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Associations of Perceived Parental Psychopathology with Mental Health Burden and Lifetime Drug Use in Gay, Bisexual, and other YMSM: The P18 Cohort Study

Perry N. Halkitis,

Center for Health, Identity, Behavior, and Prevention Studies, College of Global Public Health, and Department of Applied Psychology, Steinhardt School, and Department of Population Health, Langone School of Medicine, New York University, New York, USA

Marybec Griffin-Tomas,

Center for Health, Identity, Behavior, and Prevention Studies, New York University, New York, USA

Michael D. Levy,

Center for Health, Identity, Behavior, and Prevention Studies, New York University, New York, USA

Richard E. Greene,

Center for Health, Identity, Behavior, and Prevention Studies, Department of Medicine, Langone School of Medicine, New York University, New York, USA

Farzana Kapadia

Center for Health, Identity, Behavior, and Prevention Studies. College of Global Public Health Public Health, and Department of Population Health, Langone School of Medicine New York University, New York, USA

Abstract

Parental mental health may be a critical component in understanding the overlapping health burdens of mental health symptomatology and drug use in young men who have sex with men (YMSM), yet studies of YMSM have not fully examined these associations. To understand these relationships, data drawn from a study of gay, bisexual, and other YMSM were used examine associations between perceived parental psychopathology and the mental health symptomatology and drug use of YMSM. Findings suggest that YMSM reporting at least one parent with perceived depression, manic depression, schizophrenia, or antisocial behavior anytime during their childhoods were more likely to report higher levels of both depressive symptomatology and post-traumatic stress disorder (PTSD) than those reporting no perception of any of these psychopathologies in their parents. Number of different drugs uses in one's were higher among participants who perceived at least one parent as depressed. Mediation analyses indicated that the relationship between perceived parental depression and lifetime drug use of YMSM was mediated both by YMSM depression and YMSM PTSD. These results suggest that parental psychopathology plays an important role in the health of sexual minority men, a population with elevated levels of mental health burden and drug use across the lifespan.

Keywords

parental psychopathology; mental health; drug use; gay; bisexual; YMSM; syndemic

INTRODUCTION

Research indicates that offspring reared by parents with mental illness exhibit higher levels of psychopathology during their youth and adult lives across multiple diagnostic categories (Atwoli, Nock, Williams, & Stein, 2014; Hirshfeld-Becker et al., 2012; Mars et al., 2012; Rasic, Hajek, Alda, & Uher, 2014; Sanchez-Gistau et al., 2015; Singh et al., 2011). Atwoli et al. (2014) found that in a sample of over 4,315 adults aged 18 and older, any type of reported parental psychopathology increased the chances of suicidal ideation; in fact, findings suggested a dose-response relationship where an increasing number of reported parental mental illnesses was associated with greater lifetime suicidal ideation. A 10-year cohort study of 183 children of parents with diagnosed mental illness found that parental psychopathology predicted depression, major depressive disorder, and social phobia in their offspring; furthermore, the study found that the effects of a parent's psychopathology have long-lasting effects as their offspring continue to develop new mental health disorders as they progress to adolescence and young adulthood (Hirshfeld-Becker et al., 2012). Similarly, findings from the Yale Family Study indicated that high levels of parental psychopathology increased the risk of depression in children (Weissman, Leckman, Merikangas, Gammon, & Prusoff, 1984).

Moreover, the mental health of parents has been related to substance use in their children (Hirshfeld-Becker et al., 2012; Marmorstein, Iacono, & McGue, 2012; Oquendo et al., 2013; Stone, Becker, Huber, & Catalano, 2012). A study conducted by Stone et al. (2012) with 679 adolescent and adult offspring of parents with either bipolar or major depressive disorder found that their offspring were at increased risk for substance use disorders, regardless of age. Marmorstein et al. (2012) found that in a sample of 617 adoptive and non-adoptive families, parental psychopathology predicted an increased risk of psychopathology and substance use behaviors in their offspring, regardless of adoptive status. Over the last several decades numerous studies have established the strong association of parental psychopathology with both the mental health and substance during the youth and adult lives of their children (Beardslee & Gladstone, 2001; Green et al., 1991; Landau, Harth, Othnay, & Sharfheitz, 1972; Orvaschel, Weissman, & Kidd, 1980; Reinherz, Giaconia, Hauf, Wasserman, & Paradis, 2000; Schwartz, Dorer, Beardslee, Lavori, & Keller, 1990). These findings support strong associations between parental psychopathology and substance use disorders; while the mechanisms nor these potential causal pathways cannot be definitively established, the findings reflect the effects of both nature and nurture, both biology and environment..

While the above literature provide key insights on the associations between parental psychopathology with the mental health and substance of offspring, the majority of these studies were conducted in general population based samples, with little consideration of differentiating these relationships by the sexual orientation status of the offspring.

