Published in final edited form as:

Soc Personal Psychol Compass. 2014 October ; 8(10): 569–582. doi:10.1111/spc3.12117.

Pathways Between Concealable Stigmatized Identities and Substance Misuse

Amelia E. Talley^{*} and Andrew K. Littlefield

Texas Tech University

Abstract

Individuals with concealable stigmatized identities often possess no obviously devalued attributes, yet are at greater risk for problematic substance use compared to their privileged counterparts. We present a conceptual model, which proposes that identity-relevant content and characteristics have important implications for cognitive, affective, and behavioral consequences of stigma-related stress. In doing so, we synthesize stigma-related models from the extant literature and attempt to integrate these concepts with previous work detailing potential contributors to substance use behaviors specifically. Finally, we ask readers to consider the various ways in which the content and characteristics of an individual's stigmatized identity might combine with situational and additional individual difference factors to influence the likelihood of substance misuse.

A stigmatized identity has been characterized as “socially devalued” and often associated with negative stereotypes and beliefs (Goffman, 1963). Concealable stigmatized identities (CSIs) are those that are often not readily apparent to others (Quinn & Earnshaw, 2013). Individuals with CSIs, such as sexual minorities, those diagnosed with a previous or current psychiatric disorder, those with patterns of disordered eating, and those with non-mainstream religious affiliations, often possess no obviously stigmatizing attributes and must continually face decisions regarding “whether, when, how, and to whom to disclose their stigma” (p. 328, Pachankis, 2007).

Several lines of evidence suggest that individuals with CSIs have heightened levels of problematic substance involvement. For example, compared to their heterosexual counterparts, sexual minority individuals report greater alcohol use, tobacco use, and polysubstance use (Garofalo, Wolf, Kessel, Palfrey, & DuRant, 1998; Russell, Driscoll, & Truong, 2002; Ziyadeh et al., 2007) as well as greater odds of being diagnosed with an alcohol dependence or other drug dependence disorder in the past-year (McCabe, Hughes, Bostwick, West, & Boyd, 2009). Grant et al. (2004) report that persons who were diagnosable with a past-year mood or anxiety disorder had greater odds than those without such disorders of a co-occurring substance use disorder. Women with patterns of disordered eating also have a higher prevalence of alcohol and illicit drug use disorders (Baker, Mitchell, Neale, & Kendler, 2010; Holderness, Brooks-Gunn, & Warren, 1994; Welch & Fairburn, 1996). Similarly, religiously unaffiliated individuals are more likely than their

^{*}Correspondence: Texas Tech University, Department of Psychological Sciences, 217 Psychology Bldg. Lubbock, TX 79409. amelia.talley@ttu.edu.

religiously affiliated counterparts to report lifetime history of a substance use disorder (Dervic et al., 2004). The extant literature supports that individuals with CSIs are at greater risk for substance misuse and substance use disorders. As Marshal et al. (2008) argued, research should consider general and group-specific mediators of associations between individuals with CSIs and substance use outcomes to improve the identification of modifiable targets for intervention studies.

This article integrates and expands relevant theoretical approaches to better understand why persons with CSIs are at greater risk for substance misuse, compared to both those with privileged (non-stigmatized) identities and, to a lesser extent, those with stigmatized identities that are readily apparent to others (conspicuous stigmatized identities; e.g., ethnic/racial minorities, females, persons with physical abnormalities; see Pachankis, 2007). More specifically, the current review examines relevant aspects of stigma-related models from Pachankis (2007); Quinn and Earnshaw (2011, 2013); Meyer (2003), and Hatzenbuehler (2009) and presents an integrated conceptual model (see Figure 1). This model proposes that, among individuals with CSIs, identity-relevant content and characteristics have important implications for cognitive, affective, and behavioral consequences of stigma. We also integrate stigma-related concepts within previous frameworks explicating contributors to substance misuse specifically. Finally, we ask readers to consider how the content and characteristics of an individual's CSI might interact with situational and individual difference factors to influence substance misuse.

Concealable Stigmatized Identities and Psychosocial Outcomes

Two comprehensive models (Pachankis, 2007; Quinn & Earnshaw, 2011, 2013) have outlined consequences that individuals with CSIs are likely to face and how aspects of their identity may account for or influence psychosocial outcomes. Subsequently, relevant aspects of each conceptual approach are highlighted, respectively, and then combined in attempt to advance a more complete understanding of situational and person factors that contribute to substance misuse among individuals with CSIs.

Situational/environmental circumstances

According to Pachankis (2007), three factors contribute to acute feelings of distress in any given situation among those with CSIs. These include situational identity-salience, threat of discovery (e.g., unintentional disclosure), and beliefs regarding the consequences of discovery (e.g., anticipated stigma). The *salience* of a person's concealable stigma refers to the "relative accessibility of stigma-related thoughts or concerns" (p. 331, Pachankis, 2007) in a particular situation. It is likely that the magnitude of the CSI within the self-concept is positively related to its salience in any given situation (Quinn & Chaudoir, 2009). In addition, the salience of a person's CSI is likely to be heightened in the presence of similar others or relevant environmental cues. According to Pachankis (2007), situations in which the threat of one's CSI being discovered is heightened (Chaudoir & Fisher, 2010; Beals, Peplau, & Gable, 2009) and individuals' expectations regarding consequences of their identity being discovered (Frost, 2011; see also Quinn & Earnshaw, 2013, 2011) have cognitive, affective, and behavioral consequences.

General cognitive consequences of CSIs

Individuals with CSIs report greater preoccupation, vigilance, and suspicion pertinent to stigma-related thoughts and attributions (Pachankis, 2007; Santuzzi & Ruscher, 2002). In subsequent sections, we highlight cognitive consequences of elevated levels of preoccupation, vigilance, and other cognitive distractors among those with CSIs.

Attempts to suppress unwanted thoughts (i.e., thought suppression), such as efforts to monitor and control stigma-relevant thoughts (Pachankis, 2007), can have the ironic effect of increasing non-conscious intrusions of relevant thoughts, resulting in greater awareness of and preoccupation with suppressed content (i.e., rebound effect; Wegner, Schneider, Carter, & White, 1987). Smart and Wegner (1999) found that women diagnosed with an eating disorder (ED) who were asked to role-play a person who did not have an ED during a subsequent face-to-face interview reported a greater number of stigma-relevant thought intrusions during the session compared to those with an eating disorder who were asked to role-play a person with an ED. Notably, Hatzenbuehler, Nolen-Hoeksema, and Dovidio (2009) presented evidence that thought suppression is more common on days in which stigma-related stress is encountered by individuals with CSIs and likely contributes to daily psychological distress. Consistent with this, Wenzlaff and Wegner (2000) reviewed studies showing an association between thought suppression at the trait level and anxiety- and depression-related cognitions. Evidence supports that individuals with CSIs who attempt to suppress unwanted thoughts may have the unintended consequence of increasing preoccupation with their stigmatized status, contributing to heightened levels of psychological distress. Notably, elevations in psychological distress and depressive cognitions (e.g., Swendsen & Merikangas, 2000) are related to greater risk for substance misuse.

