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WEIGHT SELF-STIGMA AND DRUG USE AMONG YOUNG
ADULTS: EXAMINING SEXUAL ORIENTATION AS A MODERATOR

by

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A Thesis

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Abstract

Sexual minority young adults and individuals with weight self-stigma (WSS) are more likely to experience psychopathology and cope via drug use. Despite a sizeable body of research examining the relationship between WSS and psychological outcomes, researchers have not explored whether sexual orientation contributes to the relationship between weight self-stigma and drug use. Recruiting from Amazon Mechanical Turk and a Midsouth university sample, we surveyed 568 young adults about depressive symptoms, WSS, substance use, and sexual orientation. Sexual orientation was examined as a moderator between self-stigma and drug use. The interaction between sexual orientation and WSS was significant ($p < .05$), such that for sexual minorities there was a significant positive association of WSS on drug use, while for heterosexual youth the association was not significant. Findings suggest that the compounded stigma associated with being a sexual minority and experiencing internalized weight stigma is related to drug use problems.

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Weight Self-Stigma and Drug Use among Young Adults: Examining Sexual Orientation as a Moderator

Recent findings from a national survey conducted by the US Department of Health and Human Services indicated that 10.6% of individuals above 12 years of age reported engaging in drug use within the past month (Substance Abuse and Mental Health Services Administration [SAMHSA], 2017). In the same survey, researchers found that approximately one in four individuals between the ages of 18-25 endorsed having used illicit drugs within the past month (SAMSHA, 2017). Drug use disorders are significant problems given that approximately 7.4 million Americans met criteria for illicit drug use disorders within the last year, with marijuana and opioid use disorders accounting for 6.1 million of these disorders (SAMSHA, 2017). Similarly, a 2015 survey conducted by researchers at the University of Michigan found that annual prevalence of drug use was highest among college-aged students, with 41% endorsing having used illicit drugs in the last year (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2016). Thus, young adulthood is an especially high-risk period for the development of drug use disorders because it is a critical period of identity exploration, self-focused behaviors, instability, and transition (Arnett, 2005).

Minority Stress Framework

While rates of drug use are high among young adults, sexual minorities (i.e., those who endorse gay, lesbian, bisexual [LGB] or other queer sexual identities, behaviors, or attractions) may be at particularly high risk for the development of drug use disorders. A large body of research has demonstrated staggering mental health disparities among sexual minority individuals relative to heterosexual individuals. Specifically, sexual minorities are at high risk for depression (Hatzenbuehler, McLaughlin, & Nolen-Hoeksema, 2008), anxiety (Bostwick, Boyd,

Hughes, & McCabe, 2010), eating disorder pathology (Brewster, Sandil, DeBlaere, Breslow, & Eklund, 2017), and drug use (Corliss et al., 2010). The minority stress model has been proposed as an explanatory framework accounting for these disparities (Meyer, 2003; see Figure 1 below).

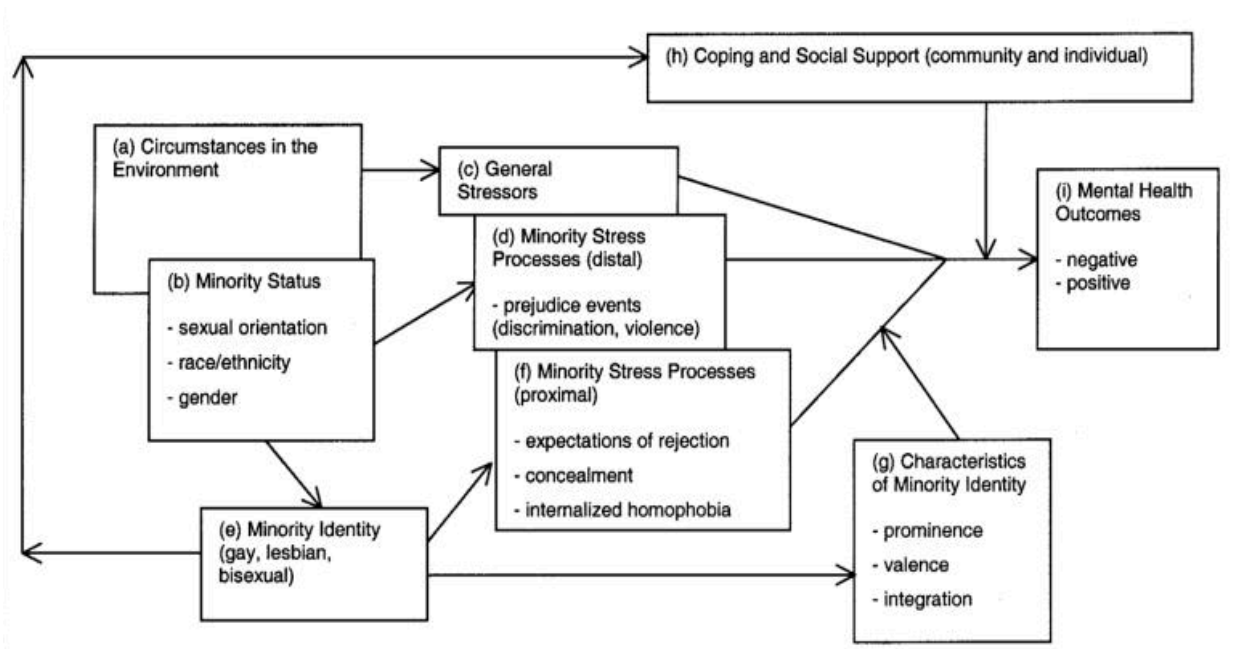


Figure 1. Meyer's Sexual Minority Stress Framework.

Specifically, Meyer's minority stress framework is grounded in social evaluation (Pettigrew, 1967) and symbolic interaction theory (Stryker & Statham, 1985), which suggests that stigma and prejudice towards minority individuals may lead to negative self-regard, which is caused, in part, by the internalization of negative regard from others (Meyer, 2003). Also central to this model involves symbolic annihilation theory, which suggests that there is inherent stress associated with being a minority, by way of lack of inclusion and representation in media, fewer positive role models from an early age, and a lack of recognition or legitimacy from a policy perspective (Kielwasser & Wolf, 1992; Müller, 2018). The minority stress framework involves three primary parts, including the experience of acute and chronic externally stressful events, anticipation and alertness of such events, and internalization of society's negative perceptions

(Meyer, 1995; Meyer & Dean, 1988). Compounded stress associated with having a minority identity can negatively affect mental health and increase the likelihood of engaging in maladaptive coping mechanisms, such as drug use, due to internalized homophobia, and self-concealment (Meyer, 2003). Another key component of the minority stress framework is the potential role of ameliorative coping processes in order to cope with stressful experiences associated with having a minority identity (e.g., homophobic discrimination and oppression).

Meyer's conceptual framework has been applied to various other stigmatized groups in addition to sexual minorities, such as individuals categorized as overweight or obese, individuals living with HIV/AIDS, and individuals with a racial or ethnic minority identity (Allison, 1998; Fife & Wright, 2000; Miller & Myers, 1998). Stigma, the phenomenon in which individuals experience feelings of marginalization and inferiority based on shared group membership (Vogel, Hammer, & Wade, 2013), can be externally and/or internally experienced. While external and internalized stigma are distinct, they are also interrelated mechanisms that affect minority stress (Meyer, 2003). Individuals who experience stigma based on body weight can experience mental health distress (Miller & Meyers, 1998), consistent with Meyer's model. Weight self-stigma is a specific form of internalized stigma that is defined as "having negative attitudes and feelings towards oneself" based on perceptions of one's body size as overweight (Lillis, Levin, & Hayes, 2011, p. 723). Weight self-stigma involves self-devaluation and fear of enacted stigma based on one's weight status, and it can occur in varying degrees within individuals of all weight classes (Puhl & Latner, 2007). A considerable amount of research has linked elevated weight self-stigma to a variety of negative mental health outcomes (Durso et al., 2012; Magallares et al., 2016; Pearl, White, & Grilo, 2014). However, little research has examined the association between weight self-stigma and drug use, despite research suggesting

that drug use may be a maladaptive coping mechanism by which individuals attempt to alleviate negative feelings associated with the general experience of stigma (Jiménez et al., 2011).

