data indicating the presence of those aspects of concealment. For a joint display, please see Figures 4-6.

Another significant convergent finding relates to the similarities between how participants self-reported their concealment experiences and the items included on the extent of concealment measure. The thematic convergence along cognitive, affective, and behavioral themes, as well as specific recounting of experiences that mirrored item content, provides important support for the relevancy of the quantitative measure.

Considering the emerging theme of mental health from the qualitative data, suicidality, depression, and anxiety seemed to be mental health impacts that participants most associated with the concealment. As suicidality was not assessed by any of the outcome measures, an assessment of how this qualitative data converges with quantitative outcome data cannot be conducted. However, the presence of suicidality as a potential result of concealment highlights an important area for further research and intervention. As for depression and anxiety, the data showcased above indicates that concealment is associated with depression and anxiety symptomatology, and that there is broad overlap between the psychological processes implicated in both concealment and these mental health outcomes.

There are differential patterns in endorsement of each component between the qualitative and quantitative data. Among the quantitative data, individuals endorsed the affective aspects of concealment the most on average, yet among the qualitative sample, affective codes ranked second in terms of participants in the sample who described affective factors involved in concealment in their qualitative responses. Likewise, although behavioral concealment items were endorsed least on average on the extent of concealment measure, they were described in greater quantity, based on the number of participants who described them in their qualitative responses, in the qualitative data than the other two components. Cognitive concealment, which was endorsed second most on average among the three components, was coded for least in terms of the number of participants who described cognitive aspects of concealment.

The qualitative data also raised important emerging themes, which were not reflected in the extent of concealment measure and thus were not assessed as part of the broader analysis of the impact of concealment on mental health outcomes. Among cognitive themes, there emerged several main ones,

including the following: 1) the process by which individuals intuitively sensed differences between themselves and others and then knew to conceal that difference based on a variety of factors, including stigma; 2) ambivalence about an identity due to a lack of information and language, uncertainty, or confusion; 3) cognitive patterns of thinking such as fortune-telling and catastrophizing (although it is important to note that these are not necessarily distortions given the dangerous reality of many SGM individuals); and 4) a sense of their own authenticity in living life in accordance with their identity and values. Among affective emerging themes, the data showed the presence of emotional suppression, hope for more openness about their identity and less concealment in the future, as well as somatization and physicalization of negative emotions while concealing. Emerging behavioral themes included going back into the closet based on negative experiences that resulted from disclosure of an identity, instinctive concealment without consciously choosing to do so, socializing with others who also ended up having concealed identities, and experiencing urges to escape from the concealment. This divergent data could be integrated into further measure development to ensure a comprehensive assessment of the construct of concealment.

Discussion

"Being in the closet" is a phenomenon that has become ubiquitous and culturally-ingrained in SGM communities. Further, among the literature, there is consensus that engaging in concealment behaviors and having a concealable stigma contribute to negative health outcomes. Despite these realities, a limited number of empirical studies has given concealment of sexual or gender identity its full due. For the most part, concealment has been assessed as the inverse of disclosure or outness, and not as a multidimensional construct. Until this study, no existing measures captured the cognitive, affective, and behavioral components involved, nor have any attempts been made to quantify the cumulative impact of those components. Moreover, there has not been a focus on how concealment renders a cumulative stress burden over time, beginning at early and significant stages of development and potentially lasting through adulthood. For gender minority individuals, there have been no empirical studies quantitatively investigating concealment of gender identity. This study takes a first step in addressing the lag in the

research by attempting to quantify and describe the multidimensionality of concealment, to understand the impact of deploying concealment behaviors over the long-term, and to understand the nature of concealment of gender identity.

The sample was large and included a great deal of diversity in terms of gender identities, sexual identities, ages, and regions of the United States. Based on the endorsement of items by this diverse sample, the extent of concealment measure appeared to capture a broad range of cognitive, affective, and behavioral experiences participants had while concealing their identity. However, based on a principal component analysis and an exploratory factor analysis of the sample data, the dimensions of the data did not reduce to three distinct components or factors of concealment. Rather than three components, only one primary component emerged, indicating that the items on the extent of concealment measure shared variance and therefore were not unrelated to the subsequent components. Upon further review, the next few components computed in the analysis, which accounted for less than six percent of the covariance each, appeared to result mainly from measurement error. For instance, all of the reverse-scored items loaded on the second component, indicating that participants responded differentially, possibly due to participant confusion at the alternate wording.

Additional explanations for the failure to render a three-principal-component model could include any of the following, or a combination of factors. One explanation could be patterns of missing data, which reduced inclusion in the analysis by almost 300 participants. A preliminary analysis of response-rates for each item on the extent of concealment measure indicated lower response rates for behavioral concealment items, although exclusion of these items in the PCA did not drastically affect the overall results. Further item analysis for clarity and relevancy may be warranted. A second explanation could be due to the selection of items. The research team reduced the number of items using rational methods. Perhaps an alternative approach would be to allow item analysis and elimination through dimension reduction. Expanding the pool to permit a vaster array of items for each component could provide for greater reduction of the dimensions to identifiable components. A third explanation could be that concealment of gender identity and sexual identity are distinct enough experiences as to justify separate,

non-comprehensive measures. Perhaps in the attempt to compile a comprehensive measure of concealment of both gender identity and sexual identity, specificity as to the aspects of each were lost. Unfortunately, in this data set, statistical power was lacking in order to conduct these analyses separately with independent samples.

Lastly, the degree of covariance found among the items in the extent of concealment measure may be explained due to psychological overlap among the three components (i.e., the difficulty in distilling a purely affective versus cognitive experience). Despite no current empirical basis for the three dimensions, the high endorsement of the items on the extent of concealment measure indicates that participants recognized and engaged in the cognitive, affective, and behavioral aspects of concealment described in the measure. This is further corroborated by the results of the qualitative analysis which raised many overlapping concealment experiences to those assessed by the extent of concealment measure. Participants reported cognitive processes like preoccupation, self-monitoring, and vigilance; affective processes such as negative affect and negative self-perceptions; and behaviors including inhibition, counterfeiting, and avoidance. The qualitative data also underscored additional important factors involved in concealing an identity. Additional themes across these three aspects of concealment emerged indicating that concealment may be more expansive a phenomenon than that captured by the extent of concealment measure. Furthermore, analysis of the qualitative data only covered 10 percent of the total sample, so additional qualitative analysis may uncover even more diverse cognitive, affective, and behavioral experiences associated with individuals' concealment of their identities. As in many psychological phenomena, concealment also appears to have tightly integrated cognitive, affective, and behavioral aspects.

According to the minority stress model, SGM individuals are at increased risk of negative mental health outcomes compared to cisgender, heterosexual individuals, and concealment may play a role in this disparity (Meyer, 2003). This study found that greater extent of concealment through endorsement of cognitive and affective concealment experiences as well as concealment behaviors positively and statistically significantly predicted depression, stress, anxiety, social anxiety, as well as alcohol and drug

use after controlling for age, gender, and ethnicity. Likewise in the qualitative data, respondents reported suffering with depression, anxiety, stress, and suicidality as a result of concealing their identities. These results provide further evidence for existing research about the direct and indirect effects of concealment on mental health outcomes, mainly for sexual minority individuals (e.g., Frost & Bastone, 2008).

The findings from this study are an important addition to the literature, further revealing that there are broad mental health impacts of concealment, such as mood symptoms, anxiety, and substance use. In developing the extent of concealment measure, the aim was to tap into the aspects of concealment that might be most relevant to mental health symptomatology. The cognitive, affective, and behavioral aspects of concealment may contribute to the general psychological and physiological processes that are implicated in mood and anxiety-related disorders and that drive substance use. The cumulative impact of these aspects of concealment has negative consequences for the mental health of sexual and gender minority individuals over the long-term. Despite having disclosed to at least one person in their lives, participants in the study continued to endorse negative mental health symptoms and described how they perceived concealment affected their mental health. These convergent findings also further substantiate concealment's place as a contributive proximal stress process in the minority stress model alongside internalized heterosexism/cissexism and expectations of rejection.

Longer duration of concealment of gender or sexual identity was hypothesized to be associated with more severe current mental health symptoms. One possible justification for this hypothesis included the fact that concealment typically coincides with major periods of identity development, such as adolescence and emerging adulthood; thus, greater disruption of these critical periods was expected to result in higher mental health symptomatology. Previous research had found that duration of concealment, calculated in the same way as this study, was indirectly related to emotional distress (Pachankis & Hatzenbuehler, 2013), and directly predicted alcohol use (Brennan, Livingston, & Cochran, 2017). However, only with overall depression, anxiety, and stress, as well as depression on its own, was this borne out. Even with evidence of these relationships, they were not particularly robust. Given these

results, duration of concealment of gender and sexual identity does not mediate the relationship between the extent of concealment and the outcome variables.

There is also some debate in the literature about the benefits and costs of coming out versus staying closeted. The results of this study may partially substantiate the dual nature of concealment as both a proximal psychological process with negative mental health impacts as well as a protective deterrent to overt victimization. On one hand, concealment may enable an individual to evade victimization on the basis of their identity, thus preventing potentially greater health impacts resulting from trauma or rejection. On the other hand, this individual simultaneously may continue to suffer the consequences associated with the cognitive overload, the negative emotionality, and the range of behaviors they may engage in as a means to conceal (Kosciw et al., 2015). Thus, the safety provided by concealment may also offset its psychological impact over the long-term. Some older research has shown negative correlations between the age of identification of a sexual minority status and rates of psychopathology (Remafedi, 1994). Therefore, the impact of concealment may have less to do with time spent concealed and more with the context within which an individual conceals and the extent to which they conceal. Given evolving attitudes towards sexual and gender minorities in the United States, the experience of concealment a few decades ago is likely to be vastly different than what might be expected contemporaneously.

Improving our understanding of the complex construct that is concealment and its impacts on SGM health enhances our ability to devise interventions to reduce minority stress in the lives of SGM individuals. For instance, a better understanding of the full impact of concealment could inspire early intervention with concealing youth, or the tailoring of existing treatments to focus on mitigating the enduring effects of early concealment behaviors. Likewise, SGM youth are coming out of the closet at ever-earlier ages, and this study may provide insight into the benefits and detriments of disclosure. Perhaps age of first disclosure may be related to greater or lesser victimization and more or less severe long-term mental health impacts.