The absence of such information is of concern for several reasons. Compared to their heterosexual counterparts, sexual minority individuals are estimated to use illicit substances at rates two to four times higher than that of the general population (Green & Feinstein, 2012; Kelly, Davis, & Schlesinger, 2015), and within the general population, emerging adults ages 18–25 demonstrate the highest rates of substance use when compared to other age groups (Allem, Lisha, Soto, Baezconde-Garbanati, & Unger, 2013; Goodman, Henderson, Peterson-Badali, & Goldstein, 2015; Huh, Huang, Liao, Pentz, & Chou, 2013). In addition, sexual minority youth also exhibit higher risk for co-occurring mental health burdens and substance use (Cochran, 2001; Cochran, Mays, & Sullivan, 2003; Sandfort, de Graaf, Bijl, & Schnabel, 2001). Evidence from studies examining such co-morbidities indicates that these health conditions may exacerbate each other, creating mutually reinforcing epidemics, (i.e., a syndemic) and even greater declines in the overall health of sexual minority individuals (Halkitis, 2010; Halkitis, Wolitski, & Millett, 2013). Both, the mental health and substance use of sexual minority youth may be explained, in part, by the stigma and discrimination, and violence that sexual minority youth experience within their families (Bouris et al., 2010; Needham & Austin, 2010; Ryan, Huebner, Diaz, & Sanchez, 2009) conditions that may even more be heightened in light of untreated parental psychopathology. These vulnerabilities towards mental health illness may be exacerbated in the emerging adulthood due to heightened experiences of gay related psychosocial burdens imparted by social and structural challenges that sexual minority individuals face (Halkitis, Wolitski, et al., 2013; Lewis, Derlega, Griffin, & Krowinski, 2003; Meyer, 1995). In effect, parental rejection and stigmatization are key factors in explaining these health challenges faced by sexual minority youth, and these challenges may worsen in light of the burdens that sexual minority youth experience from society at large. These health conditions must be understood in the context of heightened health challenges faced by boys and men broadly, and sexual minority boys and men particularly (Thorpe & Halkitis, 2016) and potentially through the mechanism of attachment which is rooted in the relationship of the sexual minority males with their parents. (Cook & Caleb, 2016). The enduring effects of stigma on substance use and mental health have been demonstrated (Link, Struening, Rahav, Phelan, & Nuttbrock, 1997), and there is every reason to believe that stigma emanating from parents on their sexual minority sons, compounded by state sanctioned discrimination and stigmatization (Halkitis, Wolitski, et al., 2013), will have the same effects.

The application of syndemic theory (Singer, 1994) to understanding the persistence of the HIV epidemic among sexual minority men (Halkitis, 2010; Halkitis, Wolitski, et al., 2013) holds that social conditions and psychosocial states due to the discrimination and victimization faced by sexual minority men may heighten their risk for multiple health problems including HIV acquisition, substance use, and mental health burden (Halkitis, Wolitski, et al., 2013). Although several investigations applied syndemic theory to understanding HIV and related health disparities in YMSM (Halkitis et al., 2015; Halkitis, Kapadia, et al., 2013; Halkitis, Moeller, et al., 2013; Moeller, Halkitis, & Surrence, 2011; Mustanski, Garofalo, Herrick, & Donenberg, 2007; Storholm, Halkitis, Siconolfi, & Moeller, 2011) the role that parental psychopathology may play in heightened mental health and substance use problems faced by sexual minority men has not been fully considered in this paradigm. Specifically, parental psychopathology is conceptualized as a psychosocial burden

in the lives of emerging adult sexual minority men, which may predispose both mental health burdens and substance use. Thus, the objective of the present study is to (1) document perceived parental psychopathology in a racially/ethnically, and socioeconomically diverse sample of $n=600$ YMSM between the ages of 18–19 and (2) examine the relationship between perceived parental psychopathology with substance use and mental health burdens among sexual minority adults. Specifically, we will examine whether the relationship between perceived parental psychopathology and individual substance use is mediated by individual mental health. More information on such associations may provide health providers and other social services with additional background and information on how to best provide comprehensive mental health and substance use counseling.