Weight Self-Stigma and Drug Use

As illustrated by Meyer's minority stress framework, a link between weight self-stigma and psychopathology, such as anxiety and depression, is clear (Magallares et al., 2016). Research has shown that anxiety and depression are sometimes managed transiently through illicit drug use (Kamimura et al., 2017), thus alluding to a connection between weight self-stigma, mental health, and drug use. Past research has also shown that chronic stressors, such as those experienced by individuals with high weight self-stigma, are associated with greater rates of drug use (Farhat, Iannotti, & Simons-Morton, 2010; Niyonsenga et al., 2012). Given that weight stigma can induce stressful mental states (Tomiyama, 2014) and chronic stress is associated with greater drug use (Sinha, 2008), a connection between weight self-stigma and drug use is likely.

Additionally, because weight self-stigma is associated with higher rates of psychological distress (Hilbert, Braehler, Haeuser, & Zenger, 2014), it places individuals at higher risk of using negative coping strategies (e.g., experiential avoidance and extreme weight control behaviors; Puhl & Brownell, 2007). While research has shown that greater exposure to external weight stigma is associated with maladaptive coping behaviors (Puhl & Brownell, 2006), illicit drug use has yet to be explored in the context of weight self-stigma (i.e., internalized stigma).

Researchers have posited that having a higher body mass index (BMI) is associated with greater stigma, which in turn increases the likelihood of substance use and other health-risk behaviors (Ford, Schroeder, & Dotson, 2014). However, Puhl and Latner (2007) contend that weight stigma has significant negative mental health consequences irrespective of an individual's

actual weight. In fact, implicit and explicit anti-fat bias exists to a similar extent for individuals with and without overweight/obesity (Schwartz, Vartanian, Nosek, & Brownell, 2006). Further, previous research indicates that perceiving oneself as overweight can lead to more maladaptive coping, irrespective of actual BMI (Farhat, 2016). Despite the possibility that some of these processes may be mediated by other factors (e.g., anxiety and depression), taken together, the examination of weight self-stigma and drug use across all weight classes remains an important next step in this line of research.

Sexual Orientation and Weight Self-Stigma

Previous research has established an association between sexual orientation and weight self-stigma. Sexual minority men are more likely to experience body image concerns and stress related to these concerns relative to their heterosexual peers (Yelland & Tiggemann, 2003). This higher risk is likely associated with the greater focus on standards of attraction that emphasize being slim and muscular in the male gay community (Martins, Tiggerman, & Kirkbride, 2007). Wrench and Knapp's research (2008) suggests that sexual minority men show greater dislike of individuals with overweight/obesity, have more anti-fat attitudes, and are excessively critical and focused on body size. They also found that sexual minority men experienced higher levels of internalized weight bias (Wrench & Knapp, 2008).

Similarly, sexual minority women have been shown to experience similar cultural standards of beauty and thinness that exist among heterosexual women and sexual minority men (Cogan, 1999). However, sexual minority women are more likely to be categorized as obese compared to heterosexual women (Boehmer, Bowen, & Bauer, 2007; Roberts, Dibble, Nussey, & Casey, 2003). Some researchers have hypothesized that experiencing homophobic discrimination may explain the relationship between sexual minority identity and higher BMI for

sexual minority women (Mereish, 2014; Rainey, Furman, & Gearhardt, 2018). Kozee and Tylka (2006) have suggested that lesbian women engage in greater body surveillance than heterosexual women, possibly as a result of increased societal pressures to adapt to socially constructed body ideals (Kozee & Tylka, 2006). A large epidemiological study also indicated that bisexual individuals are at risk of being categorized as obese compared to their heterosexual peers. Although higher BMI is associated with experiencing greater weight stigma (Friedman et al., 2005), few studies have specifically addressed the potential effect of weight self-stigma among sexual minorities, which may differentially impact sexual minorities based on the above reviewed literature.

Sexual Orientation and Drug Use

Research examining sexual minority stress has consistently demonstrated that sexual minority individuals are much more likely to use illicit substances. Results from a meta-analysis indicated that sexual minority men and women were almost three times more likely than heterosexual individuals to report using drugs (Marshall et al., 2008). Further, a recent study found that both sexual minority men and women who experienced discrimination reported significantly greater rates of drug use than individuals who had not experienced discrimination related to their sexual minority status (Lee, Gamarel, Bryant, Zaller, & Operario, 2016). Additionally, LGB adolescents and young adults have been shown to misuse prescription drugs (McCabe, 2005), and use marijuana, alcohol, cocaine, and ecstasy at higher rates than heterosexual adolescents and young adults (Corliss et al., 2010; Russell, Driscoll, & Truong, 2002).

Negative experiences associated with sexual minority stress (e.g., homelessness, physical abuse, and other life adversities) have contributed to disparate rates in psychopathology and drug

use within sexual minority populations (McLaughlin, Hatzenbuehler, Xuan, & Conron, 2012). These experiences are often associated with internalized homophobia (i.e., feelings of negative self-worth based on messages given from society, culture, and religion), which has been specifically associated with increased drug use (Moody, Starks, Grov, & Parsons, 2017). Though the connection between sexual orientation and drug use is well established, it is not clear how an additional source of stigma (i.e., weight based stigma) might exacerbate negative coping in the form of drug use.

Covariates

Higher rates of depressive symptoms are associated with greater drug use (Kamimura et al., 2017), suggesting the need to also account for the depressive symptomatology within this context. Relatedly, given that higher BMI might be protective against drug use and that it is associated with increased weight self-stigma (Stevens, Herbozo & Martinez, 2016; Gearhardt, Corbin, & Brownell), and given that race, socioeconomic status (SES), and gender are differentially associated with drug use (Goldstein, Burstyn, LeVasseur, & Welles, 2016; Hankin & Abramson, 2001; Huang et al., 2011), accounting for race, SES, and gender as covariates is warranted.

Current Study

Consistent with past research suggesting that experiencing multiple forms of stigma can contribute to greater overall minority stress and consequently drug use (McCabe et al., 2010), the current study aims to investigate whether sexual minority status contributes, strengthens, or weakens the relationship between weight self-stigma and drug use among young adults. Grounded in the minority stress framework (Meyer, 2003), it is hypothesized that sexual orientation will moderate the relationship between weight self-stigma and drug use. Specifically,

we expect that for sexual minority individuals, there will be a greater magnitude of association between weight self-stigma and drug use relative to heterosexual individuals due to the additive stigma of a sexual minority identity with internalized weight stigma.