In addition, considering the demonstrated impact of concealment on depression, anxiety, stress, and substance use, it is important to realize that these outcomes have a tremendous public health impact. Facilitation of SGM identity development in a safe, supportive environment may be a means of reducing the personal and public health burden of these syndromes among sexual minority individuals. In addition, there is evidence to suggest that there is an association between a concealable stigma and avoidance or underutilization of medical health services, pointing to an even greater potential vulnerability for this population (Quinn et al., 2014). Establishing healthcare environments that are welcoming and safe for SGM individuals, regardless of whether they are "out" or "closeted," may also serve to mitigate these health impacts. Both of these objectives are particularly crucial in the current political context as individuals may resort to concealment while sexual and gender minority rights become more tenuous.

Limitations

This study has several limitations. The limitations of current sampling methods beleaguer research on SGM populations. Firstly, there is a strong sampling bias toward individuals who are more open about their sexual or gender identity and therefore more likely to self-select to participate in an SGM-related study (Diamond & Savin-Williams, 2009). By virtue of their outness and their social media presence, the individuals in our sample may be more socially connected within the LGBT population (or at least more likely to use social media). Individuals may not have chosen to participate if they were currently concealing their identity, or because reflecting on these experiences of concealment was emotionally painful. Additionally, age, cohort, and racial background can further bias sampling (Calzo, Antonucci, Mays, & Cochran, 2011). In SGM samples, respondents tend to be more educated and younger, and these characteristics are reflected in this sample as well (Calzo et al., 2011; Diamond & Savin-Williams, 2009). Any of these demographic factors could skew the results toward certain health outcomes. Secondly, given that the study relied on retrospective self-report, the accuracy of responses may be compromised by the limitations of individuals' recall of past events, some of which may be quite far in the past. The "coming out" narrative is an important cultural ritual for many LGBT individuals, and

often this narrative includes recontextualizing former life events and experiences of a concealed identity in light of their publicly out LGBT identity. This cultural reality may skew the objectivity of self-reported experiences around concealment and coming out. Thirdly, there is a common problem with missing data for questions that ask sensitive questions, which people are more likely to skip, and this study is no exception. Particularly for behaviorally-oriented concealment, noticeable levels of missing were detected. All of these factors may have impacted the results of the study.

Based on the nonrandom sample, the design of the study, and the analyses, the generalizability of the results are fairly limited. The inability to recruit on a broader scale and from harder-to-reach SGM individuals (e.g., those who continue to conceal) compromised the representativeness of the sample. Since this study utilized cross-sectional data for each participant, no causal inferences are possible.

Future Directions

Concealment is a complex, multidimensional construct. Future research should treat it as such. Further development of the cognitive, affective, and behavioral model of concealment is warranted, particularly drawing in the themes that emerged from the qualitative data presented in this study. Additionally, given the rationally-derived component subscales, it would be worthwhile to investigate different relationships between the subscales of concealment and the outcomes in order to understand with greater specificity how particular concealment behaviors may be related to mental health outcomes.

This is the first attempt to quantify concealment of gender identity. I encourage further refinement of this measure for this purpose. It is important to understand the universal factors involved in concealment of both gender and sexual identity, and then also highlight the key differences. In doing so, we may gain a better sense of how concealment affects both gender and sexual minority individuals, and tailor interventions accordingly.

Research should also try to better understand the influence of concealment on development (of identity, sexuality, gender, etc.) as it often frames behaviors at significant and vulnerable moments. Likewise, concealment behaviors may persist throughout the lifespan, and may be protective in the face

of a hostile world. Understanding the adaptive nature of selective and situationally dependent concealment may also provide deeper insight into the phenomenon, as well as enable us to parse the mechanisms by which concealment impacts mental health in different ways. Future research could also focus on the behavioral antecedents, situational determinants, and personality factors that may mediate the relationship between concealment and health outcomes. In addition to health outcomes, the question still remains as to how concealment affects other psychological variables like outness later in life, or affiliation with the broader SGM community.

More research is needed to address health disparities more generally among SGM populations. The minority stress model enumerates key points of therapeutic intervention to reduce the onset and impact of deleterious stress processes. Concealment looms large as one possible point of intervention. Given that concealment is a proximal stress process, intrapersonal interventions will be important, as will community-wide, interpersonal interventions that create environments conducive to the expression of SGM identities.

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Tables

Table 1

Demographic characteristics of the analytic sample

	M	*SD*
Age	24.36	7.51
	n	*%*
Gender		
Man	160	25.0
Woman	266	41.6
Non-binary	106	16.6
Genderqueer	45	7.0
Agender	20	3.1
Another Gender	43	6.7
Sexual Identity		
Asexual	48	7.5
Bisexual	159	24.8
Gay	87	13.6
Lesbian	75	11.7
Straight/Heterosexual	7	1.1
Pansexual	122	19.1
Queer	105	16.4
Questioning	8	1.3
Another sexual identity	29	4.5
Ethnicity		
Black/African-American	17	2.7
Asian or Pacific Islander	26	4.1
White/European-American	588	91.9
Latino/Hispanic or Chicano	48	7.5
Native American/American-Indian	23	3.6
Middle Eastern	8	1.3
Multi-racial	33	5.2
Another race	5	0.8
Relationship Status		
Married/domestic partner	93	14.5
Committed relationship	165	25.8
Single, currently dating	125	19.5
Single, not currently dating	257	40.0
Education		
Middle school, some high school	31	4.8
High school degree, or equivalent (i.e., GED)	87	13.6
Some college, no degree	259	40.5
Associate's degree	41	6.4
Bachelor's degree	135	21.1
Graduate degree or professional degree (M.S./M.A., Ph.D., M.D., J.D.)	86	13.4

Table 2

Extent of Concealment Measure Items, Corresponding Subscale, Original Items and Source

Item	Subscale	Original Item or Quote	Original Source
I felt angry and frustrated to have to hide who I was.	Affective	"I feel a lot of anger. It is so frustrating to have to hide who I am."	*Rood et al., 2017*
I rarely felt comfortable in my own skin when I was concealing my identity.	Affective	How comfortable did you feel during the interaction?	*Cook et al., 2011*
I was afraid that others (e.g., family or friends) would reject me if they knew that I'm LGBTQIA+.	Affective	I'm afraid that others will reject me if they know that I'm gay/lesbian/bisexual.	*Lasser, Rysen, & Price, 2010*
I worried that if people knew about my identity, they would discriminate against me or shun me.	Affective	I worry about people discriminating against me.	*Berger, Ferrans, & Lashley, 2001*
There was nothing specifically I was afraid of, but I dreaded coming out.	Affective	Reasons for nondisclosure to parents – general fear or hesitancy.	*D'Augelli, Grossman, & Starks, 2005*
Telling someone about my identity felt risky, so I kept it hidden.	Affective	Telling someone I have HIV is risky.	*Berger et al., 2001*
I feared that someone would find out about my identity and tell everyone about it.	Affective	"Being exposed" as a homosexual.	*Lewis, Derlega, Berndt, Morris, & Rose, 2002*
I worried that others would find out about my identity.	Affective	I worry that others will find out about my sexual orientation.	*Lasser, Rysen, & Price, 2010*
I felt hopeless for the future because I never thought I would be able to be open about my identity.	Affective		*Pachankis, 2007*

I felt isolated because of my concealed identity.	Affective		*Pachankis, 2007*
I often felt alienated from my peers and community when I was hiding my identity.	Affective	How alienated did you feel during the interaction?	*Cook et al., 2011*
I felt so lonely when I was hiding my identity, and was afraid I would always be lonely.	Affective		*Van Gilder, 2017*
I often felt insecure during social interactions when I was hiding my identity.	Affective	How insecure did you feel during the interaction?	*Cook et al., 2011*
I felt ashamed of keeping my identity hidden.	Affective	"The mere act of hiding information about a stigma may lead an individual to believe that the stigma-related information is shameful simply because it is worthy of being hidden."	*Pachankis, 2007*
I felt relaxed in interactions where I was concealing my identity. (R)	Affective	How relaxed did you feel during the interaction?	*Cook et al., 2011*
I rarely felt genuine in my social interactions.	Affective	How genuine were you in the interaction?	*Cook et al., 2011*
I experienced a lot of sadness due to my identity, and felt like something was wrong with me.	Affective	"I experience a lot of sadness; It makes me feel like something is wrong with me."	*Rood et al., 2017*
I felt drained by the end of the day after having to conceal my identity all day.	Affective	It is tiring and exhausting; I usually feel drained by the end of the day.	*Rood et al., 2017*