METHODS

Study Design and Participants

Data for the present study were derived from the baseline visit of the P18 Cohort Study, for which, complete details and procedures appear in prior publications (Halkitis, Kapadia, et al., 2013; Halkitis, Moeller, et al., 2013). Briefly, P18 is a prospective study of the sexual behaviors, drug use and mental health burdens that may co-occur to produce syndemic conditions in a cohort of $n=600$ racially/ethnically and socioeconomically diverse young gay, bisexual and other YMSM residing in the New York City metropolitan area. To be eligible to participate in the study, individuals had to report (1) being male assigned at birth, (2) being 18–19 years old at the time of screening, (3) an HIV-negative or unknown status, (4) having sex with a man in the preceding 6 months, and, (4) residing in the NYC metropolitan area. Participants were recruited from May 2009 to June 2011 via active and passive recruitment techniques. At the baseline visit, participants completed an audio computer-assisted self-interviewing (ACASI) survey with socio-demographic, mental health, and psychosocial measures. Participants were also tested for HIV oral antibodies via OraQuick Advance ® HIV-1/2 Rapid Antibody Test. A federal certificate of confidentiality was obtained for this study and the New York University Institutional Review Board approved all study protocols. As perceived parental psychopathology was only ascertained at the baseline visits, the present study employs only baseline data for these participants.

Measures

DEMOGRAPHIC CHARACTERISTICS—Participants self-reported their race/ethnicity, which was then collapsed into four categories: Hispanic/Latino, Black (non-Hispanic), White (non-Hispanic), and Other (comprised of Asian, Native Americans, and mixed race individuals). Perceived familial socioeconomic status (SES) was measured via a 5-point Likert scale (“lower”, “lower middle”, “middle”, “upper middle”, “upper”), which was collapsed into three categories: lower, middle, and upper perceived familial SES. Perceived familial SES was ascertained at baseline as the majority of the sample was in school and not likely to have their own incomes. Moreover, perceived familial SES has been shown to be a strong indicator of health in adolescents (Goodman, Huang, Schafer-Kalkhoff, & Adler, 2007).

PERCEIVED PARENTAL PSYCHOPATHOLOGY—All participants were asked to respond to a series of items to characterize their perceptions of depression, manic depression, schizophrenia, and antisocial behavior separately for mothers and fathers. To identify these mental health conditions, participants were asked to respond (yes/no/don't know) to the following four items: (1) for depression OR depressive episodes: *“Did either of your parents ever suffer from depression, did they feel so low for a period of weeks or months that they hardly ate or couldn't work or whatever they usually did?”* (2) for manic depression or episodes of manic depression: *“Did either of your parents ever have a period of at least two weeks when others were concerned because they suddenly became active day and night and seemed not to need any sleep and talked much more than usual?”* (3) for schizophrenia: *“Did either of your parents have an illness lasting as least six months when they saw visions or heard voices that weren't really there or thought people were spying on them or plotting against them?”* and (4) for antisocial behavior: *“Are/were either of your parents the kind of people who never held a job for long, or got into fights or got into trouble with the police from time to time?”* These items from previously administered items included in the National Institute of Mental Health Epidemiologic Catchment Area Survey (Eaton & Kessler, 2012; Walsh, MacMillan, & Jamieson, 2002).

MENTAL HEALTH BURDEN—We assessed symptomatology for both depression and post traumatic stress disorder (PTSD). A validated 10 question measure developed by the Trauma Awareness and Treatment Center adapted from the DSM-IV was used to assess the participant's symptoms of PTSD (Foa, Cashman, Jaycox, & Perry, 1997). Questions in the scale are designed to assess the participant's symptoms in the previous week of upsetting memories, flashbacks, and avoidance of places or things associated with the trauma. Depressive symptomatology was captured by the Beck Depression Inventory (BDI) (Beck, Steer, & Carbin, 1988). The BDI has a high internal consistency and test-retest reliability. It consists of 21 items, which assess common symptoms of depression, including sadness, feelings of worthlessness and anhedonia. Participants each received a total BDI ($\alpha = .91$) and total PTSD score ($\alpha = .88$).

DRUG USE—Participant lifetime drug use behaviors were assessed using questions adapted from the Substance Abuse and Mental Health Services Administration's (SAMHSA) National Drug Use Survey (2007). Participants were asked to report on lifetime history of substance use, which included the following substances alcohol (more than just a sip or two were taken), powder cocaine, crack cocaine, ecstasy, gamma hydroxybutyrate (GHB), hallucinogens, heroin, inhalant including, nitrates (i.e., poppers), nitrous oxide, and other inhalants, ketamine, marijuana or hashish, methamphetamine, as well as non-prescription use of opioids/pain drugs, stimulants, steroids, tranquilizers, and male enhancement drugs. Common names and examples of each drug were provided and for each drug participants reported using, they were also asked to provide their age at first use. Lifetime tobacco use was assessed via a single item measure “Have you ever smoked a cigarette?” These measures were adapted previously from questions asked in the Substance Abuse and Mental Health Services Administration's National Drug Use Survey (2007). Dichotomous (yes/no) responses were obtained for each of the 19 drugs. For the purposes of this investigation, we computed two variables to capture the number of different drugs that

each participant reported using: all drug use (including cigarettes and alcohol) and illegal drug use (excluding alcohol and cigarettes).