Method

Participants

Following institutional review board approval, participants were recruited from two separate sources: a university subject pool and Amazon Mechanical Turk (MTurk). To be included in the study, participants had to be between 18- to 25-years old, not currently pregnant, live in the US, and have Internet access (MTurk participants only). The university subject pool was recruited from a Midsouth University and was comprised of undergraduate students taking psychology courses with the option to participate in research for course credit. MTurk is a crowdsourcing marketplace that allows individuals and businesses (aka “requesters”) to create and post “tasks” through the website, which Mechanical Turk “workers” can complete for small compensation. MTurk has been used extensively to obtain survey data on a variety of topics with a diverse on-demand workforce. It has also been used to conduct social scientific research, functioning as a large online subject pool in which potential participants can browse various advertisements to complete tasks for micropayments. Previous research has shown MTurk samples have demographic diversity and obtained data is as equally reliable as more conventional study methods (Buhrmester, Kwang, & Gosling, 2011). Researchers have used MTurk to assess sensitive topics, including depression (Schütz et al., 2013), weight bias internalization (Pearl & Puhl, 2015), alcohol use (Boynton & Richman, 2014), and drug use (Kurzban, Dukes, & Weeden, 2010). MTurk has been frequently utilized in psychological

research because of its superb record of comparable psychometric properties on such measures (Buhrmester, Kwang, & Gosling, 2011).

A total of 572 young adults ($M_{age}=21.63$, $SD=2.32$) participated in the study, with 207 college students ($M_{age}=19.64$, $SD=1.77$) from the university subject pool and 365 young adults ($M_{age}=22.77$, $SD=1.75$) from MTurk. Of the university subject pool sample, 40% identified as Non-Hispanic White, 35.0% as Non-Hispanic Black, 8.5% as multiracial, 8.4% as Hispanic, 8.0% as other (4.5% as “Other,” 3% as Asian, .5% as Native Hawaiian or Pacific Islander). Majority of participants were female (73.3%, $N = 156$). A total of 89% identified as mostly or completely heterosexual, and 11% of participants identified as bisexual, mostly homosexual, completely homosexual or other. The median household income from the last year for participants was between \$30,001-60,000. In terms of socioeconomic status, (72.4%, $N = 152$) of participants reported “living comfortably” or “very well,” and a majority (63.5%, $N = 134$) of participants were employed part or full time.

Of the 365 MTurk participants, 4 (0.7%) were excluded listwise due to missing greater than 10% of their responses on any one of the study measures. For the MTurk sample, 69.2% identified as Non-Hispanic White, 9.9% Hispanic, 8.8% as Asian, 7.1% as Non-Hispanic Black, 3.8% as Multiracial, and 3.0% as other (1.5% Native Hawaiian or Pacific Islander, American Indian or Alaskan Native, .5% “Other”). Majority of participants were female (66.4%, $N = 241$). A total of 84.8% identified as mostly or completely heterosexual, and 16.2% of participants identified as bisexual, mostly homosexual, or completely homosexual or other. The median household income from the last year for participants was between \$30,001-\$60,000. In terms of socioeconomic status, almost half of our participants (45.0%, $N = 164$) reported living

“comfortably,” and a majority (75.1%, $N = 272$) were employed part or full time. For more information regarding demographic characteristics by sexual orientation, please refer to Table 1.

Procedures

For the university subject pool, recruitment announcements were made in psychology courses and via flyering. Subject pool participants came to the research lab, completed consent and study questionnaires, and were compensated with course credits. MTurk participants saw a listing of the study via the online system on the MTurk Marketplace and could choose to participate if they met the eligibility criteria. Participants were compensated \$0.75 for their effort on the study, a rate comparable to MTurk projects of similar effort and time commitment (Buhrmester, Kwang, & Gosling, 2011). For both MTurk and university samples, participants completed an electronic consent form. Then participants completed a battery of study measures as part of a larger study on psychosocial factors contributing to behaviors, relationships and identity in young adults. At the conclusion of the study, participants were debriefed and local/national mental health resources were provided.

Measures

Demographics. The following self-reported demographics were obtained: age, gender, ethnicity, race, sexual orientation, employment status, and socioeconomic status. Participants reported their current age and indicated if they were male, female, or transgender. Participants identified their ethnicity as either Hispanic or Latino(a), or not Hispanic/Latino(a) while race was assessed by asking participants to select all that applied among the following options: American Indian or Alaskan Native, African-American or Black, Asian, Native Hawaiian or other Pacific Islander, White, or “Other.”

Sexual orientation was assessed on a continuum by participants describing their attraction as: completely heterosexual (attracted only to persons of the opposite sex), mostly heterosexual (mainly attracted to persons of the opposite sex and slightly attracted to persons of the same sex), bisexual (equally attracted to men and women), mostly homosexual (mainly attracted to persons of the same sex and slightly attracted to persons of the opposite sex), completely homosexual (gay/lesbian, attracted to persons of the same sex), or not sure.

Socioeconomic status was assessed by asking participants to choose which of the following phrases best described their socioeconomic status: “I live very well,” “I live comfortably,” “I live from paycheck to paycheck,” “I don't have a steady income,” “I have no current income,” and by asking individuals to indicate if they received public assistance (and what kinds, if applicable). Furthermore, participant employment status was assessed by asking if participants were: “Employed, part time” “Employed, full time,” “Not employed, looking for work,” “Not employed, NOT looking for work,” “Retired,” or “Disabled.”

Subjective BMI. Participant BMI was estimated using participants’ self-reported height (feet) and weight (pounds). BMI was obtained by converting the weight into metric units, then dividing the estimated weight by estimated height to calculate BMI scores in kg/m^2 , as per the Centers for Disease and Control and Prevention protocol (2015).

Weight Self-Stigma Questionnaire (WSSQ). The WSSQ (Lillis, Luoma, Levin, & Hayes, 2010) is 12-item measure of internalized weight stigma. This measure has two domains assessing: Fear of Enacted Stigma and Weight-Related Self-Devaluation. Sample items include: “others are ashamed to be around me because of my weight” and “I became overweight because I’m a weak person.” Responses are rated on a 5-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree), with participants having the option to select 0 (when the item was not

applicable). Scores on the WSSQ range from 0-60, with higher scores indicating higher levels of weight self-stigma. The scale has good internal consistency reliability, with alpha coefficients ranging from 0.71 to 0.94, and has been noted to have adequate discriminant and construct validity (Lillis et al., 2010). This study's Chronbach alpha was .95.

Drug Use Disorders Identification Test (DUDIT). The DUDIT (Berman, Bergman, Palmstierna & Schlyter, 2005) is an 11-item measure assessing the frequency of drug-use and severity of drug-use related symptoms. The DUDIT assesses the degree to which participants experience drug dependency and are at risk for problems associated with drug use (Hildebrand, 2015). Participants indicated whether they used any of the following drugs: cannabis, amphetamines, opiates, cocaine, hallucinogens, solvents/inhalants, gamma-hydroxybutyric acid (GHB) and "others." Sample items for the DUDIT include: "how often do you use drugs other than alcohol?" and "have you or anyone else been hurt (mentally or physically) because you used drugs?" Scores range from 0-44, with higher scores indicating greater severity of drug use problems. The DUDIT has the following cutoffs for problematic use: 0-5 suggests no drug problems, 6-24 suggests possible drug-related problems, and greater than 25 suggests heavy drug dependency (Berman, Bergman, Palmstierna, & Schlyter, 2005). Reliability in previous studies has been around .80 among college students (Kokotalia et al., 2004), and literature reviews have found that the measure has alphas between .74 and .94, with most studies reporting alphas greater than .90 (Hildebrand, 2015). This study's alpha was .88.