A second cognitive consequence is that individuals' preoccupation with their stigmatized identity increases vigilance regarding others' discovery of their CSI (Pachankis, 2007). Indeed, those with CSIs are prone to perseverate, or ruminate, on their stigmatized status and associated negative affectivity. Nolen-Hoeksema and colleagues (Nolen-Hoeksema, Stice, Wade, & Bohon, 2007) first defined a ruminative response style as "the tendency to repetitively focus on symptoms of distress and possible causes and consequences of these symptoms without engaging in active problem solving" (p. 198). Hatzenbuehler, and Nolen-Hoeksema, et al. (2009) findings supported that, among those with CSIs, rumination was higher on days in which stigma-related stress was encountered. Indeed, emerging evidence (Hatzenbuehler, & Nolen-Hoeksema, et al., 2009; Hatzenbuehler, Dovidio, Nolen-Hoeksema, & Phills, 2009) suggests that rumination may account, at least in part, for the relation between stigma-related stress and psychological distress among individuals with CSIs. In sum, for those with CSIs, heightened vigilance and the tendency to ruminate may usurp valuable cognitive resources (Brinker, Campisi, Gibbs, & Izzard, 2013) as well as contribute to elevated levels of negative self-awareness (Spasojević & Alloy, 2001; Trapnell & Campbell, 1999) and psychological distress (Hatzenbuehler, & Dovidio, et al., 2009; Hatzenbuehler, & Dovidio, et al., 2009), which we subsequently argue are risk factors for substance misuse.

General affective consequences of CSIs

The aforementioned cognitive consequences contribute to heightened psychological distress, which further tax the available cognitive resources of those with CSIs (Pachankis, 2007). Individuals with CSIs report heightened negative affectivity (i.e., higher anxiety and depression) on a daily basis (Frable, Platt, & Hoey, 1998) compared to those with visible stigmas and no stigmatized identities. Pachankis (2007) reviewed evidence suggesting that heightened levels of negative affect among those with CSIs is part and parcel of concealing information from others. That is, simply hiding information about a stigmatized attribute increases shame-related feelings about concealed information (Derlega, Metts, Petronio, & Margulis, 1993; Kelly, 2002). Additional research has shown that individuals who keep a stigmatized status hidden report heightened psychological distress (e.g., Major & Gramzow, 1999), whereas those who disclose their stigmatized status typically report decreased distress (e.g., Major & Gramzow, 1999; Ullrich, Lutgendorf, & Stapleton, 2003) and greater well-being (Beals et al., 2009). Individuals with CSIs experience higher levels of generalized negative affectivity as well as shame, specifically, as a result of concealing their stigmatized identity. In addition, as previously discussed, cognitive consequences, germane to concealing a stigmatized identity, are also believed to contribute to negative affectivity. Negative affectivity and, more specifically, shame-related emotions (Dearing, Stuewig, & Tangney, 2005) are often associated with substance misuse.

General behavioral consequences of CSIs

The aforementioned cognitive and affective sequelae are hypothesized to account for the relation between stigma-related stress and behavioral outcomes among individuals with CSIs (Pachankis, 2007). Pachankis discussed two behavioral outcomes that are relevant for substance involvement specifically. First, individuals with CSIs are believed to have greater concerns with impression management strategies and self-monitoring (see e.g., Sedlovskaya et al., 2013). Pachankis theorized that interpersonal interactions involving individuals with CSIs are negatively influenced by their own preoccupations with impression management. For example, individuals with CSIs are more likely to take on interaction partners' perspectives (Frable, Blackstone, & Scherbaum, 1990), which may contribute to aversive states of heightened self-awareness (e.g., Ickes, Robertson, Tooke, & Teng, 1986) and related substance misuse.

Second, persons with CSIs may avoid social situations in attempts to evade stigma-related stressors (Pachankis, 2007). Unfortunately, social avoidance and isolation may also place additional strains on individuals' social networks, affecting perceived and received support from others. Impaired social functioning is a known corollary of substance misuse (e.g., Kosterman et al., 2005). Finally, as Pachankis argued, it is expected that stigma-related stress directly relates to propensities to engage in problematic substance use.

Identity-relevant content and characteristics

Although Pachankis (2007) acknowledged "self-evaluative" consequences of concealing a stigmatized identity (e.g., identity ambivalence), influences of identity-relevant factors on situational demands and consequences received only a cursory discussion. By contrast, Quinn and Earnshaw (2011, 2013) present an expanded discussion of identity-relevant

constructs and processes among those with CSIs. Quinn and colleagues' concepts are integrated with those from Pachankis (2007) and Meyer (2003) to discuss the ways in which the content and characteristics of an individual's CSI affect psychosocial outcomes.

Identity-relevant content—Quinn and Earnshaw (2011, 2013) assert that valenced content of an individual's identity, which relates to “all of the beliefs, experiences, and cognitions that a person has about the identity that are positively or negatively valenced” (2011, p. 163), has implications for psychosocial outcomes. The valenced content of an individual's CSI, including experienced discrimination, anticipated stigma, internalized stigma, and disclosure reactions, is theorized to have implications for perceived psychological distress. Meyer's (2003) minority stress model expounded upon many valenced components discussed by Quinn and Earnshaw (2011, 2013). Events and experiences that necessitate adaptation to changing personal or social circumstances are known as general stressors, whereas minority stressors refer to a socially based, chronic source of stress that is experienced by persons with stigmas who are in relatively disadvantaged social positions (Meyer). Both proximal and distal chronic stressors contribute to mental and physical health disparities for stigmatized individuals. Meyer used the terms distal and proximal to distinguish between objective events and subjective perceptions, respectively, relevant for stigma-related stress. The term distal stressor characterizes events and conditions based on objective, external social experiences (i.e., enacted stigma). By contrast, the term proximal stressor is reserved for subjective perceptions and expectations of stigmatizing events (i.e., anticipated stigma). Anticipated stigma is related to individuals' expectancies regarding discrimination that would be experienced were the CSI to become known to others. This latter type of stigma is reliably related to psychological distress and maladaptive behavioral outcomes among those with CSIs (Quinn & Earnshaw, 2011). An individual's anticipated stigma also informed by the internalization of stigmatizing attitudes from the larger social environment (i.e., internalized stigma). Internalized stigma occurs when negative beliefs regarding an identity are believed to apply to the self (Meyer, 2003; Pachankis, 2007). The beliefs, experiences, and cognitions that a person has about their CSI have implications for self-categorization and identity development processes.