To conceal my sexual and gender identity, I avoided contact with people who identified as LGBTQIA+ or events that were tailored to LGBTQIA+ people (e.g., Pride).	Behavioral	To conceal my sexual identity I avoid contact with people who are known to be gay or bisexual.	*Bachmann & Simon, 2014*
When concealing my sexual and gender identity, I was seen in public with other LGBTQIA+ people. (R)	Behavioral	Being in public with groups of homosexuals (i.e., in a bar, church, rally).	*Lewis et al., 2002*
If I thought the topic of my concealed identity was going to come up in conversation, I tried to steer the conversation in a different direction.	Behavioral	If I think the topic of the concealable stigma is going to come up in conversation, I try to steer the conversation in a different direction.	*Quinn, Weisz, & Lawner, 2017*
I isolated myself in order to conceal my identity.	Behavioral	How often did you feel isolated?	*Bruce, Harper, & Bauermeister, 2015b*
I tried to avoid activities or situations that might make me think about my identity.	Behavioral	In the past month, have you tried to avoid thinking about the abortion or feelings you associate with it?	*Major & Gramzow, 1999*
To keep my concealed identity hidden, I avoided becoming Facebook friends with certain people on social media.	Behavioral	To keep my concealable stigma hidden, I avoid becoming Facebook friends (or other social media) with certain people.	*Quinn, Weisz, & Lawner, 2017*
I often said I was feeling sick to get out of social obligations where my identity might come up.	Behavioral	I feigned illness.	*Rivers, 2000*
I avoided going to work, school, or places that made it too hard to conceal my identity.	Behavioral	I played truant.	*Rivers, 2000*
I avoided posting any pictures, posts,	Behavioral	…he would not be able to post any	*Owens, 2017*

or comments online that might reveal my identity.		pictures or comments related to their relationship.	
I drank alcohol or did drugs to cope with having a hidden identity.	Behavioral		
While I was concealing my identity, I often tried to look happy enough on the outside, but inwardly I felt angry and rebellious.	Behavioral	Often I look happy enough on the outside, but inwardly I feel angry and rebellious.	*Jack & Dill, 1992*
I dressed or behaved in ways that are gender traditional so that others would think I am heterosexual or cisgender.	Behavioral	Dress or behave in ways that are gender traditional so that others will think I am heterosexual.	*Anderson et al., 2001*
I did not care if my online persona revealed that I was LGBTQIA+. (R)	Behavioral	…actively manage their online personas so as to appear straight.	*Owens, 2017*
I joined others in telling demeaning jokes or saying negative things about LGBTQIA+ people so that people would think I was heterosexual or cisgender.	Behavioral	Join others in telling demeaning gay jokes or saying negative things about lesbians and gay men so that people will think I am heterosexual.	*Anderson et al., 2001*
I made sure to delete my browser history so no one could see I was visiting LGBTQIA+-related websites.	Behavioral	…leaving a trace of activity (i.e., of visiting a site where one can meet sexual partners) on their computer.	*Schrimshaw, Siegel, Downing, & Parsons, 2013*
I admitted that I was LGBTQIA+ when asked. (R)	Behavioral		*Itzhaky & Kissil, 2015*
To keep my identity hidden, I used vague language when talking about my personal life.	Behavioral	To keep my concealable stigma hidden, I use vague language when talking about my personal life.	*Quinn, Weisz, & Lawner, 2017*
I lied (or would say "No," or "why do	Behavioral	…instinctive response would be “No,” or	*Malterud & Bjorkman, 2016*

you think so?") when somebody asked if I was LGBTQIA+.		"Why do you think so?" when somebody asked if they were lesbian or gay.	
Being read by others as LGBTQIA+ made me try harder to pass.	Behavioral	In the last 3 months, being read makes me try harder to pass.	*Bockting, Miner, Swinburne Romine, Hamilton, & Coleman, 2013*
In order to hide my identity, I just tried to blend in with other people.	Behavioral	In order to hide my concealable stigma, I just try to blend in with other people.	*Quinn, Weisz, & Lawner, 2017*
If the topic of conversation was about people with my concealed identity, I joined in and pretended I didn't have my concealed identity.	Behavioral	If the topic of conversation is about people with my concealable stigma, I join in and pretend I don't have a concealable stigma.	*Quinn, Weisz, & Lawner, 2017*
I tried to control how I talked (e.g. pitch or tone of voice) so it didn't give away my identity.	Behavioral	I try to control how I talk (e.g. pitch of voice).	*Timmins, Rimes, & Rahman, 2017*
While concealing, I remained silent while witnessing homophobic or transphobic remarks, jokes, or activities because I did not want to be labeled as LGBTQIA+ by those involved.	Behavioral	In the last 2 weeks, I have remained silent while witnessing anti-gay remarks, jokes, or activities because I did not want to be labeled as LGB by those involved.	*Jackson & Mohr, 2016*
I had a blank profile picture on social media (e.g, dating apps like Grindr or online forums), so no one would recognize me.	Behavioral	"we asked them if their face was visible on their profile pictures as a primary indicator of concerns about anonymity."	*Lemke & Weber, 2017*
I participated in activities regardless of whether people thought I might think I am LGBTQIA+. (R)	Behavioral	I have adjusted my level of participation in sports to appear heterosexual.	*Button, 2004*
When people assumed I was heterosexual or cisgender, I neglected to correct their misunderstanding.	Cognitive	"…neglected to rectify other people's misunderstandings, with a subsequent chain of escalating lies (like gender of	*Malterud & Bjorkman, 2016*

		partner)…"	
I concealed my identity because I had no idea how others might respond.	Cognitive	Reasons for nondisclosure to parents – unsure of parental response	*D'Augelli et al., 2005*
I was often hard on myself for having my identity.	Cognitive	I have negative thoughts about myself that I never share with anyone.	*Larson & Chastain, 1990*
I felt like I was lying to myself about who I was.	Cognitive	"Feels like I am living a double-life; I am lying to myself and others."	*Rood et al., 2017*
For me, concealing my identity felt like the most important thing.	Cognitive	In the last 3 months, for me, passing is everything.	*Bockting et al., 2013*
Thoughts about my identity often "popped" into my head the more I tried to hide it from others.	Cognitive	Thoughts of the target word often "popped" into my mind.	*Lane & Wegner, 1995*
I found I could not get thoughts or worries about my identity out of my mind even though I wanted to.	Cognitive	Did you ever find you couldn't get memories, thoughts, and mental pictures of your baby out of your mind even though you wanted to?	*Lepore, Silver, Wortman, & Wayment, 1996*
I found it hard to do other things because thoughts or mental pictures of my identity kept coming into my mind.	Cognitive	Did you ever find that you had trouble doing other things because memories, thoughts, and mental pictures of your baby kept coming into your mind?	*Lepore, Silver, Wortman, & Wayment, 1996*
In conversations, I was sensitive to even the slightest change in the facial expression of the person I was conversing with, particularly if I sensed they were suspicious about my identity.	Cognitive	In conversations, I am sensitive to even the slightest change in the facial expression of the person I'm conversing with.	*Lennox & Wolfe, 1984*
I could not stop thinking about my identity and the need to keep it hidden.	Cognitive	"keeping secrets leads to increased accessibility of the secret"	*Lane & Wegner, 1995*

I worried a lot that everyone already knew about my identity.	Cognitive		*Pachankis, 2007*
Keeping my identity secret really tormented me.	Cognitive	Some of my secrets have really tormented me.	*Larson & Chastain, 1990*
I was concerned about the way I presented myself and whether people would figure out my secret.	Cognitive	I'm concerned about the way I present myself.	*Fenigstein, Scheier, & Buss, 1975*
I often worried that I would say or do something that would expose my identity.	Cognitive	I often worry that I will say or do wrong things.	*Carleton, Collimore, & Asmundson, 2007*
I often tried to think about my identity. (R)	Cognitive	I tried not to think about "the target word" during the computer task.	*Lane & Wegner, 1995*
I was often afraid that I would reveal something about my identity I didn't want to.	Cognitive	I'm often afraid I'll reveal something I don't want to.	*Larson & Chastain, 1990*
When I talked to someone, I worried about what they may be thinking about me, particularly in regard to my concealed identity.	Cognitive	When I am talking to someone, I worry about what they may be thinking about me.	*Carleton, Collimore, & Asmundson, 2007*
I paid close attention in social interactions, monitoring the actions of others and trying to detect whether they thought I was LGBTQIA+.	Cognitive	"…closely attending to social interactions, monitoring the actions and discerning the potential perspectives of interaction partners…"	*Pachankis, 2007*
I used to plan what I would do or say if someone asked if I was LGBTQIA+.	Cognitive	"…allows the stigmatized person to think ahead to potential paths that can be taken if the interaction partner, in fact, ascertains the hidden stigma…"	*Pachankis, 2007*
When I went to social events, I was careful not to let my guard down so I	Cognitive	When I do go to social events, I am careful not to let my guard down so I	*Quinn, Weisz, & Lawner, 2017*

didn't give away my identity.		don't give away the fact that I have my concealable stigma.	
I felt like I was "living a lie" or "having to maintain two identities."	Cognitive	"…living a lie' or 'having to maintain two identities'."	*Schwitters & Sondag, 2017*

Table 3

Characteristics of the analytic sample regarding the extent of concealment, depression and anxiety symptomatology, and alcohol and drug use from questionnaire

	M	*SD*
Extent of Concealment		
Total Concealment	3.33	.71
Affective Concealment	3.78	.72
Cognitive Concealment	3.39	.85
Behavioral Concealment	2.96	.74
Depression and Anxiety Symptomatology		
Total DASS Score	1.16	.70
Anxiety	.90	.67
Depression	1.21	.88
Stress	1.32	.77
Social Anxiety	2.15	.88
Alcohol Use		
Overall Alcohol Use	5.41	5.33
Consumption	3.07	2.23
Dependency	.64	1.37
Problematic Use	1.68	2.63
Drug Use		
Overall Drug Use	2.20	2.10

Table 4

Results of the Principal Component Analysis

	Eigenvalues of 14-Component Solution			Eigenvalues of 3-Component Solution		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	34.817	33.875	33.875	34.817	33.875	33.875
2	5.292	5.149	39.024	5.292	5.149	39.024
3	3.921	3.814	42.839	3.921	3.814	42.839
4	3.244	3.157	45.995			
5	2.891	2.813	48.808			
6	2.487	2.419	51.227			
7	2.297	2.234	53.462			
8	2.215	2.155	55.617			
9	2.076	2.020	57.637			
10	1.939	1.886	59.524			
11	1.890	1.839	61.363			
12	1.840	1.790	63.153			
13	1.692	1.646	64.799			
14	1.621	1.577	66.376			

Table 5

Results of the Exploratory Factor Analysis – 15-Factor Solution

	Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	21.463	33.536	33.536	21.084	32.943	32.943	5.887	9.198	9.198
2	3.201	5.001	38.537	2.778	4.340	37.283	4.298	6.716	15.914
3	2.347	3.667	42.204	1.915	2.993	40.276	3.363	5.254	21.168
4	1.926	3.009	45.214	1.482	2.316	42.592	3.000	4.687	25.855
5	1.868	2.919	48.132	1.446	2.260	44.851	2.965	4.633	30.488
6	1.448	2.262	50.395	0.995	1.554	46.405	2.890	4.516	35.003
7	1.376	2.149	52.544	0.877	1.370	47.776	2.620	4.093	39.097
8	1.295	2.023	54.567	0.855	1.336	49.112	2.175	3.399	42.496
9	1.281	2.001	56.568	0.815	1.273	50.385	2.027	3.167	45.663
10	1.184	1.849	58.417	0.743	1.162	51.547	1.972	3.081	48.744
11	1.159	1.811	60.228	0.703	1.099	52.646	1.310	2.047	50.791
12	1.102	1.721	61.949	0.653	1.020	53.666	1.126	1.760	52.551
13	1.079	1.685	63.635	0.541	0.845	54.511	0.880	1.376	53.926
14	1.002	1.566	65.201	0.529	0.827	55.338	0.733	1.145	55.071
15	1.001	1.564	66.765	0.494	0.772	56.110	0.665	1.039	56.110

