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**Speaking Truth to Power: How Black Twitter Subscribers Discuss Mental and Emotional Wellbeing
in Relation to Drug Use, Death, and Everyday Life**

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An abstract of

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Abstract

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By Joni-Leigh Webster

This dissertation explores the lasting impact of the war on drugs on the lives of Black women and men by investigating how processes of racialization and racialized gender oppression affect access to prescription drugs and nonmedical prescription drug use (NMPDU). I apply intersectional and Black Feminist frames to understand how Black women and men engage in NMPDU as a form of resistance to negative images of Black people who use drugs, utilizing Twitter (“X”) as a site of memory to articulate drug use experiences. In paper one, I employ qualitative thematic analysis of tweets guided by intersectional analytic methods to determine reasons for, patterns of, and side effects of nonmedical prescription opioid use among Black men Twitter subscribers. I learned that hip-hop is a cultural marker by which Black men explain opioid use behaviors tied to sex, mental health, and social interactions. Paper two examines how racial capitalism shapes Black women’s decisions to engage in nonmedical prescription stimulant use (NMPSU) from the perspective of the strong Black woman controlling image as Black women manage ADHD and labor-related and co-occurring stressors. I use the transactional stress process model to evaluate Black women’s coping processes and find that while Black women express positive identity when accomplishing goals linked to work and school, co-occurring stressors, difficulty meeting expectations, and lack of access to prescription stimulants contributes to negative mental health outcomes, including suicidal ideation. Lastly, paper three uses text analysis to explore the validity of natural language processing techniques to detect emotion, sentiment, and topics about NMPSU among Black women and men. Although research indicates that current emotion lexicons and sentiment dictionaries accurately assess emotion and sentiment for Twitter subscribers writ large, I observe that they fall short of detecting the emotions and sentiments of Black women and men. However, topic models suggest that prescription stimulant dependence is prominent in conversations about NMPSU among women whereas hip-hop is more important to men’s conversations.

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Dedication

“& this is for Colored girls [and queer folks] who have considered suicide/ but are movin towards the ends of their own rainbows” – Ntozake Shange

To all oppressed and colonized people, we will see freedom in our lifetimes.

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Chapter 1: Introduction

“You want to know what this was really about? [Ehrlicman] asked with the bluntness of a man who, after public disgrace and a stretch in federal prison, had little left to protect.

“The Nixon campaign in 1968, and the Nixon White House after that, had two enemies: the antiwar left and Black people. You understand what I’m saying? We knew we couldn’t make it illegal to be either against the war or Black, but by getting the public to associate the hippies with marijuana and blacks with heroin, and then criminalizing both heavily, we could disrupt those communities. We could arrest their leaders, raid their homes, break up their meetings, and vilify them night after night on the evening news.

Did we know we were lying about the drugs? Of course, we did.” Dan Baum – *Legalize it All*, 2006

Since 2011, there has been a reversal in opioid-involved mortality, with annual percentage increase of opioid-involved and stimulant-involved overdose death highest among Black women and men in comparison to White peers (Friedman and Hansen, 2022; Townsend et al., 2022; Furr-Holden et al., 2021; Althoff et al., 2020). Yet, greater attention is paid to White people who use drugs because of rises in deaths among middle and upper socioeconomic status White women and men (Herzberg et al., 2023). Whereas morbidity and mortality from drugs have conscripted Black, Latinx, and American Indian people who use drugs to deviance, racialization in the form of Whiteness has avoided such pejorative labeling by juxtaposing them to Black and Latinx populations (Herzberg et al., 2023; Ramsey, 2023; Alexander, 2010; Provine, 2007). White people who use drugs are viewed as victims subject to the disease of addiction and consequent to this, conversations about the opioid epidemic have shifted political commentary and media discussions to more empathic portrayals of drug use rather than those engendering violence at political and judicial levels since White mortality from overdose could no longer be hidden by social class (Herzberg et al., 2023). The war on drugs acts a racial and gender project through policies and media representations to present drug use among Black people as part of the sequelae of the culture of poverty

without acknowledging Black women and men as victims and casualties in this lost war (Cooper, 2015; Omi and Winant, 2014; Windsor et al., 2012; Jordan-Zachery, 2009; Jordan-Zachery, 2008; Provine, 2007; Bonilla-Silva, 2006). In this way, controlling images are the medium by which policy makers justify control by using media to propagate negative stereotypes of Black people who use drugs (Collins, 2000).