Identity-relevant characteristics—In addition to valenced content, the magnitude of the CSI in individuals' self-concept is important for understanding their response to stigma. Quinn and Earnshaw (2011, 2013) state that identity magnitude captures “the size of the identity within the self-concept” (p. 42) and is best understood by examining the centrality and salience of the identity. Beliefs regarding the centrality of the identity, or the “extent to which a person feels that a particular identity defines who they are as a person” (p. 46), are theorized to influence psychological outcomes. Because others may be unaware of a CSI, individuals with CSIs may feel alienated or inauthentic when interacting with naïve others. Such interpersonal liabilities among those with CSIs may explain research by Quinn and Chaudoir (2009) showing positive associations between greater centrality and psychological distress. Salience with regard to a CSI is related to the frequency of thoughts (both positively and negatively valenced) an individual reports related to the identity, regardless of the content or valence of those thoughts. Quinn and Earnshaw's characterization of salience

is consistent with Pachankis's (2007) assertion that persons with CSIs are often preoccupied with unintentional disclosures of their identity status. Findings show that among those with CSIs, heightened identity salience, which may engender rumination and preoccupation with a CSI, is associated with psychological distress (Quinn & Chaudoir, 2009) and associated risks for substance misuse (e.g., Swendsen & Merikangas, 2000). Finally, although Quinn and Earnshaw (2011, 2013) related rumination and thought suppression to the construct of identity salience in their model, they state that the former constructs were not isomorphic with the concept of salience.

Identity clarity and integration—Consistent with Quinn and Earnshaw's (2011, 2013) concept of identity magnitude, there are other structural characteristics of an individual's identity-related self-concept that may influence psychosocial outcomes. Structural characteristics are related to "how knowledge components or specific self-beliefs are organized" within one's self-concept (p. 141; Campbell et al., 1996). For example, Campbell et al. examined a structural characteristic of person's global self-concept, namely self-concept clarity, defined as the "extent to which the contents of an individual's self-concept are clearly and confidently defined, internally consistent, and temporally stable" (p. 141). By extension, it is important to consider structural characteristics of individuals' CSIs and how a lack of identity clarity or integration, for example, may influence psychological and behavioral outcomes (see e.g., Sedlovskaya et al., 2013). Specifically, clarity or coherence (versus ambiguity) of a person's identity-related self-concept may afford greater resilience among those with CSIs. Providing initial evidence that structural characteristics of the self-concept have implications for self-perception, people with a lack of self-concept clarity are known to report lower self-esteem and elevated trait self-consciousness (Campbell et al., 1996), both of which increase risk for substance misuse (e.g., Hull, Levenson, Young, & Sher, 1983; Wills, 1994). Notably, studies also show that imbalanced configurations related to the underlying structure of a person's global self-concept (i.e., few positive and many negative self-schemas) are risk factors for alcohol dependence (Corte & Stein, 2007) and early alcohol use and drunkenness (Corte & Zucker, 2008) in young adults. Meyer (2003) hypothesized that individuals' level of integration of their CSI with their other identities may influence stress-related processes. An integrated identity is believed to be desirable for positive identity development (Eliason, 1996; see also Quinn & Earnshaw, 2011). Historically (e.g., Cass, 1979), an individual's integration of a CSI with other prominent identities is seen as an important process in self-acceptance. In sum, structural aspects of one's CSI self-concept, such as its clarity or integration, may alleviate or exacerbate psychosocial stress for those with CSIs and appear relevant for substance use outcomes.

Disclosure and reactions—Pachankis (2007) argued that interactions that involve social feedback from others greatly impact individuals with CSIs. Notably, Quinn and Earnshaw (2011) argue that disclosure reactions inform the content and characteristics of a person's CSI, depending on whether disclosure experiences are positive or negative. As such, previous disclosure experiences are likely to contribute to subsequent psychosocial functioning and disclosure decisions (Chaudoir & Fisher, 2010; Chaudoir & Quinn, 2010).

Pathways to Substance Misuse among Individuals with CSIs

Sinha (2008) defines stress as “processes involving perception, appraisal, and response to harmful, threatening, or challenging events or stimuli.” (p. 2). Stress that is chronic, intense, uncontrollable, and unpredictable, often characterizing stigma-related stress, is especially likely to increase vulnerability to substance use behaviors and addiction (Sinha). Sinha reviews evidence showing that psychological adversity, including recent and cumulative negative life events, trauma, and maltreatment, is associated with problematic substance use (Sinha). Exposure to stigma-related stress is likely an important contributor to both patterns of alcohol consumption and risk for alcohol use disorders, especially among individuals with a CSI (Keyes, Hatzenbuehler, & Hasin, 2011). Generalized stress also contributes to mood and anxiety disorders, which are often comorbid with substance use disorders (Grant et al., 2004).

General coping liabilities

Cicchetti and Toth (2005) argue that chronic stress generally leads to deficits in individuals’ ability to adequately regulate emotions. Emotion regulation refers to the “conscious and non-conscious strategies we use to increase, maintain, or decrease one or more components of an emotional response” (Gross, 2001). Among individuals with CSIs, specifically, maladaptive emotion regulation strategies have been shown to be enacted to a greater extent in response to stigma-related stressors (Hatzenbuehler, & Dovidio, et al., 2009). Unfortunately, and due in part to exposure to chronic stressors, persons with CSIs are believed to be at risk for utilizing poorer emotion-regulation strategies, such as rumination and thought suppression (Quinn & Earnshaw, 2011, 2013).