Table 6

Results of the Exploratory Factor Analysis – 3-Factor Solution

	Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	21.463	33.536	33.536	20.928	32.700	32.700	11.185	17.477	17.477
2	3.201	5.001	38.537	2.607	4.073	36.773	7.752	12.113	29.590
3	2.347	3.667	42.204	1.767	2.761	39.534	6.364	9.944	39.534

Table 7

Hierarchical Regression Analysis Predicting Overall Depression, Anxiety, and Stress Scores for Sexual and Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .119*)					
Age	-.028	.004	-.298	-7.948	<.001
Gender	-.204	.053	-.144	-3.852	<.001
Ethnicity	-.014	.067	-.008	-.202	.840
Step 2 (ΔR^2= .096*)					
Extent of Concealment	.314	.036	.314	8.793	<.001

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

Table 8

Hierarchical Regression Analysis Predicting Depression Scores for Sexual and Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .091*)					
Age	-.030	.004	-.256	-6.717	<.001
Gender	-.238	.067	-.135	-3.542	<.001
Ethnicity	.050	.085	.022	.588	.557
Step 2 (ΔR^2= .076*)					
Extent of Concealment	.349	.046	.279	7.584	<.001

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

Table 9

Hierarchical Regression Analysis Predicting Anxiety Scores for Sexual and Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .116*)					
Age	-.026	.003	-.292	-7.782	<.001
Gender	-.189	.050	-.141	-3.767	<.001
Ethnicity	-.062	.064	-.036	-.976	.329
Step 2 (ΔR^2= .096*)					
Extent of Concealment	.297	.034	.314	8.777	<.001

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

Table 10

Hierarchical Regression Analysis Predicting Stress Scores for Sexual and Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .093*)					
Age	-.027	.004	-.269	-7.064	<.001
Gender	-.176	.058	-.115	-3.028	.003
Ethnicity	-.030	.074	-.015	-.408	.683
Step 2 (ΔR^2= .070*)					
Extent of Concealment	.290	.040	.268	7.258	<.001

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

Table 11

Hierarchical Regression Analysis Predicting Social Anxiety Scores for Sexual and Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .126*)					
Age	-.036	.004	-.309	-8.278	<.001
Gender	-.253	.066	-.144	-3.851	<.001
Ethnicity	.028	.083	.013	.340	.734
Step 2 (ΔR^2= .050*)					
Extent of Concealment	.283	.046	.227	6.194	<.001

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

Table 12

Hierarchical Regression Analysis Predicting Alcohol Use Scores for Sexual and Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .011)					
Age	.006	.086	.031	2.170	.030
Gender	.050	.047	.059	1.189	.235
Ethnicity	.012	.009	.013	.220	.826
Step 2 (ΔR^2= .014*)					
Extent of Concealment	.089	.030	.119	2.990	.003

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

Table 13

Hierarchical Regression Analysis Predicting Alcohol Consumption Scores for Sexual and Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .020*)					
Age	.031	.012	.102	2.570	.010
Gender	.407	.184	.088	2.217	.027
Ethnicity	.100	.233	.017	.430	.668
Step 2 (ΔR^2= .010**)					
Extent of Concealment	.328	.131	.100	2.508	.012

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

Table 14

Hierarchical Regression Analysis Predicting Alcohol Dependence Scores for Sexual and Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .006)					
Age	.013	.007	.074	1.869	.062
Gender	.035	.103	.014	.340	.734
Ethnicity	-.033	.131	-.010	-.250	.803
Step 2 (ΔR^2= .007**)					
Extent of Concealment	.161	.074	.088	2.194	.029

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

Table 15

Hierarchical Regression Analysis Predicting Alcohol-Related Problems for Sexual and Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .003)					
Age	.016	.013	.048	1.192	.234
Gender	.062	.201	.012	.312	.756
Ethnicity	.055	.255	.009	.214	.830
Step 2 (ΔR^2= .013*)					
Extent of Concealment	.411	.143	.115	2.880	.004

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

Table 16

Hierarchical Regression Analysis Predicting Drug Use Scores for Sexual and Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .023**)					
Age	-.004	.001	-.145	-2.883	.004
Gender	-.012	.021	-.030	-.593	.553
Ethnicity	.003	.085	.005	.105	.917
Step 2 (ΔR^2= .017*)					
Extent of Concealment	.040	.015	.135	2.676	.008

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

Table 17

Summary of Gender Identity and Sexual Identity Milestones and the Attendant Duration of Concealment of Gender Identity and Sexual Identity

	Gender Identity (*n* = 294)				Sexual Identity (*n* = 628)			
Milestone	*M*	*SD*	*Median*	*Mode*	*M*	*SD*	*Median*	*Mode*
Age of First Wonder	13.63	5.86	15.00	15.00	12.31	3.69	12.00	12.00
Age of First Disclosure	18.87	6.05	18.00	16.00	16.64	4.53	16.00	14.00
Duration of Concealment	5.24	7.22	2.00	.00	4.32	4.49	3.00	1.00

Table 18

Hierarchical Regression Analysis for Duration of Concealment of Gender Identity Predicting Overall Depression, Anxiety, and Stress Scores for Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .073**)					
Age	-.025	.005	-.270	-4.783	<.001
Ethnicity	-.008	.097	-.005	-.082	.935
Step 2 (ΔR^2= .017*)					
Duration of Concealment	.068	.029	.145	2.336	.020

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

Table 19

Hierarchical Regression Analysis for Duration of Concealment of Sexual Identity Predicting Overall Depression, Anxiety, and Stress Scores for Sexual Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .126*)					
Age	-.032	.004	-.313	-8.272	<.001
Gender	-.178	.054	-.126	-3.328	.001
Ethnicity	-.013	.072	-.007	-.186	.853
Step 2 (ΔR^2= .007**)					
Duration of Concealment	.063	.028	.091	2.244	.025

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

Table 20

Hierarchical Regression Analysis for Duration of Concealment of Gender Identity Predicting Depression Scores for Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .041*)					
Age	-.024	.007	-.203	-3.539	<.001
Ethnicity	.007	.127	.003	.056	.955
Step 2 (ΔR^2= .029*)					
Duration of Concealment	.114	.038	.189	3.012	.003

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

Table 21

Hierarchical Regression Analysis for Duration of Concealment of Sexual Identity Predicting Depression Scores for Sexual Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .104*)					
Age	-.036	.005	-.287	-7.474	<.001
Gender	-.195	.068	-.110	-2.880	.004
Ethnicity	.048	.085	.021	.567	.571
Step 2 (ΔR^2= .016*)					
Duration of Concealment	.121	.035	.139	3.408	.001

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

Table 22

Hierarchical Regression Analysis for Duration of Concealment of Gender Identity Predicting Anxiety Scores for Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .071*)					
Age	-.024	.005	-.265	-4.690	<.001
Ethnicity	-.021	.096	-.012	-.214	.830
Step 2 (ΔR^2= .009)					
Duration of Concealment	.048	.029	.102	1.638	.103

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

Table 23

Hierarchical Regression Analysis for Duration of Concealment of Sexual Identity Predicting Anxiety Scores for Sexual Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .120*)					
Age	-.029	.004	-.300	-7.905	<.001
Gender	-.172	.051	-.129	-3.394	.001
Ethnicity	-.061	.064	-.036	-.949	.343
Step 2 (ΔR^2= .003)					
Duration of Concealment	.041	.027	.062	1.529	.127

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

Table 24

Hierarchical Regression Analysis for Duration of Concealment of Gender Identity Predicting Stress Scores for Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .068*)					
Age	-.026	.006	-.260	-4.586	<.001
Ethnicity	-.011	.104	-.006	-.105	.916
Step 2 (ΔR^2= .005)					
Duration of Concealment	.038	.032	.076	1.215	.225

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

Table 25

Hierarchical Regression Analysis for Duration of Concealment of Sexual Identity Predicting

Stress Scores for Sexual Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .093*)					
Age	-.030	.004	-.270	-7.002	<.001
Gender	-.160	.059	-.104	-2.702	.007
Ethnicity	-.027	.075	-.014	-.360	.719
Step 2 (ΔR^2= .001)					
Duration of Concealment	.023	.031	.031	.750	.453

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

Table 26

Hierarchical Regression Analysis for Duration of Concealment of Gender Identity Predicting Social Anxiety Scores for Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .061*)					
Age	-.027	.006	-.263	-4.274	<.001
Ethnicity	-.064	.115	-.032	-.555	.579
Step 2 (ΔR^2= .008)					
Duration of Concealment	.057	.035	.101	1.616	.107

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

Table 27

Hierarchical Regression Analysis for Duration of Concealment of Sexual Identity Predicting Social Anxiety Scores for Sexual Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .129*)					
Age	-.040	.005	-.317	-8.387	<.001
Gender	-.228	.066	-.130	-3.437	.001
Ethnicity	.039	.084	.017	.465	.642
Step 2 (ΔR^2= <.001)					
Duration of Concealment	-.012	.035	-.013	-.331	.741

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

Table 28

Hierarchical Regression Analysis for Duration of Concealment of Gender Identity Predicting

Overall Alcohol Use for Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2 = .016)					
Age	.001	.004	.008	.127	.899
Ethnicity	.163	.082	.124	1.991	.048
Step 2 (ΔR^2 = .010)					
Duration of Concealment	.040	.025	.112	1.625	.105

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

Table 29

Hierarchical Regression Analysis for Duration of Concealment of Sexual Identity Predicting Overall Alcohol Use for Sexual Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2 = .005)					
Age	.003	.003	.036	.841	.401
Gender	.054	.046	.050	1.158	.248
Ethnicity	.010	.058	.007	.173	.863
Step 2 (ΔR^2 = .001)					
Duration of Concealment	.018	.024	.035	.752	.452