For those drug which the participants indicated that he had used the drugs, a follow up question asked for the age of first use. Using these data we created two additional composite variables: age at first use of any drug use and age of first use of any illegal drug use. In creating these composite variables, ages of 5 or less for individual drug age onset variables were treated as missing in the likely event that the participant did not use the substance of his own volition at that age.

Analytic Plan

First, exploratory data analyses were conducted to describe the distribution of demographic and health characteristics, and each of the four perceived parental psychopathology items. In addition, bivariate analyses were conducted, using examine chi-square tests of independence, to examine statistically significant differences in perceived parental psychopathology by individual by the two keep demographic variables, race/ethnicity and perceived familial SES. We tested for statistically significant differences in participants depressive symptomology and PTSD as well as number of lifetimes substances reported across each of the four perceived parental psychopathology items, using independent samples t-tests. Two substance use variables were used in these analyses: (1) total number of lifetime substances used and (2) total number of illegal (excluding alcohol and tobacco) substances used. Because the two participant-level mental health variables were analyzed separately for each type of perceived parental psychopathology using independent samples t-tests, we applied a Bonferroni correction to account for the possibility of inflated Type I errors due to multiple comparisons (Dunn, 1961). This correction was also applied for testing differences for the two substance use variables. Finally, in order to determine the relationships between perceived parental psychopathology, individual mental health and substance use, separated mediation models were created – one for individual depressive symptomology and the second for individual PTSD. These models were tested using the Sobel tests to assess the statistical significance of the two indirect relationships (1) between parental psychopathology and individual mental health (depressive symptomology or PTSD) and (2) individual mental health (depressive symptomology or PTSD) and substance use as well as the direct relationship between perceived parental psychopathology and individual substance use. These models are directed in part by the literature which supports the emergence of mental health challenges before substance use in young adults (Christie, Burke, Regier, Rae, Boyd, & Locke, 1988).

RESULTS

The analytic sample consists of 598 young men who have sex with men (YMSM) between the ages of 18 and 19 at the time of assessment. Two of the 600 participants were excluded from the sample due to incomplete baseline data. Table 1 describes the characteristics of the total sample and stratified by race/ethnicity. The majority of the participants self-identified as Hispanic/Latino (38.3%, n=229) and the sample is primarily comprised of participants who are non-white (71.1%, n=425). Perceived familial SES was somewhat

evenly distributed ($\chi^2(6) = 89.26, p < .001$), and White YMSM were both more likely to perceive families as high SEs and less likely as low SES than the other three racial/ethnic groups. For descriptive purpose, we also provide data on the proportion of the participants using each of the 19 drug classes. Differences emerge with regard to total lifetime drug use ($F(3, 594) = 8.09, p < .001$) and total lifetime illicit drugs ($F(3, 594) = 6.99, p < .001$). Post-hoc comparisons indicate that for both variables, Hispanics reported more total lifetime drugs than both Black Non-Hispanics and those groups as Other race/ethnicity (both $p < .05$), while White Non-Hispanics report more total lifetime drugs than Hispanics, Black Non-Hispanics and others (all $p < .01$). Also there was a difference at age of first drug use ($F(3, 594) = 4.75, p < .01$), with both Blacks YMSM, White YMSM, and other YMSM indicating an older age at first drug use than Hispanics ($p < .01$). The vast majority of the participants indicated lifetime use of alcohol, cigarettes/tobacco, and marijuana, with about one-fifth reporting lifetime use of Ecstasy and pain drugs without a prescription. Differences, reported across racial/ethnic groups for lifetime use of cocaine, hallucinogens, marijuana, nitrous oxide, pain drugs without a prescription, stimulants without a prescription, as well as alcohol and cigarettes. In all cases, the highest proportion was indicated among White YMSM.

Perceived Parental Psychopathology

Perceived parental psychopathology, by type, is reported in Table 2 for the total sample, stratified by race/ethnicity, and perceived familial SES. The most common form of parental psychopathology reported by the participants was depression (36.8%, $n=220$), with schizophrenia being least reported (2.7%, $n=16$). Differences were noted for depression by race/ethnicity ($\chi^2(6) = 89.26, p < .001$), with Hispanics endorsing this more than the other groups, and for antisocial behavior ($\chi^2(3) = 10.41, p = .015$) with Blacks reporting this at the highest frequency. SES differences were detected for perceived parental schizophrenia ($\chi^2(2) = 6.49, p = .039$) and antisocial behavior ($\chi^2(2) = 27.78, p < .001$) with those of low SES indicating the highest prevalence.