Nolen-Hoeksema et al. (2007) asserted that persons may attempt to avoid self-focused rumination by engaging in maladaptive coping efforts, such as using illicit substances, as a means to “escape from the self” (p. 198). Nolen-Hoeksema et al. found that rumination was prospectively related to higher levels of depressive symptoms, bulimic symptoms, and problematic substance use in a sample of female adolescents. Emerging evidence also suggests that experiences involving stigma, per se, are directly related to the enactment of maladaptive coping behaviors, such as smoking and drinking (Hatzenbuehler, Phelan, & Link, 2013). Thus, among those with CSIs, general maladaptive coping tendencies likely contribute to and, at times, exacerbate substance misuse in the face of heightened stigma-related stress.

In subsequent sections, we focus on alcohol-specific models of pathology. When possible, the relevance to other substances will be noted. These models provide various explanations that are meant to delineate risk factors for substance misuse, which are germane to stigma-related stressors, among individuals with CSIs. Notably, the alcohol literature is characterized by both breadth and depth, and thus, we highlight findings most relevant to our current aims (see Sher, Martinez, & Littlefield, 2011, for a review of general factors related to alcohol pathology).

Potential cognitive, affective, and behavioral mechanisms

Depleted self-control and cognitive escape—Sinha (2008) reviewed work supporting that exposure to negative affect and chronic stressors deplete behavioral and cognitive control and increase impulsive responding. Thus, self-regulation (i.e., self-control) depletion resulting from exposure to stigma-related stressors is expected to contribute to problematic substance use among those with CSIs. Self-control is defined as the mental effort required by individuals to regulate their behavior (Muraven & Baumeister, 2000). Evidence (Baumeister, Dwall, Ciarocco, & Twenge, 2005) suggests that social isolation and exclusion, often reported among those with CSIs, impairs self-regulation abilities. Taken together, evidence suggests that individuals with CSIs may be more likely to invoke and deplete their self-regulatory resources as a result of stress associated with attempts to manage their stigmatized identity (Hatzenbuehler et al., 2013). Once restraints on behaviors are “lifted” by a person who was previously regulating behavior, he/she may have exhausted their self-regulation capabilities and engage in poorer decision-making. To escape from restrictive cultural norms and monitored restraint in managing their stigmatized identity, substance misuse among persons with CSIs may facilitate cognitive escape (McKirnan, Ostrow, & Hope, 1996). Cognitive-escape models have been used to explain deficient self-regulation phenomenon (e.g., binge eating; Heatherton & Baumeister, 1991), including that which facilitates substance use (George, Derman, & Nochajski, 1989; Tiffany, 1990; Wills, Ainette, Stoolmiller, Gibbons, & Shinar, 2008; Wills & Stoolmiller, 2002). Several studies have examined the impact of self-regulation depletion on alcohol use (see Jones, Christiansen, Nederkoorn, Houben, & Field, 2013, for a review), and empirical evidence supports that overexertion of self-control leads to subsequent increases in alcohol use, both in lab-based and naturalistic settings (e.g., Muraven, Collins, & Neinhuis, 2002; Muraven, Collins, Shiffman, & Paty, 2005). A recent laboratory-based study (Jones et al., 2013), however, suggests that it is *beliefs* about self-control, rather than changes in disinhibition, that link depletion and alcohol use (Christiansen, Cole, & Field, 2012). Consistently, McKirnan et al. (1996) noted individual differences in people’s proclivities to escape through substances and other risky behaviors (Hull & Bond, 1986) and also with regard to their expectancies regarding the effects of certain substances for facilitating cognitive escape (e.g., tension reduction; Conger, 1951, 1956; Cooper, Russell, Skinner, Frone, & Mudar, 1992). Ultimately, exhausting self-control resources to manage and respond to stigma-related stress is likely to make it difficult for individuals to thwart the initiation and escalation of substance misuse.

Reduced self-awareness—Hull’s (1981) self-awareness theory of alcohol use asserted that alcohol serves to decrease persons’ feelings of self-awareness (see also Baumeister & Boden, 1994; Hull et al., 1983). Duval and Wicklund (1972) defined self-awareness as a state of self-focused attention that occurs when individuals make comparisons between their actual and ideal selves. Hull highlighted that self-awareness “corresponds to the encoding of information in terms of its relevance for self and....directly entails a greater responsivity to the self-relevant aspects of the environment” (p. 588). When self-relevant aspects of the environment are present, a self-evaluative process is initiated. Alcohol serves to disrupt the importance of self-relevant information in drinking contexts. According to Hull, alcohol does not necessarily reduce tension directly; rather, it serves to reduce awareness of self-

relevant sources of tension. Sareen, Chartier, Paulus, and Stein (2006) note that other substances, namely stimulants, cocaine, and anti-depressants, also decrease levels of self-awareness (i.e., self-consciousness) by increasing levels of norepinephrine, serotonin, and dopamine, especially among those who report heightened levels of social anxiety (Camacho & Stein, 2002). In sum, individuals with CSIs, who likely experience chronically elevated self-awareness, are at risk for substance misuse as a means to ameliorate negative self-focus.

Alcohol myopia—Steele and Josephs (1990) describe the phenomenon of alcohol myopia as “a state of shortsightedness in which superficially understood, immediate aspects of experience have a disproportionate influence on behavior and emotion” (p. 923). Expectancies attributable to alcohol myopia effects may help explain why individuals with CSIs are more susceptible to pursuing the stress-reducing properties of alcohol (i.e., as a means of cognitive escape) to minimize effortful cognitive processing. Alcohol myopia is hypothesized to be especially relevant in circumstances that, if an individual were sober, would necessitate response conflict in which a pre-potent behavioral response elicited by strong environmental cues would be inhibited by other cues that required effortful processing. Unfortunately, individuals with CSIs may be particularly vulnerable to negative consequences of alcohol myopia in instances where their self-control is impaired due to stigma-related stress. As such, negative alcohol-related consequences associated with alcohol myopia (e.g., sexual risk-taking; Giancola, Josephs, Parrott, & Duke, 2010) may be more common among individuals who evince depleted self-regulatory resources and impaired inhibitory control, such as those with CSIs.