Center for Epidemiological Studies Depression Scale (CES-D). The CES-D (Radloff 1977) is a 20-item self-report measure that has been used in community populations to measure the frequency of depressive symptoms over the past week on a 4-point Likert scale from zero (rarely or none of the time; less than one day) to three (most or all of the time; 5-7 times). The

CES-D includes six domains which correspond with important dimensions of depression including: depressed mood, feelings of guilt and worthlessness, feelings of helplessness, psychomotor retardation, loss of appetite, and sleep disturbance. Sample items include: “my sleep was restless,” and “I thought my life had been a failure.” Four items were reverse coded and the responses were summed to calculate a total score out of 60. A score of 16 or higher is indicative of clinically significant depression (Radloff, 1977). The CES-D has been noted to have high reliability, with Chronbach’s alpha of .85 in community samples and .90 in psychiatric samples. The CES-D has been validated and shown to be strongly correlated with several other measures of depression (Radloff 1977). This study’s alpha was .84.

Data Analytic Strategy

Statistical analyses were conducted using IBM’s Statistical Package for the Social Sciences (SPSS) 22.0. Means, standard deviations, and Pearson correlations were obtained for all study variables. Tests of assumptions were performed, including assessing for skewness and kurtosis, multicollinearity, and outliers. Normality was tested using the Kolmogorov-Smirnov test. Chronbach’s alphas were calculated for each measure to ensure scale reliability. In order to address missing data, ipsative mean imputation was used, given that all Chronbach alphas were $>.70$, which is the primary criterion for using this method (Schafer & Graham, 2002). Thus, if a participant was missing 10% or less of their data on a particular measure, then the mean of the participant’s scores was calculated and imputed, and a new total measure score was calculated. Initial analyses were completed comparing basic demographics between the university subject pool and MTurk participants to determine any differences between the samples prior to primary analyses.

The larger study had two samples, a university subject pool in addition to MTurk participants. We examined the study variables in the two samples separately to determine if a merge of the data sets would be plausible. These initial analyses revealed differences in the results by group, and thus we opted not to merge the two samples. Given that the MTurk sample had the larger sample, the MTurk sample explained more variance in the outcome, and the university sample raised concerns about low power (due to the small number of sexual minority individuals), we opted to proceed with analyses with the MTurk sample alone.

The study's hypothesis was tested using the PROCESS macro for SPSS v. 24 (Hayes, 2017). First, correlation analyses were conducted to determine associations among all continuous study variables including independent, dependent, moderator, and covariate variables. Next, moderation analyses were used to generate 5000 bootstrap samples with 95% confidence intervals (CI) (Hayes, 2017), to examine the relationship between weight self-stigma and drug use disorder symptoms, with sexual orientation as a moderator and BMI, depressive symptoms, gender, SES, and race as covariates. The independent variable was weight self-stigma as measured by the WSSQ total score and the dependent variable was drug use disorder symptoms as measured by the DUDIT total score. Dichotomized sexual orientation (i.e., completely and mostly heterosexual responses collapsed as one category and bisexual, mostly and completely homosexual responses as a second category) was the moderating variable. Depressive symptoms as measured by the CES-D total score, self-reported SES measured on a continuum, and calculated subjective BMI, were entered as continuous covariates in the moderation model, while self-reported gender and race were entered as categorical covariates. The covariate-adjusted moderation analysis was used to examine the study hypothesis that sexual minority individuals

will have a greater magnitude of association between weight self-stigma and drug use when compared to heterosexual individuals, controlling for covariates.

Results

Assumptions

The DUDIT total score was significantly positively skewed with a high zero inflation, which was expected in a non-treatment sample with a relatively low overall prevalence rate. Depression and weight-self stigma did not pass the Kolmogorov-Smirnov test ($p < .05$), but this can be common in larger samples even if the variables are normal (Pallant, 2015). The study variables skewness and kurtosis values all fell within the acceptable range of -2 and 2, and thus were considered to be normal (George & Mallery, 2010). Boxplots and stem-and-leaf plots were used to assess for outliers and none were identified. The study variables did not appear to have multicollinearity, as per their tolerance and VIF values which all fell within the acceptable ranges of greater than .2 and below 10, respectively (Pallant, 2015).

Main Effect Differences

Main effect differences for each demographic and continuous study variable by sexual orientation was examined using chi-square analyses and independent samples t-tests (see Table 1). Results revealed significant main effects for gender, SES, depressive symptoms, and weight self-stigma, such that sexual minority individuals had higher depressive symptoms and weight self-stigma compared to heterosexual individuals. Sexual minority individuals also had significantly higher SES compared to sexual majority individuals. The sexual minority group also had a greater number of females than males, compared to the heterosexual group. Of note, there were no significant differences in drug use between the sexual minority and heterosexual groups (see Table 1).

Correlations

Table 2 provides means, standard deviations, and correlations for all continuous variables. Of note, subjective BMI was significantly positively correlated with depressive symptoms and depressive symptoms were significantly positively associated with drug use disorder symptoms. As expected, weight self-stigma was significantly positively associated with drug use disorder symptoms. Given these significant associations, subjective BMI and depressive symptoms were entered into the model as covariates.

Moderation Analysis

It was hypothesized that sexual orientation would moderate the relationship between weight self-stigma and drug use. Specifically, it was predicted that sexual minority individuals would have a greater magnitude of association between weight self-stigma and drug use when compared to heterosexual individuals. Subjective BMI, depressive symptoms, SES, gender, and race were included as covariates.

The hypothesis was supported, given that the overall covariate adjusted moderation model was significant, $F(13, 347) = 3.50$, $R^2 = .12$, $p < .001$, accounting for approximately 12% of the variance in the association between weight self-stigma and drug use. The interaction effect of weight self-stigma and sexual orientation was significant ($\beta = .12$, $t = 2.14$, $p < .04$; see Table 3). There was a significant positive association of weight self-stigma and drug use for sexual minorities ($\beta = .16$, $t = 3.13$, $p < .002$), but not for heterosexual individuals ($\beta = .04$, $t = 1.43$, $p = .15$; see Figure 1). The overall interaction effect revealed that there are significant differences in the magnitude of association between sexual minority and heterosexual individuals with respect to weight self-stigma and drug use. For sexual minority individuals in our sample, higher weight self-stigma was associated with higher drug use.

Discussion

This study examined how sexual orientation moderated relationship between weight self-stigma and drug, while controlling for: gender, race, depressive symptoms, SES, and subjective BMI. As hypothesized, sexual orientation moderated the relationship between weight self-stigma and drug use. Sexual minority individuals had a greater magnitude of association between weight self-stigma and drug use as compared to heterosexual individuals. Consequently, this study moves the field forward by assessing sexual orientation as a moderating factor in the relationship between weight self-stigma and drug use in a sample of diverse 18-25 year old young adults. These results suggest that the intersection of stigmatized identities and potential internalization of stigma among young adults may be associated with greater problems related to drug use.