Stigmatization of drug use without acknowledging the reasons for it perpetuate risk by creating an unholy union wherein oppression through controlling images of Black people exacerbate the likelihood of death while reducing access to treatment and heightening exposure to adulterated or illegalized drugs along raced and gendered lines. Rises in mortality from drugs among Black people is driven by fundamental causes of disease (Banks et al., 2023; Gondre-Lewis et al., 2022; Nicholson, 2020; Phelan and Link, 2015; Phelan et al., 2010; Williams and Collins, 2001; Link and Phelan, 1995) and neighborhood characteristics that make illegalized drugs and drug products contaminated with synthetic opioids more accessible in Black communities (Ciccarone, 2021; Nicholson and Ford, 2019). The introductory quote by Baum showcases how the federal government undermines Black communities to forestall progress from the Civil Rights movement and Black Panther party through stereotypes that depict Black women and men as criminals and negligent parents who violate societal contracts of acceptability by not conforming to American ideals (Herzberg et al., 2023; Ramsey, 2023; Mendoza et al., 2019; Alexander, 2010; Provine, 2007; DuBois, 1903; DuBois, 1899).

Though drug use among Black people is partially explained by social disadvantage from exposure to poverty, neighborhood instability, and childhood trauma (Banks et al., 2023; Nicholson, 2023), studies infrequently explore reasons for drug use conceptualized from Black people's perspectives outside of a punitive frame (Sypher et al., 2023; Hargons et al., 2022; Jemal et al., 2020; Jones et al., 2015). To this end, this dissertation examines how race and gender intersect through a matrix of domination (Collins, 2000; Crenshaw, 1991) to affect the drug-related experiences of Black Twitter subscribers who engaged in nonmedical prescription drug use. I assessed the implication of racialization and gender on adverse mental health and drug-related experiences for prescription opioids and stimulants, and positive effects of

use to challenge negative images of Black women and men who use drugs using qualitative inquiry and computational text analysis. Although I focused on how drug use is used to racialize Black people towards deviance, this does not imply that White people are not concomitantly racialized through drugs (Herzberg et al., 2023) since race and gender are social constructions and not deterministic (Omi and Winant, 2014; Collins, 2004; Collins, 2001). It is just that this dissertation paid attention to the patterns and outcomes of Black women and men exclusively.

A Racial and Gender Project of Drug Use

As Black people age, risk of drug use increases because of the persistence of discrimination across their lives (Nicholson et al., 2022; Jackson et al., 2010). For Black men, it is hypothesized that the legacy of slavery and present marginalization promotes aversion to responsibility and family life, leaving women to be caretakers in the home as Black men seek alternative ways to articulate masculinity tied to American ideals of economic success and dominance (hooks, 2004). As a result of this and the nexus of racism and sexism, Black women and children are left to care for themselves causing Black women to harbor feelings of anger as they are taught to put the needs of families and communities ahead of their own (hooks, 2004; Davis, 1983). This conflates with controlling images of Black women and men as sexually promiscuous, lazy, and drug dependent to justify control by the state and medical providers (Collins, 2004; Collins, 2000). However, controlling images like these are limited and do not explain how adverse childhood experiences from exposure to poverty and racism, impedes Black women's and men's ability to engage in vulnerability as silence is antithetical to strength in the form of masculinity for Black men, and the strong Black woman framework for Black women (Silverstein et al., 2023; Banks et al., 2023; Craddock et al., 2023; Bernard et al., 2020; Harper and Jackson, 2019; Beauboeuf-Lafontant, 2009; hooks, 2004; Collins, 2000). For instance, absent from these kinds of conversations are the use of the prison and medical industrial complexes to worsen drug-related outcomes among Black people who use drugs (Mingus, 2015; Omi and Winant, 2014).