Affect regulation—Affect regulation theory states that substances are used to enhance positive emotional states as well as to cope with negative affectivity resulting from exposure to chronic and acute stressors (see Carmody, 1992; Chesney, 1991; Cooper, Russell, & Frone, 1990; Shiffman & Wills, 1985). Cooper’s (1994) four-factor model of motivations for using alcohol described two underlying dimensions related to the source (internal versus external) and valence (positive and negative) that contribute to drinking motives. Crossing these two dimensions results in four types of motives, defined as (a) intrinsic, positive reinforcement (i.e., enhancement); (b) extrinsic, positive reinforcement (i.e., social); (c) intrinsic, negative reinforcement (i.e., coping); and (d) extrinsic, negative reinforcement (i.e., conformity). As discussed previously, individuals experiencing chronic stress may show deficits in abilities to adequately regulate emotions (Cicchetti & Toth, 2005), putting them at greater risk to misuse substances as a means to regulate their affective states. Because persons with CSIs are more often attempting to regulate negative emotions, they may more often rely on negative reinforcement strategies as they attempt to alleviate distress and endorse coping motives as relevant for their substance use (Hatzenbuehler, 2009). Because coping motives are known to relate to both heavy substance use and substance-related problems (Carey & Correia, 1997; Simons, Gaher, Correia, Hansen, & Christopher, 2005), those with CSIs are vulnerable to substance misuse.

Social conformity—Resulting from social isolation and alienation (e.g., Frable et al., 1998), social ostracism that is perpetrated by higher status peers may lead those with CSIs to affiliate with deviant peers. Consistent with the deviance-proneness model (Sher, Trull,

Bartholow, & Vieth, 1999), substance misuse is just one of many potential deviant behaviors that may result from a childhood characterized by inadequate socialization (including social isolation) and heritable vulnerabilities (e.g., neuroticism, novelty seeking, and pharmacological sensitivity to alcohol). Because those with CSIs are marginalized, they may more often select into deviant social groups whose members are prone to externalizing behaviors. Stigma-related stressors also promote substance use behaviors, for example, by encouraging the pursuit of social acceptance via adherence to deviant peers' substance use norms. That is, individuals with CSIs are likely to report motivations for substance use that pertain to desires to "fit in" with social groups (i.e., conformity), reflecting a socially based negative reinforcement motive for substance use.

Personality influences—Littlefield and Sher (2010) review personality constructs that are known to be associated with alcohol use disorders, including impulsivity-related traits and neuroticism (i.e., the tendency to experience negative emotional states). It is conceivable that individuals with CSIs would also show elevations in personality traits implicated in substance use disorders. For example, considering that (a) self-regulation can be thought of as a "muscle" that can either be strengthened or weakened (see Baumeister, Gailliot, DeWall, & Oaten, 2006) and (b) individuals with CSIs may have increased cognitive demands associated with stigma-related thoughts and attributions which weaken self-regulation (see *General Cognitive Consequences of CSIs* above), it is reasonable that individuals with CSIs may evince higher levels on measures that assess impulsivity-related characteristics. Similarly, based on Hatzenbuehler's (2009) observations that feelings of hopelessness, pessimism, and low self-esteem are common among those who encounter stigma-related stress, individuals with CSIs are expected to report heightened levels of neuroticism, a trait associated with risk for substance use disorders (SUDs) and other psychopathologies (see Trull & Sher, 1994; Kotov, Gamez, Schmidt, & Watson, 2010; Lahey, 2009). Although individuals with CSIs may show elevation in these traits, expected relations may differ from theoretical models that attempt to link personality with SUDs generally (e.g., genetic-diathesis models; see Sher et al., 1999; Littlefield & Sher, 2010). More specifically, rather than personality traits predisposing individuals for heightened risk of developing and maintaining SUDs, we purport that individuals with CSIs show heightened levels of impulsivity and neuroticism, in part, as a *result* of the psychological and social consequences they encounter. Greater proclivities toward impulsivity and neuroticism, in turn, increase risk for substance misuse through various mechanisms (e.g., negative reinforcement drinking for individuals high in neuroticism). Finally, levels of impulsivity and neuroticism are likely to play an important role in moderating relations between stigma-related stress and substance misuse. For example, individuals higher in impulsivity are especially likely to use risky coping strategies that produce immediate rewards (e.g., binge drinking), making those who report heightened levels of impulsivity and a CSI especially prone to engage in substance misuse. Likewise, individuals otherwise high in neuroticism may be especially sensitive to experiencing the aforementioned negative affective and cognitive consequences linked to CSIs. Despite these possibilities, studies linking personality, SUDs, and CSIs are lacking; future research should investigate the utility of incorporating specific personality facets within the current framework.

Potential Avenues for Research Examining CSIs and Substance Use Disparities

The current model provides a useful integration of previous theories, which have respectively highlighted how situational and identity-relevant characteristics may relate to affective, cognitive and behavioral consequences among individuals with CSIs. Given the integration of these perspectives, it will be important to determine the relative impact of identity-related characteristics and content, as compared to environmental factors, in predicting rates and trajectories of substance misuse. By better understanding contributing factors that shape hazardous patterns of substance use, health providers can improve their attempts to identify clients who are at greatest risk for substance misuse and associated pathologies.

To determine whether the proposed pathways that serve to increase risk for substance misuse among individuals with CSIs are also relevant for individuals with any or multiple marginalized identities, future research should examine whether hypothesized processes are similar for individuals with conspicuous stigmatized identities or for those with multiple CSIs or both. By contrasting the relative influence of distinct identity-relevant and environmental features, we will begin to develop a clearer understanding of risk factors that contribute to substance-related disparities among various stigmatized populations.

Researchers should also investigate alternative behavioral strategies used by individuals with CSIs to alleviate negative affectivity and aversive states of self-focus. Despite that the current model was primarily focused on substance misuse, additional avoidant behavioral strategies for coping with CSIs may be relevant as well (e.g., disordered eating). Finally, although many of the pathways outlined above were derived from the alcohol literature, it is expected that other drug consumption behaviors are pursued by individuals with CSIs for reasons similar to those hypothesized throughout the current work.

Conclusion

Previous models (Pachankis, 2007; Quinn & Earnshaw, 2011, 2013) have provided conceptual frameworks highlighting situational and self-relevant characteristics that influence psychosocial functioning among those with CSIs. The current model integrated these frameworks with additional concepts from minority stigma models (Meyer, 2003; Hatzenbuehler, 2009; Hatzenbuehler, & Nolen-Hoeksema, et al., 2009). Finally, relevant theories from the substance use literature were reviewed to provide additional support for pathways hypothesized to account for associations between stigma-related stressors and substance misuse among those with CSIs. By improving our understanding of why and under what circumstances individuals with CSIs are at greater risk for substance misuse, we are better able to address their mental health needs and prevent the initiation and escalation of substance-related pathologies.

Acknowledgments

The authors would also like to acknowledge support to Amelia E. Talley (AA019974).