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

Table 30

Hierarchical Regression Analysis for Duration of Concealment of Gender Identity Predicting Drug Use for Gender Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2 = .015)					
Age	-.003	.002	-.121	-1.667	.097
Ethnicity	.009	.039	.017	.229	.819
Step 2 (ΔR^2 = .009)					
Duration of Concealment	.016	.012	.107	1.334	.184

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

Table 31

Hierarchical Regression Analysis for Duration of Concealment of Sexual Identity Predicting

Drug Use for Sexual Minority Individuals

Variables Entered	*B*	*SE B*	*β*	*t*	*sig.*
Step 1 (ΔR^2= .024**)					
Age	-.004	.001	-.148	-2.901	.004
Gender	-.011	.021	-.026	-.506	.613
Ethnicity	-.001	.026	-.001	-.028	.978
Step 2 (ΔR^2= <.001)					
Duration of Concealment	.001	.011	.006	.115	.909

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

Table 32

Summary of Bivariate correlations on the Extent of Concealment measure, DASS, DASS Depression subscale, and Duration of Concealment of Gender Identity

	1	*2*	*3*	*4*	*M*	*SD*
1. Extent of Concealment	1.00	.284*	.243*	.174*	3.46	.67
2. Overall Depression, Anxiety, and Stress	.284*	1.00	.879*	.001	1.29	.68
3. Depression Score	.243*	.879*	1.00	.067	1.37	.87
4. Duration of Concealment of Gender Identity	.174*	.001	.067	1.00	1.78	1.45

* Correlation is significant at the .01 level (2-tailed).
** Correlation is significant at the .05 level (2-tailed).

Table 33

Summary of Bivariate correlations on the Extent of Concealment measure, DASS, DASS Depression subscale, and Duration of Concealment of Sexual Identity

	1	*2*	*3*	*4*	*M*	*SD*
1. Extent of Concealment	1.00	.350*	.304*	.084**	3.32	.71
2. Overall Depression, Anxiety, and Stress	.350*	1.00	.900*	-.059	1.16	.71
3. Depression Score	.304*	.900*	1.00	-.005	1.21	.88
4. Duration of Concealment of Sexual Identity	.084**	-.059	-.005	1.00	1.82	1.01

* Correlation is significant at the .01 level (2-tailed).
** Correlation is significant at the .05 level (2-tailed).

Figure 1. The Extent of Concealment Construct

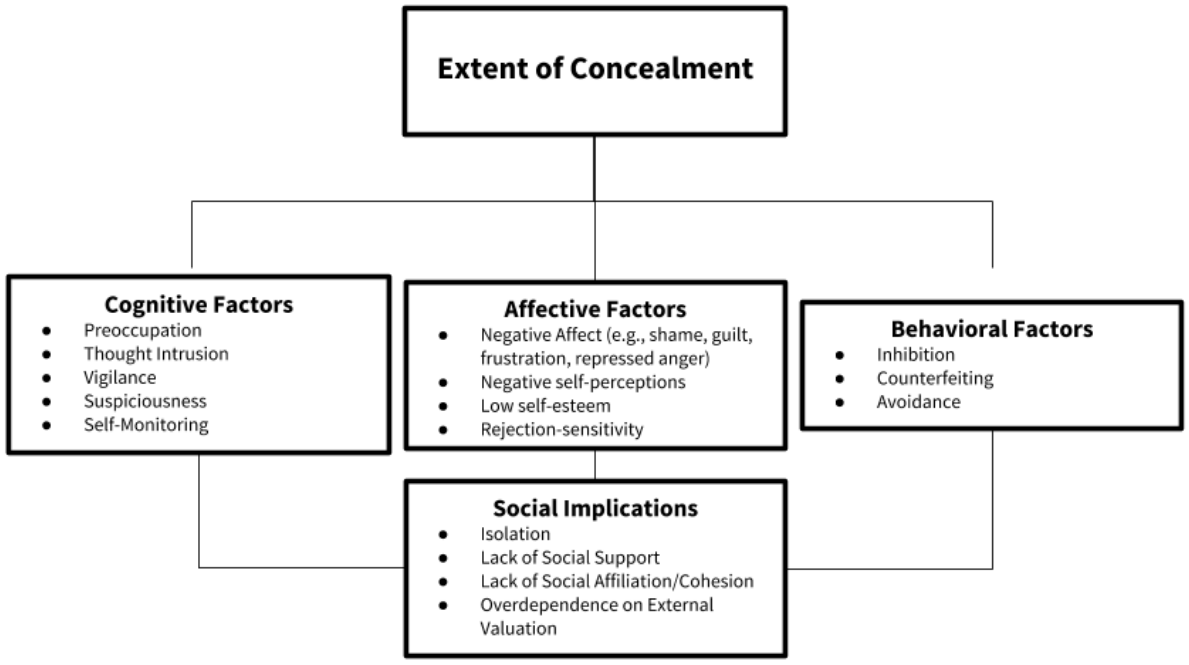


Figure 1. The Extent of Concealment construct comprises three primary factors: cognitive, affective, and behavioral. Each factor has social implications for sexual and gender minority individuals.

Figure 2. A Mediation Model for the Impact of Concealment

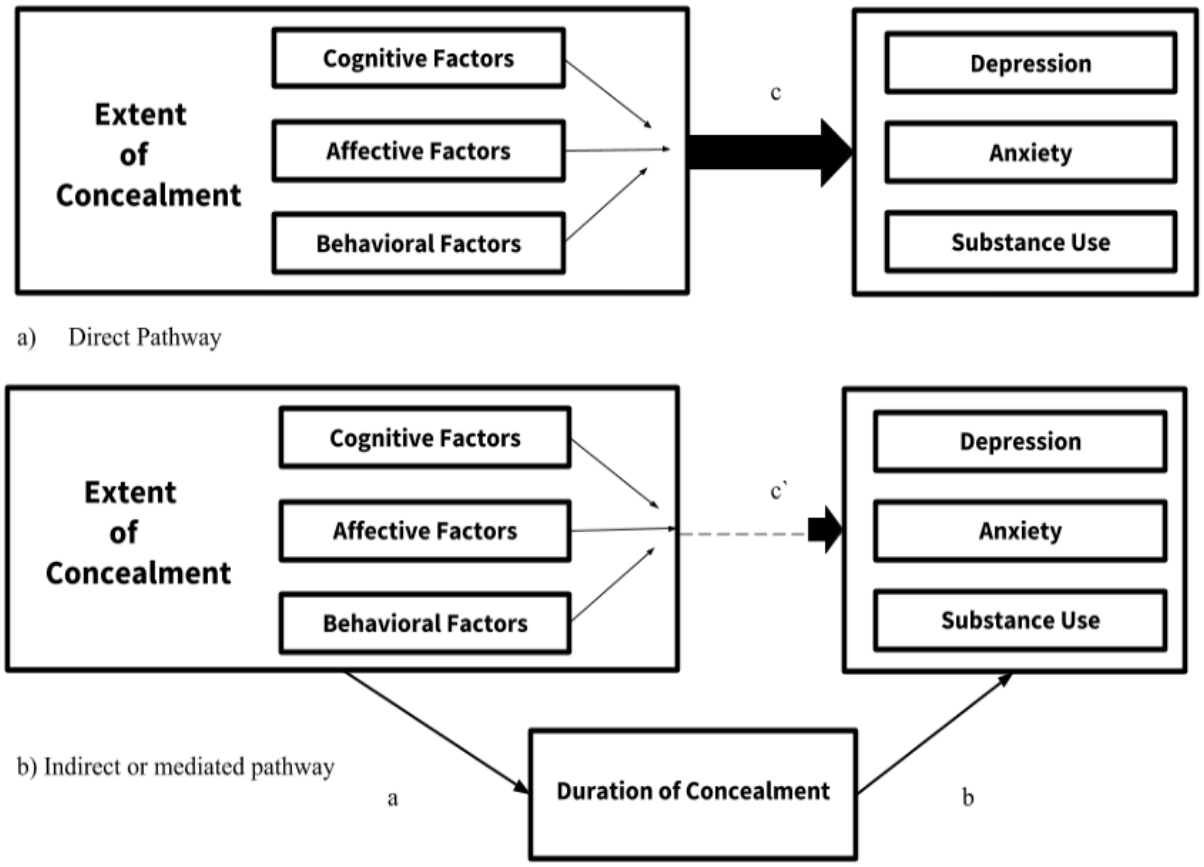


Figure 2. Generic mediation model being tested (on the basis of Baron & Kenny, 1986). The Extent of Concealment will directly predict the dependent variables, and this direct pathway will be mediated by Duration of Concealment.