Mental Health Burden and Drug Use in Relation to Perceived Parental Psychopathology

Participants in this sample reported using a mean of 3.72 different drugs (including alcohol and cigarettes) over their lifetimes ($SD = 2.80$, Median = 3, Range 0 – 16) and a mean of 2.11 illegal drugs were reported over their lifetime ($SD = 2.48$, Median = 1, Range 0 – 14). With regard to mental health burden, mean scores were 16.85 ($SD = 7.07$, Range 0 – 40) and 9.95 ($SD = 8.79$, Range 0 – 63) for PTSD and depression, respectively. These scores reflect minimal level of both depressive symptomatology and mild levels of PTSD. The PTSD scores were highly associated with BDI scores ($r = .69, p < .001$), number of different drugs used ($r = .14, p < .01$) and illegal drugs ($r = .13, p < .01$). Similarly, depression was related with the variables ($r = .25, p < .001$ for all drugs and all illegal drugs).

Next, drug use and mental health of the participants were examined in relation to each of the four perceived parental psychopathology variables. As shown in Table 3, YMSM who perceived at least one parent as depressed themselves indicated higher levels of depression, ($t(586) = 3.99, p < .01$); these individuals also reported elevated levels of PTSD, as well as a greater number of different drugs used over the lifetime. Higher levels of both

depression and PTSD were also reported by YMSM reporting at least one parent with manic depression, schizophrenia, and antisocial behavior. However, no statistically significant differences were detected for lifetime drug use.

In addition, differences emerged with regard to age of onset of drug use. Participants who reported a depressed parent initiated drug use at a younger age than those not reporting a depressed parent ($M = 14.13$ vs. $M = 14.74$; $t_{adj}(392) = 2.91$, $p < .01$). The same difference was found among those reporting a parent with schizophrenia ($M = 12.20$ vs. $M = 14.59$; $t_{adj}(14) = 2.66$, $p = .02$), namely that those with a parent perceived to be schizophrenic starting using drug at a significantly younger age than those without such a parent.

Modeling the Role of Parental Psychopathology on Mental Health Burden and Drug Use

Given the strong associations between perceived parental depression with both the mental health and lifetime drug use in YMSM, we sought to model the relations of these three variables. Our first analysis was directed by the hypothesis that YMSM depression mediates the relationship between perceived parental depression and drug use, using the variable of lifetime drug use (which includes) alcohol and cigarettes. This model is directed by an underlying concepts that parental psychopathology precedes health behavior of their children; and mental health precedes substance use, as suggested by Christie et al. (1988). The model, shown in Figure 1, achieves significance (Sobel test = 3.44, $SE = .07$, $p < .001$). This mediation model indicates that the depression of sexual minority men explains their drug use and that their depression is explained by the psychopathology of their parents, mediating the relationship between parental psychopathy and their own drug use. The mediation is also supported by examining the b-weights associated with parental depression in the regression models explaining drug use of the young men, which decreases from $b = .624$ in the simple regression model to $b = .384$ in the multiple regression that also incorporates the young men's depression as a predictor. Similar findings also are achieved when the mediation model is tested with the second composite drug variable, lifetime use of illegal drugs. (Sobel test = 3.50, $SE = .06$, $p < .001$).

We also examined the extent to which the young men's PTSD mediates the relationship between perceived parental depression and lifetime drug use. As was the case when using young men's depression as the mediator, the model using the young men's PTSD as mediator also achieves significance (Sobel test = 2.55, $SE = .05$, $p = .01$). The model is shown in Figure 2, and depicts that the influence of parental depression on young men's drug use is mediated by the young men's PTSD. This finding is also supported by the fact supported by the b-weight associated with parental depression decreases from $b = .624$ in the simple linear regression explaining drug use to $b = .512$ in the multiple linear regression which also includes the young men's PTSD as a predictor. The mediating effects of PTSD is also supported when modeling lifetime illegal drug use (Sobel test = 2.46, $SE = .04$, $p = .01$),

DISCUSSION

The extant literature supports the association between parental psychopathology and mental health burdens in their offspring. However, studies have not examined these relationships specifically in the sexual minority population, which has been shown to be more vulnerable

to mental health burden and drug use than heterosexuals (Cochran et al., 2003; Institute of Medicine, 2011; King et al., 2008). For emerging adult gay, bisexual, and other YMSM, such mental health burdens may compromise their overall health, placing these young men at risk for the acquisition of HIV, which has disproportionately affected gay men for over three decades (Halkitis, Wolitski, et al., 2013).

Our findings support the negative sequelae associated with being raised by a parent who is perceived by her/his child as depressed. Specifically, in our sample of YMSM who were ages 18–19 at the time of the baseline assessment, perceived parental depression was associated with all of the health outcomes we assessed in these young men, namely depression, PTSD, and lifetime drug use. The role that parental depression may play in the health of their offspring has previously been documented (Fendrich, Warner, & Weissman, 1990). For the men in our sample, whose own depression and drug use may be directed by parental depression, such impacts may even be more profound. Elevated levels of depression in sexual minority men has been linked to sexual risk taking (Alvy et al., 2011), substance use (Holt et al., 2012), and, as has been noted previously, these factors have been drivers of HIV acquisition throughout the AIDS epidemic (Halkitis et al., 2011). Moreover, our findings suggest that the effect of parental depression on drug use in YMSM is mediated by YMSM mental health, specifically depression and PTSD. Taken together, these results indicated that the mental health of YMSM is both directly associated with their drug use and is influenced by the mental health of their parents.