Biographies

Amelia E. Talley was born and raised in Texas and attended Texas A&M University, where she received her BA degree in 2001, majoring in Psychology and minoring in Classical Studies. Amelia Talley obtained both her master (2004) and doctoral (2009) degrees from the University of Missouri. Currently, Dr Talley is an Assistant Professor in the Department of Psychological Sciences at Texas Tech University. Her research interests cover a range of topics in the health psychology, stigma, and identity literatures.

Andrew K. Littlefield is from southwest Missouri. He received BA degrees in Psychology and Business from the University of Missouri. Dr Littlefield obtained his doctorate from the University of Missouri. Currently, he is an Assistant Professor in the Department of Psychology at Texas Tech University.

References

- Baker JH, Mitchell KS, Neale MC, Kendler KS. Eating disorder symptomatology and substance use disorders: prevalence and shared risk in a population based twin sample. *International Journal of Eating Disorders*. 2010; 43:648–658. [PubMed: 20734312]
- Baumeister, RF.; Boden, JM. Shrinking the self. In: Brinthaup, TM.; Lipka, RP., editors. *Changing the self: Philosophies, techniques, and experiences*. Albany, NY: SUNY Press; 1994. p. 143-173.
- Baumeister RF, DeWall CN, Ciarocco NJ, Twenge JM. Social exclusion impairs self-regulation. *Journal of Personality and Social Psychology*. 2005; 88:589. [PubMed: 15796662]
- Baumeister RF, Gailliot M, DeWall CN, Oaten M. Self-regulation and personality: How interventions increase regulatory success, and how depletion moderates the effects of traits on behavior. *Journal of Personality*. 2006; 74:1773–1801. [PubMed: 17083666]
- Beals KP, Peplau LA, Gable SL. Stigma management and well-being: The role of perceived social support, emotional processing, and suppression. *Personality and Social Psychology Bulletin*. 2009; 35:867–879. [PubMed: 19403792]
- Brinker JK, Campisi M, Gibbs L, Izzard R. Rumination, mood and cognitive performance. *Psychology*. 2013; 4:224–231.
- Camacho A, Stein MB. Modafinil for social phobia and amphetamine dependence. *American Journal of Psychiatry*. 2002; 159:1947. -a. [PubMed: 12411237]
- Campbell JD, Trapnell PD, Heine SJ, Katz IM, Lavalley LF, Lehman DR. Self-concept clarity: Measurement, personality correlates, and cultural boundaries. *Journal of Personality and Social Psychology*. 1996; 70:141.
- Carey KB, Correia CJ. Drinking motives predict alcohol-related problems in college students. *Journal of Studies on Alcohol and Drugs*. 1997; 58:100.
- Carmody TP. Affect regulation, nicotine addiction, and smoking cessation. *Journal of Psychoactive Drugs*. 1992; 24:111–122. [PubMed: 1506996]
- Cass VC. Homosexuality identity formation: A theoretical model. *Journal of Homosexuality*. 1979; 4:219–235. [PubMed: 264126]
- Chaudoir SR, Fisher JD. The disclosure processes model: understanding disclosure decision making and postdisclosure outcomes among people living with a concealable stigmatized identity. *Psychological Bulletin*. 2010; 136:236. [PubMed: 20192562]
- Chaudoir SR, Quinn DM. Revealing concealable stigmatized identities: The impact of disclosure motivations and positive first-disclosure experiences on fear of disclosure and well-being. *Journal of Social Issues*. 2010; 66:570–584. [PubMed: 26160985]
- Chesney, MA. Women, work-related stress, and smoking. In: Frankenhaeuser, M.; Lundberg, U.; Chesney, M., editors. *Women, work, and health: Stress and opportunities*. New York: Plenum Press; 1991. p. 139-155.

- Christiansen P, Cole JC, Field M. Ego depletion increases ad-lib alcohol consumption: Investigating cognitive mediators and moderators. *Experimental And Clinical Psychopharmacology*. 2012; 20:118–128.10.1037/a0026623 [PubMed: 22182418]
- Cicchetti D, Toth SL. Child maltreatment. *Annual Review of Clinical Psychology*. 2005; 1:409–438.
- Conger JJ. The effects of alcohol on conflict behavior in the albino rat. *Quarterly Journal of Studies on Alcohol*. 1951; 12:1–29. [PubMed: 14828044]
- Conger JJ. Reinforcement theory and the dynamics of alcoholism. *Quarterly Journal of Studies on Alcohol*. 1956; 17:296–305. [PubMed: 13336262]
- Cooper ML, Russell M, Frone MR. Work stress and alcohol effects: A test of stress-induced drinking. *Journal of Health and Social Behavior*. 1990; 31:260–276. [PubMed: 2133480]
- Cooper ML, Russell M, Skinner JB, Frone MR, Mudar P. Stress and alcohol use: moderating effects of gender, coping, and alcohol expectancies. *Journal of Abnormal Psychology*. 1992; 101:139. [PubMed: 1537960]
- Corte C, Stein KF. Self-cognitions in antisocial alcohol dependence and recovery. *Western Journal of Nursing Research*. 2007; 29:80–99. [PubMed: 17228062]
- Corte C, Zucker RA. Self-concept disturbances: Cognitive vulnerability for early drinking and early drunkenness in adolescents at high risk for alcohol problems. *Addictive Behaviors*. 2008; 33:1282–1290. [PubMed: 18602220]
- Dearing RL, Stuewig J, Tangney JP. On the importance of distinguishing shame from guilt: Relations to problematic alcohol and drug use. *Addictive Behaviors*. 2005; 30:1392–1404. [PubMed: 16022935]
- Derlega, VJ.; Metts, S.; Petronio, S.; Margulis, ST. Self-disclosure. Newbury Park, CA: Sage; 1993.
- Dervic K, Oquendo MA, Grunebaum MF, Ellis S, Burke AK, Mann JJ. Religious affiliation and suicide attempt. *American Journal of Psychiatry*. 2004; 161:2303–2308. [PubMed: 15569904]
- Duval S, Wicklund RA. A theory of objective self awareness. 1972
- Eliason MJ. Identity formation for lesbian, bisexual, and gay persons: Beyond minoritizing view. *Journal of Homosexuality*. 1996; 30:31–58. [PubMed: 8743116]
- Fable DE, Blackstone T, Scherbaum C. Marginal and mindful: Deviants in social interactions. *Journal of Personality and Social Psychology*. 1990; 59:140. [PubMed: 2145419]
- Fable DE, Platt L, Hoey S. Concealable stigmas and positive self-perceptions: Feeling better around similar others. *Journal of Personality and Social Psychology*. 1998; 74:909. [PubMed: 9569651]
- Frost DM. Social stigma and its consequences for the socially stigmatized. *Social and Personality Psychology Compass*. 2011; 5:824–839.
- Garofalo R, Wolf RC, Kessel S, Palfrey J, DuRant RH. The association between health risk behaviors and sexual orientation among a school-based sample of adolescents. *Pediatrics*. 1998; 101:895–902. [PubMed: 9565422]
- George WH, Dermen KH, Nochajski TH. Expectancy set, self-reported expectancies and dispositional traits: Predicting interest in violence and erotica. *Journal of Studies on Alcohol and Drugs*. 1989; 50:541–551.
- Giancola PR, Josephs RA, Parrott DJ, Duke AA. Alcohol myopia revisited clarifying aggression and other acts of disinhibition through a distorted lens. *Perspectives on Psychological Science*. 2010; 5:265–278. [PubMed: 26162159]
- Goffman, E. Stigma: Notes on the Management of Spoiled Identity. Englewood Cliffs, NY: Prentice-Hall; 1963.
- Grant BF, Stinson FS, Dawson DA, Chou SP, Dufour MC, Compton W, Kaplan K. Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: Results from the national epidemiologic survey on alcohol and related conditions. *Archives of General Psychiatry*. 2004; 61:807–816.10.1001/archpsyc.61.8.807 [PubMed: 15289279]
- Gross JJ. Emotion regulation in adulthood: Timing is everything. *Current Directions in Psychological Science*. 2001; 10:214–219.
- Hatzenbuehler ML. How does sexual minority stigma “get under the skin”? A psychological mediation framework. *Psychological Bulletin*. 2009; 135:707. [PubMed: 19702379]