Findings fit within the context of past literature which suggests a link between sexual orientation and weight self-stigma (Wrench & Knapp, 2008). Specifically, findings support the idea that two marginalized identities may interact to potentially yield higher drug use problem severity. Consistent with past literature showing that sexual minority individuals might have a higher likelihood of experiencing weight stigma (Friedman et al., 2005; Mereish, 2014; Rainey, Furman, & Gearhardt, 2018), the sexual minority individuals in this sample reported higher weight self-stigma. Our examination of the moderating effect of a minority sexual orientation on internalized weight stigma and drug use in emerging adults is an important next step for understanding the stigma experiences of sexual minority young adults. Young adulthood is a critical developmental period in which individuals explore aspects of their identity that may be salient to experiences of discrimination (Arnett, 2006) and it is also a risk period for illicit drug use (Arnett, 2006). Thus, exploration of these relations in young adulthood is important. It is notable that identifying as a sexual minority was not independently associated with more severe

drug use, which is at odds with prior research showing staggering disparities in drug use and addiction among sexual minority individuals (Corliss et al., 2010). It may be that these effects are attenuated in 18-25 year olds due to other developmental concerns of this period in the life course, which may be driving drug independent of sexual minority status. Despite this finding, weight self-stigma together with a minority sexual orientation predicted greater drug use in our sample relative to heterosexual individuals and thus warrants attention. Similar to prior studies that suggested internalized weight stigma was related to negative coping mechanisms and drug use (Farhat, Iannotti, & Simons-Morton, 2010; Niyonsenga et al., 2012), findings support the idea that weight self-stigma is associated with a potentially maladaptive coping strategy (i.e., drug use) commonly used by young adults to relieve stress (e.g., stressors related to experienced stigma).

Overall, the study's results suggest that internalized stigma (and the resulting minority stress surrounding it) may lead to maladaptive coping processes and negative mental health, which aligns well within Meyer's Minority Stress framework (Meyer, 2003). Per this model, ameliorative coping processes (such as drug use) are used as a way to combat stress (or associated negative mental health distress) resulting from stigma. Both weight self-stigma and sexual minority status appear to function together and interact to yield greater use of illicit drugs. These findings are consistent with other research on multiple minority stressors (McCabe et al., 2010) leading to greater negative outcomes. Specifically, McCabe and colleagues (2010) demonstrated greater rates of drug use as a result of experiencing multiple types of stigma and discrimination (e.g., racism, sexism, and homophobic discrimination), compared to those experiencing fewer types of stigma. While several studies have investigated compounded minority stress associated racial, gender and sexual minority status (e.g., Balsam, Molina,

Beadnell, Simoni, & Waters, 2011; McCabe et al., 2010), research is limited on the assessment of stress specific to minority sexual identity and weight stigma. Thus, this study is an important contribution to a growing body of literature on the impact of multiple minority stress and stigma.

Implications

Given the current drug epidemic in the United States, it is crucial to understand some of the reasons behind the increasing rates and severity of drug use. Higher rates of drug use among sexual minorities are well documented in the literature (Corliss et al., 2010); thus, identifying factors that might underlie these disparities is critically needed. The results of this study reveal that the presence of moderate to high weight self-stigma is associated with higher drug use. Although the average DUDIT scores did not reach clinical significance for a drug use disorder diagnosis (6-24 for possible problems; 25+ for severe drug dependence), findings that sexual orientation moderates the relationship between weight self-stigma and drug use has considerable value.

Strengths and Limitations

In addition to the many strengths, including a demographically diverse population of young adults, a relatively large sample size, and lack of observer bias, the study also had some limitations. Like other studies that use cross sectional designs, temporality and directionality could not be determined. Further, without using an experimental design, we cannot definitively make conclusions regarding causality.

Despite this study's strong focus on drug use-related problems, we did not specifically ask questions about why participants engaged in drug use or which drugs participants used. Although research has identified drug use as a common form of maladaptive coping, conclusions drawn about whether the participants were engaging in drug use as a coping process versus for

recreation (or some other reason) are speculative. Another limitation is that the study does not specifically measure sexual minority stigma or within group differences that individuals from sexual minority backgrounds have, but rather we dichotomized the different sexual minority orientations together into one group identity. For example, sexual minority individuals may be at different stages of sexual identity development which could impact their perception of stigma related to their sexual orientation. Additionally, sexual minority young adults might vary on drug use by gender in the context of weight stigma but this could not be explored due to the small sample size of sexual minority men compared to sexual minority women.

Using MTurk to assess drug use in psychological research via self-report is both a strength and limitation. Drug use can often be underreported in studies because of the stigma associated with use and fear of potential legal implications. Participants may have under-reported their use to a lesser degree because of the anonymity that MTurk provides (Chalmers, Lancaster & Hughes, 2016). Similarly, for many individuals, sexual orientation might also be a sensitive topic that respondents might not feel comfortable responding honestly to, in person. In our sample, rates of sexual minority status were comparable to population estimates (Gates, 2011). Although the study authors suggest that holding a sexual minority identity inherently results in stigma, the extent of varying degrees of internalized sexual minority stigma was not directly assessed. Thus, relying on self-reported sexual orientation is a limitation because it does not fully capture the lived experiences of stigma an individual has in relation to others of the same (or different) sexual minority identity.

Future Directions

First, future researchers should distinguish differences within sexual minority groups by using measures of sexual minority stigma. Specifically, measures such as the Lesbian, Gay,

Bisexual Group Identity Measure (LGBGIM; Sarno & Mohr, 2016), Homonegative Microaggressions Scale (Wright & Wagner, 2012) or the LGBT People of Color Microaggression Scale (Balsam, Molina, Beadnell, Simoni, & Walters, 2011) could provide rich data to move the field forward. Second, exploring ways in which other minority statuses (e.g., gender identity, race, disability status) might contribute to poorer coping via drug use is important. Such research could explore these variables as moderators of the moderating influence of sexual orientation on weight stigma and drug use. Such research would require a large sample size with equal distribution of sexual orientation, gender, race, and disability status. Third, given these identified relationships between weight self-stigma, drug use, and sexual orientation, researchers can specifically identify which drugs (e.g., psychomotor stimulants, opioids, etc.) are being used, and reasons associated with motivation to use these drugs (e.g., to accelerate weight loss or to cope with stress). Once further research has been conducted, potential interventions could be developed to evaluate if reducing weight stigma might be an effective intervention strategy to reduce drug use. Finally, qualitative research would serve to bolster the theoretical underpinnings of Meyer's Minority Stress framework, by exploring participants' reasons for engaging in drug use and by assessing details about specific drugs used. This future qualitative research might identify factors that could lead to novel intervention development to target stigma and illuminate practical ways to minimize the impact of stigma, and ultimately reduce disparities in drug use among sexual minority young adults.

Conclusion

To understand some of the complex factors related to the national drug epidemic and the tremendous disparities among sexual minorities, research must address how certain stressors affect important differences in vulnerability and risk as a result of identity. Despite sexual

orientation being presumably unchanging, weight self-stigma is a mutable factor that has ostensibly been linked to more negative coping strategies and drug use problems. As such, efforts in identifying and reducing weight self-stigma have meaningful research and clinical implications, especially within sexual minority young adults. More research is required to further glean ways that stigma, and its associated stress, can accumulate and yield worse outcomes, as well as examine protective factors that might mitigate the risks in young adults.