In addition to the role of parental depression, our work also demonstrates the negative consequences associated with other parental psychopathologies, namely manic depression, schizophrenia, and antisocial behavior. Specifically, the young men who reported perceiving any of these psychopathologies in at least one parent, themselves demonstrated higher levels of depression and PTSD. These findings align with the extant literature (Harold et al., 2011) and as has been suggested by Singh et al. (2011), the effects of parental psychopathology on the mental health of their offspring is likely realized through the environmental circumstances created in homes where parents are struggling with mental illness. However, the role of genetics and neuroadaptive systems (Cloninger, 1999) provide another explanation the development of mental health and substance use in YMSM. Thus all of these findings must be understood in relation to both nature and nurture.

The potential impact of parental psychopathology requires that we attend to such familial conditions since they are likely to compromise the well-being of their children as they emerge into adulthood, a period of high instability and exploration (Arnett, 2005). This epoch may be even more unstable for gay, bisexual, and other YMSM as they navigate same sex desires in a heterosexist society. For young sexual minority men, the impact of parental psychopathology may be even more profound since these conditions do not exist in isolation and are often accompanied by other psychosocial burdens. For many young sexual minority men, additional life stressors may take the form of familial rejection due to their sexual orientation as well as the homonegativity and homophobia that they may experience from intrapersonally and interpersonally within their own communities and society at large, and research has documented the numerous negative mental health outcomes, including drug use, among sexual minority individuals as they emerge into adulthood due to the

experience of familial rejection (Ryan et al., 2009) and societal homophobia (Birkett, Espelage, & Koenig, 2009). Therefore, these conditions must be considered in tandem with the experience of perceived parental psychopathology as gay, bisexual, and other YMSM emerge into adulthood.

The theory of syndemics posits that health problems are overlapping and reinforcing; moreover, these negative health consequences are directed by psychosocial burdens and other socially produced conditions (Halkitis, Moeller, et al., 2013). While the research to date has demonstrated the merits of this paradigm in explaining the overlapping health problem of young gay, bisexual, and other YMSM as well as the psychosocial drivers that fuel them (Halkitis et al., 2015; Halkitis, Kapadia, et al., 2013; Halkitis, Moeller, et al., 2013; Moeller et al., 2011; Mustanski et al., 2007; Storholm et al., 2011), the role of perceived parental psychopathology, an additional burden, has yet to be fully examined in relation to the life experiences of YMSM. The findings of our investigation suggest that the role of parental psychopathology cannot be ignored in understanding the mental health of emerging adult gay, bisexual, and other YMSM. Moreover, the synergistic effects of parental psychopathology with the other burdens that YMSM experience, namely family rejection, discrimination, and homophobia, may provide a powerful means for understanding the compromised health young sexual minority men experience. Such effects may be even more pronounced among young racial and ethnic minority men and men of limited economic means and limited access to mental health services (Hightow-Weidman et al., 2011; Storholm et al., 2013). In effect, the synergistic effects of comprised mental health of parents, coupled with familial rejection, societal discrimination, and homophobia are likely to elevate the mental health and drug use problems YMSM face as they emerge into adulthood and, if unchecked, potentially throughout their lives. This perspective suggests that we attend to familial mental health as much as psychosocial burdens as we deliver services and programming to sexual minority men. In addition, these findings suggest that more nuanced investigations are needed to delineate the effects of the complex intersection of parental psychopathology, familial rejection, homophobia, discrimination, and societal stigma on the health of emerging adult sexual minority men.

Limitations

These findings must be considered in light of a few limitations. First, we assessed perceived parental psychopathology not actual psychopathology, and thus these significant associations must be cast in light of how YMSM viewed and experienced their parents' mental health and do not reflect actual clinical diagnoses of their parents' mental health, and may be either under or overestimated. In the absence of an intergenerational cohort, and clinical assessments of parents, perceived parental psychopathology serves as a good but imperfect measure of the constructs of interest. Although a more rigorous study design would involve recruitment of parents with direct assessment of psychopathologies, this is not possible. First, it would be logistically challenging to recruit both parents and their offspring when many of these offspring may not have come out to their parents. Thus, to only include parents and children who have come to their parents would most likely bias this sample. Second, a longitudinal investigation is not feasible as it is not possible to recruit parents with young children as they may or may not be aware of their sexual identity. Nonetheless, it should