Figure 3. Scree Plot of Principal Component Analysis

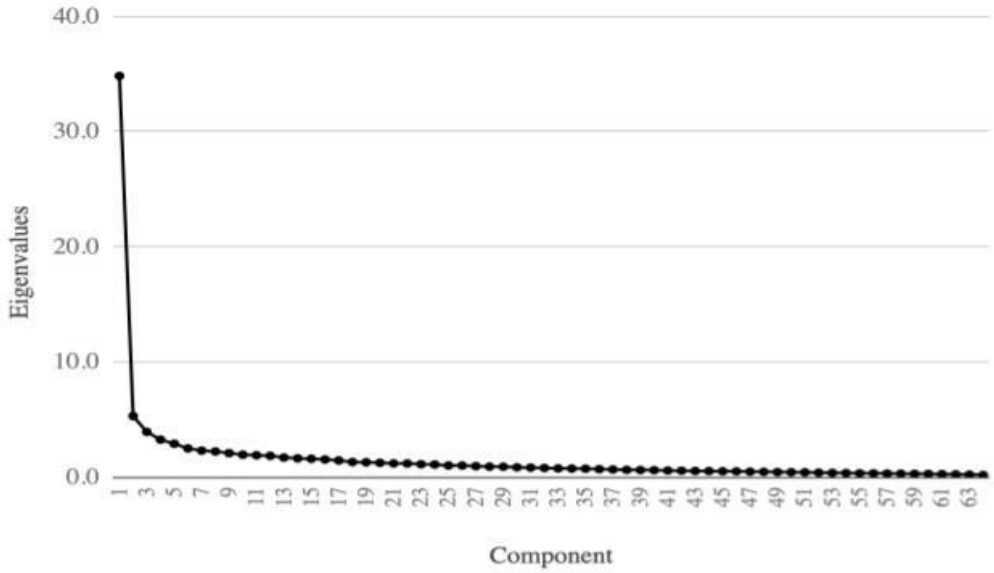
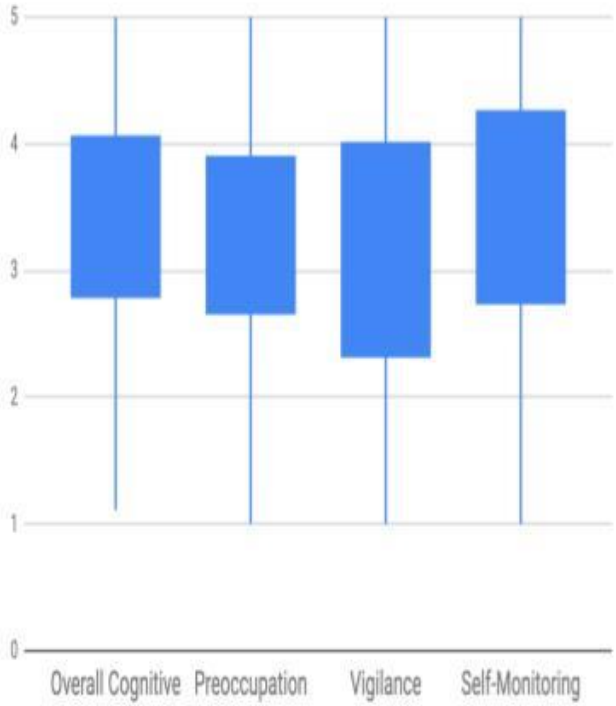


Figure 3. A principal component analysis tested on the 64 items of the Extent of Concealment measure, indicating one primary component of concealment of gender and sexual identity.

Figure 4. Convergent Mixed Methods Analysis of Cognitive Aspects of Concealment



Convergent Qualitative Data

Preoccupation: "I was worried of how I was being seen, constantly feeling watched."

Vigilance: "…it's like walking on eggshells because you know you'll be shunned if you step on one."

Self-Monitoring: "A desperate, constant thought that I needed to be "normal" in every way to mask this aspect."

Emerging Themes

"I honestly don't know [how I knew to conceal], I just did."

"there's probably no such thing as the way I'm feeling (gender neutral, specifically)."

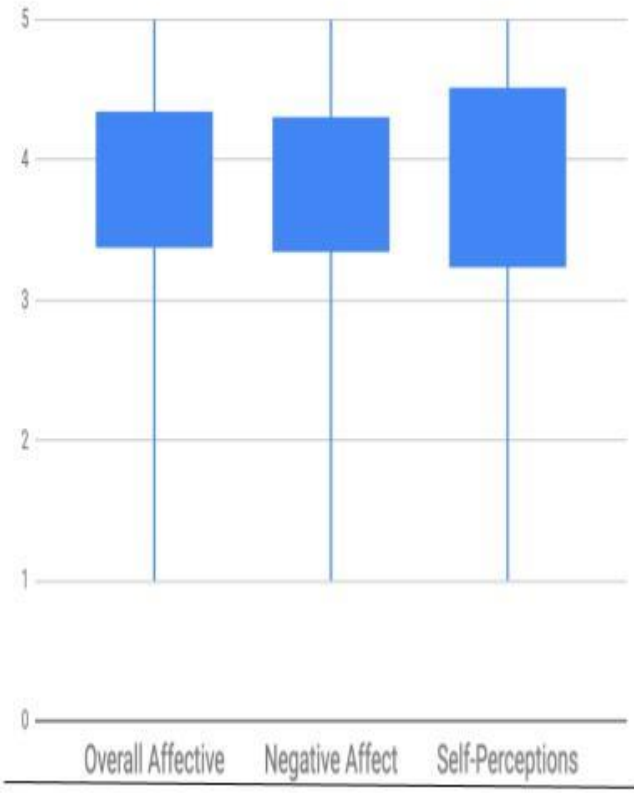
"Not ready to admit to myself."

"Not cool not being your authentic self."

"maybe I'm making a mountain out of a molehill…"

Figure 4. A joint display of the qualitative and quantitative data of cognitive aspects of concealment. The box-and-whiskers plot compares the average scores of the cognitive subscale of the Extent of Concealment measure as well as the average scores of the preoccupation, vigilance, and self-monitoring items on the subscale. Convergent and divergent qualitative data is on the right.

Figure 5. Convergent Mixed Methods Analysis of Affective Aspects of Concealment



Convergent Qualitative Data

Negative Affect: "I shut down as a creative happy kid."

"Sometimes I feel helpless because I can't speak out without being outed myself."

Negative Self-Perceptions: "...a general feeling of self hatred. There is also the shame in keeping a secret that big from the people you love."

"It's going to be hard enough to make anyone love you, imagine trying to be transgender at the same time."

Emerging Themes

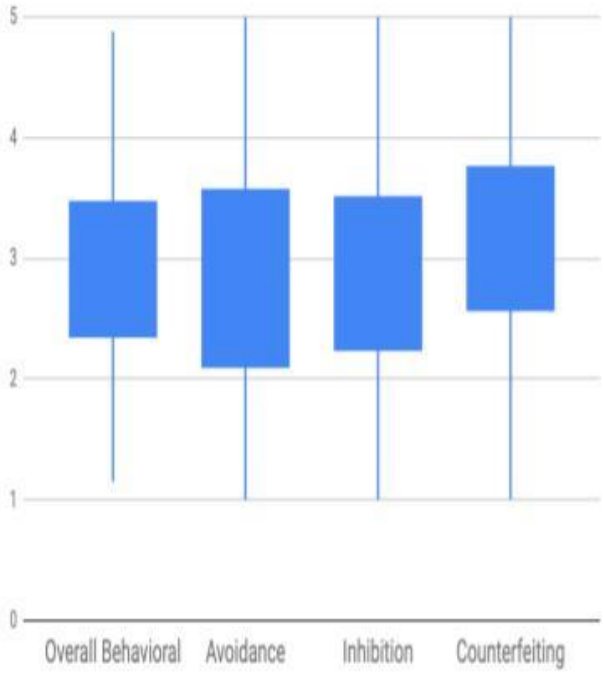
"I would suppress everything to the point where I cauterized my sense of vulnerability."

"I suppressed the feelings most of the time - but when I thought about it, it was heavy - as if there was an actual weight on me, or some kind of smothering force that surrounded me."

"...when I was younger it did feel exhilarating at times to keep a secret and to get to explore who I was without telling people…"

Figure 5. A joint display of the qualitative and quantitative data of affective aspects of concealment. The box-and-whiskers plot compares the average scores of the affective subscale of the Extent of Concealment measure as well as the average scores of the negative affect and negative self-perceptions items on the subscale. Convergent and divergent qualitative data is on the right.

Figure 6. Convergent Mixed Methods Analysis of Behavioral Aspects of Concealment



Convergent Qualitative Data

Avoidance: "never played with toys others might perceive as feminine, avoided feminine-related things, especially colors and music. didn't want to be detected."

"I had very few friends so nobody would think anything."

Inhibition: "I didn't speak up or correct people when they assumed something of me. For the most part, I didn't do anything to hide my identity as much as I didn't do anything to embrace my identity. Instead of getting dressed, I stayed in the closet, so to speak."

"Now that I've transitioned, and not disclosing history."

Counterfeiting: "if my mom asks I say bad things about [non-male-identified individuals] to hide the fact I find them attractive."

Emerging Themes

"I just did. I didn't have some magical way of knowing, it just didn't happen."

"[Concealment is] what you do when you don't feel you can be your true self."

Figure 6. A joint display of the qualitative and quantitative data of behavioral aspects of concealment. The box-and-whiskers plot compares the average scores of the behavioral subscale of the Extent of Concealment measure as well as the average scores of the avoidance, inhibition, and counterfeiting items on the subscale. Convergent and divergent qualitative data is on the right.

Survey Measures

Appendix A – General Recruitment Text

Appendix B – Demographics and Social History Questionnaire

Appendix C – Identity Milestones Questionnaire

Appendix D – Extent of Concealment Measure

Appendix E – Qualitative Questionnaire

Appendix F - Depression Anxiety Stress Scale (DASS)

Appendix G – Social Interaction Anxiety Scale (SIAS)

Appendix H – Drug and Alcohol Use Pre-Screen Questions

Appendix I - Alcohol Use Disorders Identification Test (AUDIT)

Appendix J – Drug Abuse Screening Test (DAST-10)

Appendix K – Qualitative Codebook

Appendix A

General Recruitment Text

Initial Email

We are looking for LGBTQIA+ individuals to participate in a research study to improve our current understanding of their valuable life experiences! In particular, we are interested to know more about what it's like for LGBTQIA+ people to hide their gender identity and/or sexual orientation. Being "closeted" or "in the closet" is common among LGBTQIA+ individuals and can impact who they are, so we are also interested in how these experiences are related to current well-being.

We need participants who identify broadly as LGBTQIA+, are at least 18 years old, and reside in the United States. As part of your participation, you will be asked to fill out an anonymous, online questionnaire (LINK) to tell us about your experiences. The survey should take between 25-50 minutes to complete. Your participation is completely voluntary, and you can leave the survey at any time.

Those accessing the survey will have the chance to enter a drawing to win one of 10 $20 gift cards to Amazon.com!

PARTICIPATE HERE!

Follow-up Email

This email is to follow-up on an earlier invitation to participate in a research study about LGBTQIA+ life experiences. In particular, we are interested to know more about what it's like for LGBTQIA+ people to hide their gender identity and/or sexual orientation. Being "closeted" or "in the closet" is common among LGBTQIA+ individuals and can impact who they are, so we are also interested in how these experiences are related to current well-being.