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Tables and Figures

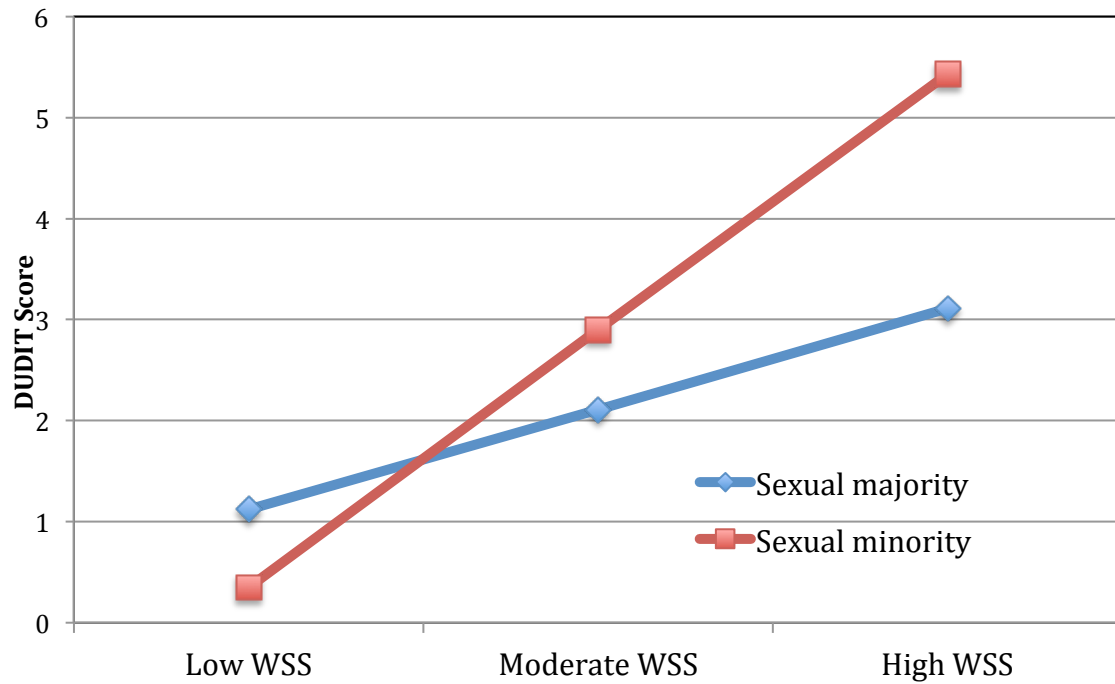


Figure 1. Weight self-stigma and drug use moderated by sexual orientation in MTurk sample.

Note: This figure illustrates the greater magnitude of association between weight self-stigma and drug use disorder symptoms. WSS= Weight self-stigma; Low WSS is defined as one standard deviation below the mean, moderate WSS is defined as at exactly the mean, and high WSS is 1 standard deviation above the mean.

Table 1.

Demographic Characteristics and Continuous Study Variables by Sexual Orientation

Variables		Heterosexual (N = 306)	Sexual Minority (N = 59)	Total (N = 365)
Race	Non-Hispanic Black	24 (7.9%)	2 (3.4%)	26 (7.1%)
	Non-Hispanic White	210 (68.9%)	42 (71.2%)	252 (69.2%)
	Hispanic	29 (9.5%)	7 (11.9%)	36 (9.9%)
	Other	31 (10.2%)	5 (8.5%)	36 (9.9%)
	Multiracial	11 (3.6%)	3 (5.1%)	14 (3.8%)
Gender	Female	193 (63.2%)	47 (80%)	240 (66.4%)*
	Male	113 (36.8%)	12 (20%)	125 (33.6%)*
Age		22.86 (<i>SD</i> =1.7)	22.3 (<i>SD</i> =2.1)	22.7 (<i>SD</i> =1.8)
SES		2.55 (0.9)	3.02 (1.1)	2.63 (0.9)***
Subjective BMI		25.6 (6.4)	26.4 (7.2)	25.7 (6.6)
Depression		15.6 (12.1)	23.2 (15.7)	16.9 (13.1)***
WSS		19.8 (12.8)	23.4 (14.1)	20.4 (13.5)*
Drug use		2.1 (4.7)	3.4 (8.5)	2.3 (5.5)

Note. *** $p < .001$, ** $p < .01$, * $p < .05$. Numbers and percentages provided for categorical variables while means and standard deviations are provided for continuous variables. SES = Socioeconomic status, WSS = Weight Self Stigma, BMI = Body Mass Index.

Table 2.

Means, Standard Deviations, and Correlations of Variables

	DUDIT	CES-D	Subjective BMI	WSSQ
DUDIT	2.2 (5.3)	.19*	-.02	.20*
CES-D		17.0 (13.24)	.15*	.40*
Subjective BMI			25.7 (6.6)	.48*
WSSQ				20.5 (13.1)

Note. Diagonal of table provides means (and standard deviations) for continuous variables. DUDIT= Drug Use Identification Test; CES-D = Centers for Epidemiological Studies Depression Scale; BMI = Body Mass Index; WSSQ= Weight Self Stigma Questionnaire
 $*p < .05$

Table 3.

Covariate-adjusted moderated regression results predicting drug use

Variables	β	t	p	95% confidence interval LL	95% confidence interval UL
Sexual Orientation	.78	.94	.34	-.84	2.41
Weight Self Stigma	.10	3.53	.001	.042	.15
Sexual Orientation x WSS	.12	2.15	.03	.01	.23
Depression	.05	2.15	.03	.01	.10
Subjective BMI	-.14	-2.91	.003	-.24	-.05
SES	.14	.42	.67	-.51	.79
Gender					
Male	2.31	1.16	.25	-1.60	6.23
Female	1.26	.64	.52	-2.57	5.09
Race					
Non-Hispanic White	.94	.95	.34	-1.01	2.89
Non-Hispanic Black	2.24	1.58	.11	-.55	5.02
Hispanic	1.40	1.07	.28	-1.17	3.96
Multi-Racial	-.81	-.48	.63	-4.14	2.52
Other	-1.50	-.47	.64	-7.81	4.80
<i>Level of Interaction Variable</i>					
Sexual majority	.04	1.42	.15	-.01	.09
Sexual minority	.16	3.13	.002	.06	.27

Note. WSS= Weight Self-Stigma; BMI = Body Mass index, SES = Socioeconomic Status; Bolded text indicates significance.

Appendix A

Consent to Participate in a Research Study

Behaviors, Relationships, and Identity Development

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?

You are being invited to take part in a research study about how people think about themselves and the things that are important to who they are. If you volunteer to take part in this study, you will be one of about 800 people to do so.

WHO IS DOING THE STUDY?

The person in charge of this study is Kristina Decker, M.A., of the University of Memphis, Department of Psychology. She is supervised by Idia B. Thurston, Ph.D., of University of Memphis, Department of Psychology. There may be other people on the research team assisting at different times during the study.

WHAT IS THE PURPOSE OF THIS STUDY?

The purpose of this study is to learn how people think about themselves and the things that are important to who they are. Furthermore, we're interested in learning about participants' health habits and lifestyle choices.

By doing this study, we hope to learn how different experiences and perspectives affect a person's self-perception.

ARE THERE REASONS WHY YOU SHOULD NOT TAKE PART IN THIS STUDY?

You should not take part in this study if you are under 18 years of age, over the age of 25, or pregnant.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The research procedures will be conducted at The University of Memphis. You will need to come to Room 361 of the University of Memphis Psychology Building two times during the study. The first visit will take approximately 1 and 30 minutes. The second visit will take place approximately 2 weeks after the first session and will last about 30 minutes. The total amount of time you will be asked to volunteer for this study is 2 hours over the next 2 weeks.

WHAT WILL YOU BE ASKED TO DO?

You will be asked to complete questionnaires with a number of questions regarding your beliefs, experiences, lifestyle habits, height and weight. Upon completion of these questionnaires, a research assistant will measure your height and weight.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life. You may find some questions we ask you to be upsetting or stressful. If so, we can tell you about some people who may be able to help you with these feelings. In addition to the risks listed above, you may experience a previously unknown risk or side effect.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?

There is no guarantee that you will get any benefit from taking part in this study. However, some people may gain motivation to continue or begin developing a healthier lifestyle. Your willingness to take part, however, may, in the future, help society as a whole better understand this research topic.