be noted that a perception of parental psychopathology may be as vital in understanding the mental health of YMSM as actual parental psychopathology, and is supported by other recent studies that demonstrate the significance of more generic constructs, such as familial adversity, in explaining the syndemic in YMSM (Herrick, Stall, Egan, Schrager, & Kipke, 2014). Second, other than depression, very few of the young men reported the presence of manic depression, schizophrenia, and antisocial behavior in their parents. These small numbers prevented us from undertaking more granular investigations to differentiate the effects of maternal and paternal perceived psychopathology and to delineate the effects of the primary caregiver (i.e. mother, father, both or some other individual), and may explain why the relations of these parental states to YMSM drug use failed to achieve significance. Third, the mental health of YMSM was assessed via measures assessing symptomatology rather than actual clinical diagnoses, although the instruments we utilized are implemented in research settings and possess strong psychometric properties. Fourth, we note that our sample is a convenience sample and while the sample is highly diverse in terms of race, ethnicity, and socioeconomic status it is not necessarily representative of the population of YMSM since it is also an urban sample. Finally, for these first set of analyses we have utilized only the baseline data from the cohort study. As a result, the cross sectional nature of the data used are subject to spurious association, although we have every reason to believe these patterns are evidenced across time as we have shown the persistence of the syndemic across time in this sample (Halkitis et al., 2015).

CONCLUSIONS

The knowledge we have generated suggests that we must attend to the role of parental psychopathology in understanding the emergence of health issues in young gay, bisexual, and other YMSM. The health of YMSM must thus be considered not only in relation to the burdens created by experiences of rejection and societal discrimination, but also the parental psychopathologies that these young men experience in their childhoods and adolescence, and the potentially damaging synergistic effects that may emerge when young sexual minority men are raised within this context. In effect, familial circumstances and potential familial adversities may be key elements in understanding syndemic production as YMSM emerge into adulthood, and may provide critical insights into how the health of YMSM may be diminished throughout the course of the lifespan beginning in childhood. Embedding such understandings into the syndemic framework, coupled with the buffering effects that resilience may play (Wilson et al., 2014), allows us to create an even more holistic framework for understanding addressing the health of sexual minority men that builds upon the well-established effects that psychosocial burdens play in syndemic production.

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Sobel test = 3.44, $p < .001$

FIGURE 1.

YMSM Depression as Mediator of Perceived Parental Depression on YMSM Drug Use

Sobel test = 2.55, $p < .01$

FIGURE 2.

YMSM PTSD as Mediator of Perceived Parental Depression on YMSM Drug Use

TABLE 1

Participant Demographic and Health Characteristics (N = 598)

	Black Non-Hispanic (n = 89)		White Non-Hispanic (n = 107)		Hispanic (n = 229)		Other (n = 173)		Total Sample (N = 598)
	M (SD)		M (SD)		M (SD)		M (SD)		M (SD)
Depression	10.00 (9.42)		9.12 (7.94)		10.56 (9.51)		9.84(7.92)		9.95 (8.79)
PTSD	16.83 (7.63)		16.08 (5.92)		17.26 (7.54)		17.22 (7.28)		16.84 (7.07)
Total Lifetime Drugs (includes Alcohol and Cigarettes) ***	3.04 (2.19)		4.47 (3.12)		3.73 (2.69)		3.07 (2.64)		3.37 (2.80)
Total Lifetime Illicit Drugs ***	1.54 (1.84)		2.78 (2.86)		2.06 (2.40)		1.67 (2.23)		2.11 (2.48)
Age at First Drug (includes Alcohol and Cigarettes) **	15.05 (2.12)		14.68 (1.97)		14.09 (2.54)		14.79 (2.31)		
Age at First Illicit Drug	15.95 (1.71)		15.81 (1.78)		15.45 (2.26)		15.74 (2.00)		
	% (n)		% (n)		% (n)		% (n)		% (n)
Perceived SES ***									
Low	53.9 (48)		14.5 (25)		41.0 (94)		30.8 (33)		33.4 (200)
Middle	33.7 (30)		32.9 (57)		41.9 (96)		36.4 (39)		36.1 (222)
High	12.4 (11)		52.6 (91)		17.0 (39)		32.7 (35)		29.4 (176)
Alcohol *	89.9 (80)		95.4 (165)		91.7 (210)		82.2 (88)		90.8 (543)
Cigarettes ***	60.7 (54)		75.7 (131)		75.5 (173)		57.9 (62)		70.2 (420)
Cocaine **	10.1 (9)		23.7 (41)		15.7 (36)		10.3 (11)		16.2 (97)
Crack Cocaine	0.0 (0)		2.9 (5)		2.6 (6)		0.9 (1)		2.0 (12)
Ecstasy (MDMA)	14.6 (13)		20.2 (35)		23.6 (54)		19.6 (21)		20.6 (123)
Erectile Enhancers without Rx	3.4 (3)		4.0 (7)		1.3 (3)		0.9 (1)		2.3 (13)
GHB	1.1 (1)		1.7 (3)		1.3 (3)		0.9 (1)		1.3 (8)