We need participants who identify broadly as LGBTQIA+, are at least 18 years old, and reside in the United States. As part of your participation, you will be asked to fill out an anonymous, online questionnaire (link) to tell us about your experiences. The survey should take between 25-50 minutes to complete. Your participation is completely voluntary, and you can leave the survey at any time.

Those accessing the survey will have the chance to enter a drawing to win one of 10 $20 gift cards to Amazon.com!

Appendix B

Demographic and Social History Questionnaire

1. Where do you live?
    a. County:_____
    b. State:_____

2. What is your age? _____

3. Do you consider yourself LGBTQIA+ or part of the queer or transgender spectrum?
    a. Yes
    b. No

4. What group(s) do you belong to? (Please select all that apply)
    a. Black/African-American
    b. Asian or Pacific Islander
    c. European-American/White/Caucasian
    d. Latino, Hispanic, or Chicano
    e. Native-American/American-Indian
    f. Multi-racial
    g. Other: _____

5. What is your highest level of education?
    a. Middle school, some high school.
    b. High school degree, or equivalent (i.e., GED)
    c. Some college, no degree
    d. Associate's
    e. Bachelor's
    f. Graduate degree/professional degree (M.S./M.A., Ph.D., M.D., J.D., etc.)

6. What is your current relationship status?
    a. Married/domestic partner with same sex partner
    b. Married/domestic partner with opposite sex partner
    c. Dating same sex partner(s) only
    d. Dating opposite sex partner(s) only
    e. Dating both same and opposite sex partners
    f. Committed relationship with same sex partner
    g. Committed relationship with opposite sex partner
    h. Single (not currently dating)

7. What was your assigned sex at birth?
    a. Male
    b. Female
    c. Intersex

8. How would you define your gender?
    a. Man
    b. Woman

c. Non-binary
d. Genderqueer
e. Intersex
f. Agender
g. Another gender_____

9. What is your current sexual identity?
    a. Gay
    b. Lesbian
    c. Bisexual
    d. Straight/Heterosexual
    e. Pansexual
    f. Queer
    g. Questioning
    h. Asexual
    i. Another sexual identity _____

10. Which of the following best describes the way you view your sexual orientation currently?
    a. Exclusively heterosexual
    b. Predominantly heterosexual, only incidentally homosexual
    c. Predominantly heterosexual, but more than incidentally homosexual
    d. Equally heterosexual and homosexual
    e. Predominantly homosexual, but more than incidentally heterosexual
    f. Predominantly homosexual, only incidentally heterosexual
    g. Exclusively homosexual

11. In your lifetime, have your sexual partners been:
    a. Only male
    b. Only female
    c. Only transgender
    d. Both male and female
    e. Male, female, and transgender
    f. This question does not apply to me

12. In your lifetime, have the majority of your romantic partners been:
    a. Only male
    b. Only female
    c. Only transgender
    d. Both male and female
    e. Male, female, and transgender
    f. This question does not apply to me

13. Considering your closest non-sexual/romantic relationships, are those individuals primarily:
    a. Heterosexual
    b. Gay/Lesbian
    c. Bisexual
    d. Queer
    e. Transgender/Gender Non-Conforming

Appendix C

Identity Milestones Questionnaire

1. At what age did you first wonder whether you might be different from your peers regarding your sexuality (i.e., you might have same-sex or nonheterosexual attractions)?

2. At what age did you first wonder whether you might be different from your peers regarding your gender (i.e., you might be transgender or noncisgender)?

3. At what age did you first acknowledge that you might not be heterosexual or cisgender?

4. At what age did you first acknowledge that you might not be cisgender?

5. At what age did you first tell someone you were nonheterosexual?

6. At what age did you first tell someone you were noncisgender?

7. At what age did you first consider yourself as gay/lesbian/bisexual/pansexual/queer, etc.?

8. At what age did you first consider yourself as transgender/noncisgender?

9. Thinking about your first memories of being attracted to girls or boys, how old were you? These memories need not have been interpreted as sexual in nature at the time.

10. At what age, did you first have sex (defined as “genital contact on the part of either you, your partner, or both”) with someone of the same sex as you or another queer person?

Appendix D

Extent of Concealment

Use the following scale to rate yourself on the following questions:

1 = Never
2 = Rarely
3 = Occasionally
4 = Frequently
5 = Very frequently

2. I felt angry and frustrated to have to hide who I was.
3. I rarely felt comfortable in my own skin when I was concealing my identity.
4. I was afraid that others (e.g., family or friends) would reject me if they knew that I'm LGBTQIA+.
5. I worried that if people knew about my identity, they would discriminate against me or shun me.
6. There was nothing specifically I was afraid of, but I dreaded coming out.
7. Telling someone about my identity felt risky, so I kept it hidden.
8. I feared that someone would find out about my identity and tell everyone about it.
9. I worried that others would find out about my identity.
10. I felt hopeless for the future because I never thought I would be able to be open about my identity.
11. I felt isolated because of my concealed identity.
12. I often felt alienated from my peers and community when I was hiding my identity.
13. I felt so lonely when I was hiding my identity, and was afraid I would always be lonely.
14. I often felt insecure during social interactions when I was hiding my identity.
15. I felt ashamed of keeping my identity hidden.
16. I felt relaxed in interactions where I was concealing my identity. (R)
17. I rarely felt genuine in my social interactions.
18. I experienced a lot of sadness due to my identity, and felt like something was wrong with me.
19. I felt drained by the end of the day after having to conceal my identity all day.
20. To conceal my sexual and gender identity, I avoided contact with people who identified as LGBTQIA+ or events that were tailored to LGBTQIA+ people (e.g., Pride).
21. When concealing my sexual and gender identity, I was seen in public with other LGBTQIA+ people. (R)
22. If I thought the topic of my concealed identity was going to come up in conversation, I tried to steer the conversation in a different direction.
23. I isolated myself in order to conceal my identity.
24. I tried to avoid activities or situations that might make me think about my identity.
25. To keep my concealed identity hidden, I avoided becoming Facebook friends with certain people on social media.
26. I often said I was feeling sick to get out of social obligations where my identity might come up.
27. I avoided going to work, school, or places that made it too hard to conceal my identity.
28. I avoided posting any pictures, posts, or comments online that might reveal my identity.
29. I drank alcohol or did drugs to cope with having a hidden identity.
30. While I was concealing my identity, I often tried to look happy enough on the outside, but inwardly I felt angry and rebellious.
31. I dressed or behaved in ways that are gender traditional so that others would think I am heterosexual or cisgender.
32. I did not care if my online persona revealed that I was LGBTQIA+. (R)
33. I joined others in telling demeaning jokes or saying negative things about LGBTQIA+ people so that people would think I was heterosexual or cisgender.
34. I made sure to delete my browser history so no one could see I was visiting LGBTQIA+-related websites.
35. I admitted that I was LGBTQIA+ when asked. (R)

36. To keep my identity hidden, I used vague language when talking about my personal life.
37. I lied (or would say "No," or "why do you think so?") when somebody asked if I was LGBTQIA+.
38. Being read by others as LGBTQIA+ made me try harder to pass.
39. In order to hide my identity, I just tried to blend in with other people.
40. If the topic of conversation was about people with my concealed identity, I joined in and pretended I didn't have my concealed identity.
41. I tried to control how I talked (e.g. pitch or tone of voice) so it didn't give away my identity.
42. While concealing, I remained silent while witnessing homophobic or transphobic remarks, jokes, or activities because I did not want to be labeled as LGBTQIA+ by those involved.
43. I had a blank profile picture on social media (e.g, dating apps like Grindr or online forums), so no one would recognize me.
44. I participated in activities regardless of whether people thought I might think I am LGBTQIA+. (R)
45. When people assumed I was heterosexual or cisgender, I neglected to correct their misunderstanding.
46. I concealed my identity because I had no idea how others might respond.
47. I was often hard on myself for having my identity.
48. I felt like I was lying to myself about who I was.
49. For me, concealing my identity felt like the most important thing.
50. Thoughts about my identity often "popped" into my head the more I tried to hide it from others.
51. I found I could not get thoughts or worries about my identity out of my mind even though I wanted to.
52. I found it hard to do other things because thoughts or mental pictures of my identity kept coming into my mind.
53. In conversations, I was sensitive to even the slightest change in the facial expression of the person I was conversing with, particularly if I sensed they were suspicious about my identity.
54. I could not stop thinking about my identity and the need to keep it hidden.
55. I worried a lot that everyone already knew about my identity.
56. Keeping my identity secret really tormented me.
57. I was concerned about the way I presented myself and whether people would figure out my secret.
58. I often worried that I would say or do something that would expose my identity.
59. I often tried to think about my identity. (R)
60. I was often afraid that I would reveal something about my identity I didn't want to.
61. When I talked to someone, I worried about what they may be thinking about me, particularly in regard to my concealed identity.
62. I paid close attention in social interactions, monitoring the actions of others and trying to detect whether they thought I was LGBTQIA+.
63. I used to plan what I would do or say if someone asked if I was LGBTQIA+.
64. When I went to social events, I was careful not to let my guard down so I didn't give away my identity.
65. I felt like I was "living a lie" or "having to maintain two identities."

Appendix E

Qualitative Questions

We have found that people who identify as LGBTQIA+ often hide their identities from others, and they do so for a variety of valid reasons. Think back to a time when you hid your identity as you answer the following questions.

1. Explain to the best of your ability why you hid the fact that you were LGBTQIA+.
2. How did you know to hide your identity?
3. In what ways did you hide your identity?
4. How did it feel to hide your identity?
5. What were common thoughts you had while hiding your identity?