DO YOU HAVE TO TAKE PART IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering. As a student, if you decide not to take part in this study, your choice will have no effect on your academic status or grade in class.

IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

If you do not want to be in the study, there are no other choices except not to take part in the study.

WHAT WILL IT COST YOU TO PARTICIPATE?

There are no costs associated with taking part in the study.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

You will receive a total of 2 research credits for taking part in this study; 1.5 research credits for the first session and .5 credit for the second session.

WHO WILL SEE THE INFORMATION THAT YOU GIVE?

We will make every effort to keep private all research records that identify you to the extent allowed by law. To protect your privacy, electronic files containing identifying information will be password protected, and only approved study personnel may access the password and files. All study materials will remain in a locked filing cabinet locked in room 361 of the Psychology Building. Only approved study personnel will have access to these materials.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be personally identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. Individual information will be number coded in our databases to ensure anonymity. Any personal information provided will be directly entered into the computer and only associated with your identification number that will not be traced back to you. We will keep private all research records that identify you to the extent allowed by law. However, there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court to tell authorities if you report information about a child being abused or if you pose a danger to yourself or someone else. Also, we may be required to show information which identifies you to people who need to be sure we have done the research correctly; these would be people from such organizations as the University of Memphis.

CAN YOUR TAKING PART IN THE STUDY END EARLY?

If you decide to take part in the study you still have the right to decide at any time that you no longer want to continue. You will not be treated differently if you decide to stop taking part in the study.

The individuals conducting the study may need to withdraw you from the study. This may occur if you are not able to follow the directions they give you, if they find that your being in the study is more risk than benefit to you, or if the agency funding the study decides to stop the study early for a variety of scientific reasons.

ARE YOU PARTICIPATING OR CAN YOU PARTICIPATE IN ANOTHER RESEARCH STUDY AT THE SAME TIME AS PARTICIPATING IN THIS ONE?

You may not take part in this study if you are currently involved in another research study that directly affects your weight status. It is important to let the investigator know if you are in another research study. You should also discuss with the investigator before you agree to participate in another research study while you are enrolled in this study.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Kristina Decker, M.A., at kdecker@memphis.edu or the faculty advisor, Idia B. Thurston, Ph.D. at bthrston@memphis.edu. If you have any questions about your rights as a volunteer in this research, contact the Institutional Review Board staff at the University of Memphis at 901-678-2705. We will give you a copy of this consent form to take with you.

WHAT IF NEW INFORMATION IS LEARNED DURING THE STUDY THAT MIGHT AFFECT YOUR DECISION TO PARTICIPATE?

If the researcher learns of new information in regards to this study, and it might change your willingness to stay in this study, the information will be provided to you. You may be asked to sign a new informed consent form if the information is provided to you after you have joined the study.

What happens to my privacy if I am interviewed?

Any information gathered during the height and weight measuring portion of the study will be separated from any identifying information using code numbers. The study staff is also trained to maintain confidentiality while conducting research.

By clicking “yes” to the following statement, you are affirming that you are at least 18 years old and are agreeing to be in this study. You will receive a printed copy of this document for your records and a copy will also be kept with the study records. Be sure to contact Kristina Decker with any questions you have about what you are being asked to do. You may also contact her if you think of questions at a later date. Ms. Decker’s email address is: kdecker@memphis.edu.

- I have read, understood, and received a printed copy of the above consent form and desire of my own free will to participate in this study.*

Appendix B

Demographics

Participant ID: _____

Today's Date: _____

Date of Birth: _____

Age: _____

Gender: (please only check one)

Male

Female

Transgender

If transgender: (please check)

(MTF)

(FTM)

Other (_____)

Other (_____)

Ethnicity: (please only check one)

Hispanic or Latino

Not Hispanic or Latino

Race: (please select all that apply)

American Indian or Alaska Native

African-American or Black

Asian

Native Hawaiian or Other Pacific Islander

White

Other: _____

Which one of the following best describes your feelings? (please only check one)

- Completely heterosexual (*attracted only to persons of the opposite sex*)
- Mostly heterosexual
- Bisexual (*equally attracted to men and women*)
- Mostly homosexual
- Completely homosexual (*gay/lesbian, attracted to persons of the same sex*)
- Not sure

Which of these phrases best describes your socioeconomic status?

- I live very well.
- I live comfortably.
- I live from paycheck to paycheck.
- I don't have a steady income.
- I have no current income.

Are you currently

- Employed, part time
- Employed, full time
- Not employed, looking for work
- Not employed, NOT looking for work
- Retired
- Disabled

Center for Epidemiologic Studies Depression Scale (CES-D)
(Radloff, 1977)

DIRECTIONS: Circle the number of each statement which best describes how often you felt or behaved this way – DURING THE PAST WEEK.

	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of the time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me	0	1	2	3
2. I did not feel like eating; my appetite was poor	0	1	2	3
3. I felt that I could not shake off the blues even with help from my family and friends	0	1	2	3
4. I felt that I was just as good as other people	0	1	2	3
5. I had trouble keeping my mind on what I was doing	0	1	2	3
6. I felt depressed	0	1	2	3
7. I felt that everything I did was an effort	0	1	2	3
8. I felt hopeful about the future	0	1	2	3
9. I thought my life had been a failure	0	1	2	3
10. I felt fearful	0	1	2	3
11. My sleep was restless	0	1	2	3
12. I was happy	0	1	2	3
13. I talked less than usual	0	1	2	3
14. I felt lonely	0	1	2	3
15. People were unfriendly	0	1	2	3
16. I enjoyed life	0	1	2	3
17. I had crying spells	0	1	2	3
18. I felt sad	0	1	2	3
19. I felt that people disliked me	0	1	2	3
20. I could not get "going"	0	1	2	3

The Weight Self-Stigma Questionnaire (WSSQ)
(Lillis, Luoma, Levin, & Hayes, 2010)

DIRECTIONS: Please rate your level of agreement with the following statements

	Not Applicable	Completely disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Completel y agree
1. I'll always go back to being overweight.	0	1	2	3	4	5
2. I caused my weight problems.	0	1	2	3	4	5
3. I feel guilty because of my weight problems.	0	1	2	3	4	5
4. I became overweight because I'm a weak person.	0	1	2	3	4	5
5. I would never have any problems with weight if I were stronger.	0	1	2	3	4	5
6. I don't have enough self-control to maintain a healthy weight.	0	1	2	3	4	5
7. I feel insecure about others' opinions of me.	0	1	2	3	4	5
8. People discriminate against me because I've had weight problems.	0	1	2	3	4	5
9. It's difficult for people who haven't had weight problems to relate to me.	0	1	2	3	4	5
10. Others will think I lack self-control because of my weight problems.	0	1	2	3	4	5
11. People think that I am to blame for my weight problems.	0	1	2	3	4	5
12. Others are ashamed to be around me because of my weight.	0	1	2	3	4	5

The Drug Use Disorders Identification Test (DUDIT)
(Berman, Bergman, Palmstierna, & Schlyter, 2003)

DIRECTIONS: Here are a few questions about drugs (see list of drugs below). Please answer as correctly and honestly as possible by indicating which answer is right for you.