- Hatzenbuehler ML, Dovidio JF, Nolen-Hoeksema S, Phills CE. An implicit measure of anti-gay attitudes: Prospective associations with emotion regulation strategies and psychological distress. *Journal of Experimental Social Psychology*. 2009; 45:1316–1320. [PubMed: 20161465]
- Hatzenbuehler ML, Nolen-Hoeksema S, Dovidio J. How does stigma “get under the skin”? The mediating role of emotion regulation. *Psychological Science*. 2009; 20:1282–1289. [PubMed: 19765237]
- Hatzenbuehler ML, Phelan JC, Link BG. Stigma as a fundamental cause of population health inequalities. *American Journal of Public Health*. 2013; 103:813–821. [PubMed: 23488505]
- Heatherton TF, Baumeister RF. Binge eating as escape from self-awareness. *Psychological Bulletin*. 1991; 110:86. [PubMed: 1891520]
- Holderness CC, Brooks-Gunn J, Warren MP. Co-morbidity of eating disorders and substance abuse: review of the literature. *International Journal of Eating Disorders*. 1994; 16:1–34. [PubMed: 7920577]
- Hull JG. A self-awareness model of the causes and effects of alcohol consumption. *Journal of Abnormal Psychology*. 1981; 90:586. [PubMed: 7320328]
- Hull JG, Bond CF. Social and behavioral consequences of alcohol consumption and expectancy: a meta-analysis. *Psychological Bulletin*. 1986; 99:347. [PubMed: 3714923]
- Hull JG, Levenson RW, Young RD, Sher KJ. Self-awareness-reducing effects of alcohol consumption. *Journal of Personality and Social Psychology*. 1983; 44:461–473. 10.1037/0022-3514.44.3.461
- Ickes W, Robertson E, Tooke W, Teng G. Naturalistic social cognition: Methodology, assessment, and validation. *Journal of Personality and Social Psychology*. 1986; 51:66.
- Jones A, Christiansen P, Nederkoorn C, Houben K, Field M. Fluctuating disinhibition: implications for the understanding and treatment of alcohol and other substance use disorders. *Frontiers in Psychiatry*. 2013; 4:140. 10.3389/fpsy.2013.00140 [PubMed: 24155728]
- Kelly, AE. *The Psychology of Secrets*. Springer; 2002.
- Keyes KM, Hatzenbuehler ML, Hasin DS. Stressful life experiences, alcohol consumption, and alcohol use disorders: the epidemiologic evidence for four main types of stressors. *Psychopharmacology*. 2011; 218:1–17. [PubMed: 21373787]
- Kosterman R, Hawkins J, Abbott RD, Hill KG, Herrenkohl TI, Catalano RF. Measures of positive adult behavior and their relationship to crime and substance use. *Prevention Science*. 2005; 6:21–33. 10.1007/s11121-005-1250-0 [PubMed: 15766003]
- Kotov R, Gamez W, Schmidt F, Watson D. Linking “big” personality traits to anxiety, depressive, and substance use disorders: A meta-analysis. *Psychological Bulletin*. 2010; 136:768. [PubMed: 20804236]
- Lahey BB. Public health significance of neuroticism. *American Psychologist*. 2009; 64:241–256. [PubMed: 19449983]
- Littlefield AK, Sher KJ. The multiple, distinct ways that personality contributes to alcohol use disorders. *Social and Personality Psychology Compass*. 2010; 4:767–782. [PubMed: 21170162]
- Major B, Gramzow RH. Abortion as stigma: Cognitive and emotional implications of concealment. *Journal of Personality and Social Psychology*. 1999; 77:735. [PubMed: 10531670]
- Marshall MP, Friedman MS, Stall R, King KM, Miles J, Gold MA, Morse JQ. Sexual orientation and adolescent substance use: A meta-analysis and methodological review*. *Addiction*. 2008; 103:546–556. [PubMed: 18339100]
- McCabe SE, Hughes TL, Bostwick WB, West BT, Boyd CJ. Sexual orientation, substance use behaviors and substance dependence in the United States. *Addiction*. 2009; 104:1333–1345. [PubMed: 19438839]
- McKirman DJ, Ostrow DG, Hope B. Sex, drugs and escape: A psychological model of HIV-risk sexual behaviours. *AIDS care*. 1996; 8:655–670. [PubMed: 8993716]
- Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychological Bulletin*. 2003; 129:674. [PubMed: 12956539]
- Muraven M, Baumeister RF. Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin*. 2000; 126:247. [PubMed: 10748642]