Appendix F

Depression and Anxiety Stress Scale (DASS)

Please read each statement and circle a number 0, 1, 2 or 3 that indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

1 = Applied to me to some degree, or some of the time
2 = Applied to me to a considerable degree, or a good part of time
3 = Applied to me very much, or most of the time
0 = Did not apply to me at all

1. I found myself getting upset by quite trivial things
2. I was aware of dryness of my mouth
3. I couldn't seem to experience any positive feeling at all
4. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)
5. I just couldn't seem to get going
6. I tended to over-react to situations
7. I had a feeling of shakiness (e.g., legs going to give way)
8. I found it difficult to relax
9. I found myself in situations that made me so anxious I was most relieved when they ended
10. I felt that I had nothing to look forward to
11. I found myself getting upset rather easily
12. I felt that I was using a lot of nervous energy
13. I felt sad and depressed
14. I found myself getting impatient when I was delayed in any way (e.g., lifts, traffic lights, being kept waiting)
15. I had a feeling of faintness
16. I felt that I had lost interest in just about everything
17. I felt I wasn't worth much as a person
18. I felt that I was rather touchy
19. I perspired noticeably (e.g., hands sweaty) in the absence of high temperatures or physical exertion
20. I felt scared without any good reason
21. I felt that life wasn't worthwhile
22. I found it hard to wind down
23. I had difficulty in swallowing
24. I couldn't seem to get any enjoyment out of the things I did
25. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)
26. I felt down-hearted and blue
27. I found that I was very irritable
28. I felt I was close to panic
29. I found it hard to calm down after something upset me
30. I feared that I would be "thrown" by some trivial but unfamiliar task
31. I was unable to become enthusiastic about anything
32. I found it difficult to tolerate interruptions to what I was doing
33. I was in a state of nervous tension
34. I felt I was pretty worthless

35. I was intolerant of anything that kept me from getting on with what I was doing
36. I felt terrified
37. I could see nothing in the future to be hopeful about
38. I felt that life was meaningless
39. I found myself getting agitated
40. I was worried about situations in which I might panic and make a fool of myself
41. I experienced trembling (e.g., in the hands)
42. I found it difficult to work up the initiative to do things

Appendix G

Social Interaction Anxiety Scale (SIAS)

Instructions: For each item, please circle the number to indicate the degree to which you feel the statement is characteristic or true for you. The rating scale is as follows:

0 = **Not at all** characteristic or true of me.
1 = **Slightly** characteristic or true of me.
2 = **Moderately** characteristic or true of me.
3 = **Very** characteristic or true of me.
4 = **Extremely** characteristic or true of me.

1. I get nervous if I have to speak with someone in authority (teacher, boss, etc.).
2. I have difficulty making eye contact with others.
3. I become tense if I have to talk about myself or my feelings.
4. I find it difficult to mix comfortably with the people I work with.
5. I find it easy to make friends my own age.
6. I tense up if I meet an acquaintance in the street.
7. When mixing socially, I am uncomfortable.
8. I feel tense if I am alone with just one other person.
9. I am at ease meeting people at parties, etc.
10. I have difficulty talking with other people.
11. I find it easy to think of things to talk about.
12. I worry about expressing myself in case I appear awkward.
13. I find it difficult to disagree with another's point of view.
14. I have difficulty talking to attractive persons of the same or opposite sex.
15. I find myself worrying that I won't know what to say in social situations
16. I am nervous mixing with people I don't know well.
17. I feel I'll say something embarrassing when talking.
18. When mixing in a group, I find myself worrying I will be ignored.
19. I am tense mixing in a group.
20. I am unsure whether to greet someone I know only slightly.

Appendix H

Drug and Alcohol Use Pre-Screen Questions

1. Have you ever consumed alcohol or drugs (include illegal drugs or illegal use of prescription drugs) in your lifetime? Please check ALL that apply to you:
    a. I have tried alcohol
    b. I have tried drugs
    c. I have never tried drugs OR alcohol/not applicable

2. If you have never used drugs or alcohol, would you like to?
    a. Yes
    b. No

3. Please indicate which substances you would like to try in the space below (report the substance's actual name): _____

(If participants reported any lifetime use of drugs or alcohol, they were then routed to the drug and alcohol use questionnaires.)

Appendix I

Alcohol Use Disorders Identification Test (AUDIT)

Please answer the following questions with respect to your current alcohol use.
Consider a "drink" to be a 12oz. can or bottle of beer, a 5oz. glass of wine, a wine cooler, one cocktail, or a shot (1.25oz.) of hard liquor (like gin or vodka).

1. How often do you have a drink containing alcohol?
1= Never
2= Monthly or less
3= 2-4 times a month
4= 2-3 times a week
5= 4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
1= 1 or 2
2= 3 or 4
3= 5 or 6
4= 7 to 9
5= 10 or more

3. How often do you have six or more drinks on one occasion?
1= Never
2= Less than monthly
3= Monthly
4= Weekly
5= Daily or almost daily

4. How often during the last year have you found that you were not able to stop drinking once you started?
1= Never
2= Less than monthly
3= Monthly
4= Weekly
5= Daily or almost daily

5. How often during the last year have you failed to do what was normally expected of you because of drinking?
1= Never
2= Less than monthly
3= Monthly
4= Weekly
5= Daily or almost daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
1= Never
2= Less than monthly
3= Monthly
4= Weekly

5= Daily or almost daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
1= Never
2= Less than monthly
3= Monthly
4= Weekly
5= Daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because of your drinking?
1= Never
2= Less than monthly
3= Monthly
4= Weekly
5= Daily or almost daily

9. Have you or someone else been injured because of your drinking?
1= No
2= Yes, but not in the last year
3= Yes, during the last year

10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking, or suggested you cut down?
1= No
2= Yes, but not in the last year
3= Yes during the last year

Appendix J

Drug Use Questionnaire (DAST-10)

The following questions concern information about your potential involvement with drugs *not including alcoholic beverages* **during the past 12 months**. Carefully read each statement and decide if your answer is 'Yes' or 'No'. Then, circle the appropriate response beside the question.

In the statements 'drug abuse' refers to (1) the use of prescribed or over the counter drugs in excess of the directions and (2) any non-medical use of drugs. The various classes of drugs may include: cannabis (e.g. marijuana, hash), solvents, tranquilizers (e.g. Valium), barbiturates, cocaine, stimulants (e.g. speed), hallucinogens (e.g. LSD) or narcotics (e.g. heroin). Remember that the questions *do not* include alcoholic beverages.

Please answer every question. If you have difficulty with a statement, then choose the response that is mostly right.

These questions refer to the past 12 months. Select the appropriate response on the right.

1. Have you used drugs other than those required for medical reasons?	Yes	No
2. Do you abuse more than one drug at a time?	Yes	No
3. Are you always able to stop using drugs when you want to?	Yes	No
4. Have you had 'blackouts' or 'flashbacks' as a result of drug use?	Yes	No
5. Do you ever feel bad or guilty about your drug use?	Yes	No
6. Have family members (i.e., partner/spouse, parents, children) ever complained about your involvement with drugs?	Yes	No
7. Have you neglected your family because of your use of drugs?	Yes	No
8. Have you engaged in illegal activities in order to obtain drugs?	Yes	No
9. Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?	Yes	No
10. Have you had medical problems as a result of your drug use (e.g. memory loss, hepatitis, convulsions, bleeding, etc.)?	Yes	No

Appendix K

Qualitative Codebook

Codes and Subcodes for Qualitative Coding

Component	Code	Definition
		Codes
Cognitive	COG	Anything having to do with thoughts and mental processes (e.g., "I thought everyone knew I was gay").
Affective	EMO	Anything having to do with emotions (fear, anger, guilt/shame, joy/happiness, surprise, disgust, sadness, anxiety/anticipation; e.g., "I felt scared").
Behavioral	BX	Anything having to do with actions people took to conceal their identity ("I changed my clothing so as not to look gay").
Gender Identity	GI	Concealment of gender identity (e.g., "I hid the fact I was trans.")
Sexual Orientation	SO	Concealment of sexual identity (e.g., "I hid the fact I was gay.")
Emerging	EMERGE	Use this code for statements that do not seem to fit into the COG/EMO/BX breakdown.
		Subcodes: Cognitive
Preoccupation	COG-P	Anything to do with the inability to stop thinking about one's identity in the form of intruding thoughts, and attempts to think about other things.
Self-Monitoring	COG-SM	Anything to do with checking oneself to see if one's appearance, mannerisms, or speech might allude to their concealed identity (e.g., changing an outfit to look less "gay").
Vigilance	COG-V	Anything to do with attending to and monitoring others' reactions and responses during an interaction in order to detect any hints that the other person has perceived their identity (e.g., wondering to oneself: "do they know I'm gay?").
Emerging	COG-EMERGE	Use this code for other cognitive aspects of concealment not listed above.
		Subcodes: Affective
Negative Affect	EMO-NA	Emotions that are negatively charged (negative valence), such as Anger, Discomfort, Expectations of Rejection, Fear, Hopeless, Isolation, Loneliness, Shame, Social Anxiety, Unhappy/sadness.
Negative Self-Perceptions	EMO-SP	Negative emotions that stem from insecurities and negative views on who they are as a person (e.g., "I am bad because of my sexuality"). Can be

		related to low self-esteem, or a lack of truthfulness about who they are, and what that lack of truthfulness may say about them as a person.
Emerging	EMO-EMERGE	Use this code for other emotional aspects of concealment not listed above.
		Subcodes: Behavioral
Inhibition	BX-INH	Any attempt to stop behaviors that might reveal someone's identity: 1. **self-silencing**, such as being reticent to be emotionally expressive and open about one's true self within close relationships; 2. **speech alterations** to deliberately modify speech content in order to maintain concealment, such as using the opposite gender pronouns for a romantic partner, or making the gender of a partner ambiguous, in order to conceal the true gender in a same-sex romantic partnership. GM individuals may also avoid correcting others who misgender them, or by using pronouns that are inconsistent with their gender identity but align better with their external gender presentation a readiness to lie when necessary in order to maintain concealment.
Counterfeiting	BX-CF	Anything that makes people seem or appear straight or cisgender: 1. Passing 2. Covering (i.e., tailoring information to avoid any insinuation that one might not be heterosexual or cisgender); 3. Blending (i.e., being perceived as cisgender); 4. Distance oneself from LGBT people.
Avoidance	BX-AV	Avoid disclosure by isolating, withdrawing, feigning illness, being truant, avoiding extracurricular activities that may implicate or reveal their sexual identity in some way. SGM individuals may also avoid specific individuals, such as people from their past or those who may be particularly prejudicial.
Emerging	BX-EMERGE	Use this code for other behavioral aspects of concealment not listed above.