	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week
1. How often do you use drugs other than alcohol? (see list of drugs below)	0	1	2	3	4
2. Do you use more than one type of drug on the same occasion?	0	1	2	3	4
	1 or 2	3 or 4	5 or 6	7 to 9	10 or more
3. How many times do you take drugs on a typical day when you use drugs?	0	1	2	3	4
	Never	Less than Monthly	Monthly	Weekly	Daily or Almost Daily
4. How often are you influenced heavily by drugs?	0	1	2	3	4
5. Over the past year, have you felt that your longing for drugs was so strong that you could not resist it?	0	1	2	3	4
6. Has it happened, over the past year, that you have not been able to stop taking drugs once you started?	0	1	2	3	4
7. How often over the past year have you taken drugs and then neglected to do something you should have done?	0	1	2	3	4
8. How often over the past year have you needed to take a drug the morning after heavy drug use the day before?	0	1	2	3	4
9. How often over the past year have you had guilty feelings or a bad conscience because you used drugs?	0	1	2	3	4
	No		Yes, but not in the last year		Yes, during the last year
10. Have you or someone else been hurt (mentally or physically) because you used drugs?	0		2		4
11. Has a relative, friend, doctor, or nurse or anyone else been worried about your drug use or said to you that you should stop using drugs?	0		2		4

LIST OF DRUGS

(Note! Not alcohol!)

Cannabis	Amphetamines	Cocaine	Opiates	Hallucinogens	Solvents/inhalants	GHB and others
Marijuana	Methamphetamine	Crack	Smoked heroin	Ecstasy	Thinner	GHB
Hash	Phenmetraline	Freebase	Heroin	LSD (Lisergic acid)	Trichlorethylene	Anabolic steroids
Hash oil	Khat	Coca leaves	Opium	Mescaline	Gasoline/petrol	Laughing gas (Halothane)
	Betel nut			Peyote	Gas	Amyl nitrate (Poppers)
	Ritaline (Methylphenidate)			PCP, angel dust (Phencyclidine)	Solution	Anticholinergic compounds
				Psilocybin	Glue	
				DMT (Dimethyltryptamine)		

PILLS – MEDICINES

Pills count as drugs when you take

- more of them or take them more often than the doctor has prescribed for you
- pills because you want to have fun, feel good, get "high", or wonder what sort of effect they have on you
- pills that you have received from a relative or a friend
- pills that you have bought on the "black market" or stolen

SLEEPING PILLS/SEDATIVES

Alprazolam	Glutethimide	Rohypnol
Amobarbital	Halcion	Secobarbital
Apodorm	Heminevrin	Sobril
Apozepam	Iktorivil	Sonata
Aprobarbital	Imovane	Stesolid
Butabarbital	Mephobarbital	Stilnoct
Butalbital	Meprobamate	Talbutal
Chloral hydrate	Methaqualone	Temesta
Diazepam	Methohexital	Thiamylal
Dormicum	Mogadon	Thiopental
Ethchlorvynol	Nitrazepam	Triazolam
Fenemal	Oxascand	Xanor
Flunitrazepam	Pentobarbital	Zopiklon
Fluscand	Phenobarbital	

PAINKILLERS

Actiq	Durogesic	OxyNorm
Coccilana-Etyfin	Fentanyl	Panocod
Citodon	Ketodur	Panocod forte
Citodon forte	Ketogan	Paraflex comp
Dexodon	Kodein	Somadril
Depolan	Maxidon	Spasmofen
Dexofen	Metadon	Subutex
Dilaudid	Morfin	Temgesic
Distalgesic	Nobligan	Tiparol
Dolcontin	Norflex	Tradolan
Doleron	Norgesic	Tramadul
Dolotard	Opidol	Treo comp
Doloxene	OxyContin	

Pills do NOT count as drugs if they have been prescribed by a doctor and you take them in the prescribed dosage.

Appendix C

Mechanical Turk Debriefing Form (Time 1)

Thank you for your participation in this research project. The purpose of this study is to learn how people think about themselves and the things that are important to who they are. As such, the current study utilized a large number of questionnaires in order to understand behavior, attitudes, and identity development across various domains.

Remember, this is a two-part study. Therefore, you will be asked enroll via Mechanical Turk for a follow-up session, which needs to occur in approximately 2 weeks. All of your questionnaire responses will remain strictly confidential. The second part will last approximately 30 minutes, and you will receive \$.25. A reminder message will be sent to you via Mechanical Turk's website, which will include access to part 2 of this study.

If you are concerned about the study questions asked and wish to speak with a professional, please contact one of the following resources:

National Alliance on Mental Illness (NAMI) Helpline
800-950-NAMI
info@nami.org

National Suicide Prevention Lifeline
800-273-TALK
24 hrs/day; 7 days/week
<http://www.suicidepreventionlifeline.org>

Centers for Disease Control (CDC) INFO
800-CDC-INFO
24 hrs/day; 7 days/week
<http://www.cdc.gov>

Subject Pool Debriefing Form

Thank you for your participation in this research project. The purpose of this study is to learn how people think about themselves and the things that are important to who they are. As such, the current study utilized a large number of questionnaires in order to understand behavior, attitudes, and identity development across various domains.

Remember, this is a two-part study. Therefore, you will be asked to enroll via SONA for part 2, which will occur in approximately 2 weeks. Session 2 will last 30 minutes in Psychology Bldg Room 361, and you will receive .5 credit. All of your questionnaire responses will remain strictly confidential.

A reminder email will be sent to you in the days prior to your scheduled Session 2 time. Please indicate your preferred email .

Preferred email address: _____

If you have any further questions regarding the nature of this study, or would like to request details of the results of the study, please feel free to contact:

Graduate Researcher: Kristina Decker (Mentor: Dr. Idia Thurston)
Psychology Building – Office 361
kdecker@memphis.edu

If you have concerns about the study questions asked and wish to speak with a professional, please contact one of the following resources:

University of Memphis Resources

Counseling Center (CCPC)
Wilder Tower, Room 214
(901) 678-2068

Psychological Services Center
Psychology Building, Room 126
400 Innovation Dr.
(901) 678-2147

The University of Memphis
Student Health Services
200 Hudson Health Center
(901) 678-2287

Community Resources

Shelby County Health Department
814 Jefferson Avenue
Memphis, TN 38105
(901) 544-7600

Memphis Sexual Assault Resource Center
1750 Madison Ave #102
Memphis, TN 38104
(901) 272-2020

Planned Parenthood
2430 Poplar Avenue #100
Memphis, TN 38112
(901) 725-1717

Appendix D

Hello,

The University of Memphis Institutional Review Board, FWA00006815, has reviewed and approved your submission in accordance with all applicable statuses and regulations as well as ethical principles.

PI NAME: Kristina Decker

CO-PI:

PROJECT TITLE: Behaviors, Relationships, and Identity Development

FACULTY ADVISOR NAME (if applicable): Idia Thurston

APPROVAL DATE: 1/22/2016

EXPIRATION DATE: 1/22/2017

LEVEL OF REVIEW: Expedited

Please Note: Modifications do not extend the expiration of the original approval

Approval of this project is given with the following obligations:

- 1. If this IRB approval has an expiration date, an approved renewal must be in effect to continue the project prior to that date. If approval is not obtained, the human consent form(s) and recruiting material(s) are no longer valid and any research activities involving human subjects must stop.**
- 2. When the project is finished or terminated, a completion form must be completed and sent to the board.**
- 3. No change may be made in the approved protocol without prior board approval, whether the approved protocol was reviewed at the Exempt, Expedited or Full Board level.**
- 4. Exempt approval are considered to have no expiration date and no further review is necessary unless the protocol needs modification.**

Approval of this project is given with the following special obligations:

Thank you,

James P. Whelan, Ph.D.

Institutional Review Board Chair

The University of Memphis.

Note: Review outcomes will be communicated to the email address on file. This email should be considered an official communication from the UM IRB.