- Muraven M, Collins RL, Neinhans K. Self-control and alcohol restraint: An initial application of the self-control strength model. *Psychology of Addictive Behaviors*. 2002; 16:113–120. [PubMed: 12079249]
- Muraven M, Collins RL, Shiffman S, Paty JA. Daily fluctuations in self-control demands and alcohol intake. *Psychology of Addictive Behaviors*. 2005; 19:140–147. [PubMed: 16011384]
- Nolen-Hoeksema S, Stice E, Wade E, Bohon C. Reciprocal relations between rumination and bulimic, substance abuse, and depressive symptoms in female adolescents. *Journal of Abnormal Psychology*. 2007; 116:198. [PubMed: 17324030]
- Pachankis JE. The psychological implications of concealing a stigma: A cognitive-affective-behavioral model. *Psychological Bulletin*. 2007; 133:328. [PubMed: 17338603]
- Quinn DM, Chaudoir SR. Living with a concealable stigmatized identity: The impact of anticipated stigma, centrality, salience, and cultural stigma on psychological distress and health. *Journal of Personality and Social Psychology*. 2009; 97:634. [PubMed: 19785483]
- Quinn DM, Earnshaw VA. Understanding concealable stigmatized identities: The role of identity in psychological, physical, and behavioral outcomes. *Social Issues and Policy Review*. 2011; 5:160–190.
- Quinn DM, Earnshaw VA. Concealable stigmatized identities and psychological well-being. *Social and Personality Psychology Compass*. 2013; 7:40–51. [PubMed: 23730326]
- Russell ST, Driscoll AK, Truong N. Adolescent same-sex romantic attractions and relationships: Implications for substance use and abuse. *American Journal of Public Health*. 2002; 92:198–202. [PubMed: 11818291]
- Santuzzi AM, Ruscher JB. Stigma salience and paranoid social cognition: Understanding variability in metaperceptions among individuals with recently-acquired stigma. *Social Cognition*. 2002; 20:171–197.
- Sareen J, Chartier M, Paulus MP, Stein MB. Illicit drug use and anxiety disorders: Findings from two community surveys. *Psychiatry Research*. 2006; 142:11–17. [PubMed: 16712953]
- Sedlovskaya A, Purdie-Vaughns V, Eibach RP, LaFrance M, Romero-Canyas R, Camp NP. Internalizing the closet: Concealment heightens the cognitive distinction between public and private selves. 2013
- Sher, KJ.; Martinez, JA.; Littlefield, AK. Alcohol use disorders. In: Barlow, DH., editor. *Handbook of Clinical Psychology*. New York: Oxford University Press; 2011. p. 405–445.
- Sher, KJ.; Trull, TJ.; Bartholow, B.; Vieth, A. Personality and alcoholism: Issues, methods, and etiological processes. In: Blane, H.; Leonard, K., editors. *Psychological Theories of Drinking and Alcoholism*. 2. New York: Plenum; 1999. p. 55–105.
- Shiffman, S.; Wills, TA. *Coping and Substance Use*. Orlando, FL: Academic Press; 1985.
- Simons JS, Gaher RM, Correia CJ, Hansen CL, Christopher MS. An affective-motivational model of marijuana and alcohol problems among college students. *Psychology of Addictive Behaviors*. 2005; 19:326. [PubMed: 16187813]
- Sinha R. Chronic stress, drug use, and vulnerability to addiction. *Annals of the New York Academy of Sciences*. 2008; 1141:105–130. [PubMed: 18991954]
- Smart L, Wegner DM. Covering up what can't be seen: Concealable stigma and mental control. *Journal of Personality and Social Psychology*. 1999; 77:474. [PubMed: 10510504]
- Spasojevi J, Alloy LB. Rumination as a common mechanism relating depressive risk factors to depression. *Emotion*. 2001; 1:25. [PubMed: 12894809]
- Steele CM, Josephs RA. Alcohol myopia: Its prized and dangerous effects. *American Psychologist*. 1990; 45:921. [PubMed: 2221564]
- Swendsen JD, Merikangas KR. The comorbidity of depression and substance use disorders. *Clinical Psychology Review*. 2000; 20:173–189. [PubMed: 10721496]
- Tiffany ST. A cognitive model of drug urges and drug-use behavior: Role of automatic and nonautomatic processes. *Psychological Review*. 1990; 97:147. [PubMed: 2186423]
- Trapnell PD, Campbell JD. Private self-consciousness and the five-factor model of personality: Distinguishing rumination from reflection. *Journal of Personality and Social Psychology*. 1999; 76:284. [PubMed: 10074710]

- Trull TJ, Sher KJ. Relationship between the five-factor model of personality and Axis I disorders in a nonclinical sample. *Journal of Abnormal Psychology*. 1994; 103:350–360. [PubMed: 8040504]
- Ullrich PM, Lutgendorf SK, Stapleton JT. Concealment of homosexual identity, social support, and CD4 cell count among HIV-seropositive gay men. *Journal of Psychosomatic Research*. 2003; 54:205–212. [PubMed: 12614830]
- Wegner DM, Schneider DJ, Carter SR, White TL. Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology*. 1987; 53:5. [PubMed: 3612492]
- Welch SL, Fairburn CG. Impulsivity or comorbidity in bulimia nervosa. A controlled study of deliberate self-harm and alcohol and drug misuse in a community sample. *The British Journal of Psychiatry*. 1996; 169:451–458. [PubMed: 8894196]
- Wenzlaff RM, Wegner DM. Thought suppression. *Annual review of psychology*. 2000; 51:59–91.
- Wills T. Self-esteem and perceived control in adolescent substance use: Comparative tests in concurrent and prospective analyses. *Psychology of Addictive Behaviors*. 1994; 8:223–234.10.1037/0893-164X.8.4.223
- Wills TA, Stoolmiller M. The role of self-control in early escalation of substance use: A time-varying analysis. *Journal of Consulting and Clinical Psychology*. 2002; 70:986–997. [PubMed: 12182282]
- Wills TA, Ainette MG, Stoolmiller M, Gibbons FX, Shinar O. Good self-control as a buffering agent for adolescent substance use: An investigation in early adolescence with time-varying covariates. *Psychology of Addictive Behaviors*. 2008; 22:459–471. [PubMed: 19071971]
- Ziyadeh NJ, Prokop LA, Fisher LB, Rosario M, Field AE, Camargo CA Jr, Bryn Austin S. Sexual orientation, gender, and alcohol use in a cohort study of US adolescent girls and boys. *Drug and Alcohol Dependence*. 2007; 87:119–130. [PubMed: 16971055]

Figure 1.
Conceptual model illustrating pathways between exposure to stigma-related stress and substance misuse.