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	Black Non-Hispanic (n = 89)		White Non-Hispanic (n = 107)		Hispanic (n = 229)	Other (n = 173)	Total Sample (N = 598)
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Hallucinogens ***	6.7 (6)	22.5 (39)	10.9 (25)	7.5 (8)	2.8 (17)		
Heroin	0.0 (0)	5.2 (9)	2.2 (5)	2.8 (3)	2.8 (17)		
Inhalants (Nitrous Oxide) **	0.0 (0)	10.4 (18)	4.4 (10)	5.6 (6)	5.7 (34)		
Inhalant Nitrates (Poppers)	16.9 (15)	12.7 (22)	14.4 (33)	12.1 (13)	13.9 (83)		
Inhalants (Other)	3.4 (3)	6.4 (11)	6.6 (15)	4.7 (5)	5.7 (34)		
Ketamine	1.1 (1)	3.5 (6)	2.2 (5)	2.8 (3)	2.5 (15)		
Marijuana **	69.7 (62)	79.8 (138)	71.6 (164)	60.7 (65)	71.7 (429)		
Methamphetamine	2.2 (2)	2.9 (5)	3.1 (7)	0.5 (3)	2.8 (17)		
Pain Drugs without Rx ***	12.4 (11)	32.9 (57)	23.6 (54)	18.7 (20)	23.7 (142)		
Steroids without Rx	0.00 (0)	0.2 (1)	0.4 (1)	0.2 (0)	0.5 (3)		
Stimulants without Rx ***	9.0 (8)	27.7 (48)	12.2 (28)	12.1 (13)	16.2 (97)		
Tranquilizers without Rx	0.5 (3)	18.5 (32)	10.0 (23)	2.8 (3)	10.2 (61)		

* p .05

** p .01

*** p .0001

TABLE 2
Perceived Parental Psychopathology by Participant (YMSM) Race/Ethnicity and Socioeconomic Status

	Depression ** % (n)	Manic Depression % (n)	Schizophrenia % (n)	Antisocial Behavior * % (n)
Race/Ethnicity				
Black Non-Hispanic	22.4 (19)	4.7 (4)	2.3 (2)	19.1 (17)
White Non-Hispanic	38.6 (66)	5.8 (10)	1.9 (2)	9.3 (11)
Hispanic	44.1 (100)	8.8 (20)	4.4 (10)	10.5 (24)
Other	33.3 (35)	4.8 (5)	1.2 (2)	6.4 (10)
	Depression ** % (n)	Manic Depression % (n)	Schizophrenia * % (n)	Antisocial Behavior *** % (n)
Perceived Familial SES				
Low	43.8 (85)	8.8 (17)	5.1 (10)	19.1 (38)
Middle	34.7 (76)	7.3 (16)	1.4 (3)	8.6 (19)
High	33.7 (59)	3.4 (6)	1.7 (3)	2.8 (5)
Total Sample	36.8 (220)	6.5 (39)	2.7 (16)	10.4 (62)

* p .05
** p .01
*** p .001

Association of Perceived Parental Psychopathology with YMSM Mental Health Burden and Drug Use

TABLE 3

Perceived Parental Psychopathology																	
		Depression				Manic Depression				Schizophrenia				Antisocial Behavior			
		Yes (220)	No (368)	t	p	Yes (39)	No (549)	t	p	Yes (16)	No (577)	t	p	Yes (62)	No (535)	t	p
Illegal Drugs	Mean	2.46	1.93	2.49	.001	2.26	2.11	0.37	.99	1.88	2.12			2.53	2.06		
	SD	2.80	2.27			2.48	2.49			2.47	2.48	0.39	.61	2.70	2.44	1.33	.38
All Drugs	Mean	4.13	3.51	2.62	.03	4.03	3.70	0.72	.64	3.44	3.73			4.15	3.67		
	SD	3.06	2.63			2.68	2.82			2.78	2.80	0.42	.55	3.01	2.76	1.20	.61
PTSD	Mean	18.25	15.96	3.74	.01	20.95	16.51	2.78	.001	24.75	16.62			19.19	16.58		
	SD	7.42	6.75			9.83	6.78			9.21	6.92	3.50	.01	8.57	6.84	2.77	.03
Depression	Mean	11.80	8.71	3.99	<.01	14.87	9.51	2.86	<.01	18.75	9.67			14.29	9.45		
	SD	9.68	8.00			11.50	8.47			14.81	8.46	2.44	<.001	10.57	8.44	4.16	<.01