The neuroscience explanation of drug use emerged in the early 2000s with amplified incidence of opioid dependence among White people because of prescription opioid marketing predicated on beliefs

that White people are less susceptible to addiction and Black people are more tolerant of pain (Hertzberg et al., 2023; Hart, 2021; Washington, 2008). The whitening of drug use as a biological rather than social outcome fell under the purview of medical providers to manage through prescription drugs. However, moralization of drug use due to biologization does not allow for drug use to exist along a continuum where pathologization is not the only outcome, enabling medical practitioners to gatekeep care in tandem with the state (Conrad and Barker, 2010; Illich, 2000; Zola, 1972). Due to this, differences in treatment for heroin versus prescription opioid addiction (derived from the same primary active ingredient - opium) follows racialization of pharmacotherapy with methadone treatment in majority minoritized and impoverished neighborhoods, and buprenorphine normalized in private doctors' offices in suburban White communities (Herzberg et al., 2023). In these ways, race and space intersect with policy and social control to create barriers to care routinized by geographic exclusion irrespective of insurance coverage (Wu et al. 2016; Lagisetty et al. 2019).

Treatment in private medical offices provides insured patients with flexibility in deciding to take medications in the privacy of their homes, outside of the scrutiny of others in White suburban contexts (Herzberg et al., 2023). Though, treatment of opioids in the form of heroin is managed by methadone clinics and is subject to supervision in-office by clinic personnel with patients required to present to clinics daily for treatment, receive psychological or group therapy, and to pass urine drug screens. In conjunction to this, provider bias regarding Black women's (people's) ability to withstand pain decreases medical professionals' willingness to treat Black pain through prescription opioids (Poehlmann et al. 2022; Keister et al. 2021; Rosenthal et al. 2021; Santoro and Santoro 2018). Thus, the medical industrial complex merges with the prison industrial complex to permit physicians' control in access to less stigmatized and criminalized prescription medications (drugs) while law enforcement and child welfare organizations punish drug use among Black women and men (Finamore; 2022; Harp and Bunting, 2020; Jordan-Zachery, 2008).

Policies and practices like stop-and-frisk practices; mandatory minimum sentences; prenatal screening for drug use of Black mothers; and utilization of no-knock drug warrants in Black communities

create an image of Black people as deviant, with illegalized drug use worsening perceptions of a spoiled identity requiring incarceration to mitigate fallout (Orenstein and Kaul, 2022; Earp et al., 2021; Donnelly et al., 2020; Mencarini et al., 2020; McCellan et al., 2018; Jones, 2017; Hansen and Netherland, 2016; Alexander, 2010; Roberts, 1993; Goffman, 1963). The intersection of gender and race is palpable in these frameworks, as rises in overdose mortality is higher among Black men, yet Black women bear a greater burden of opioid- and stimulant-involved overdoses compared to White women (Jones et al., 2023).

Incarceration has fed the bidirectional relationship between criminalization for nonviolent drug offenses and overdose since the 1990s through changes in mandatory minimum sentencing guidelines for drug possession of crack-cocaine versus powder-cocaine and prescription opioids versus heroin (Herzberg, 2023; Ramsey, 2023; Alexander, 2010; Provine, 2007). A quick review of studies published during this period showcases how crack-cocaine was used to present Black men as “super predators” and Black women as crack-addicted teenage mothers to explain drug use in Black communities. Missing from these assessments are the prevalence of use and sale of heroin and cocaine by White people above Black people or the provision of prescription opioids by physicians through pill mills (Herzberg et al., 2023; Harp and Bunting, GF; Ingram, 2014; Alexander, 2010; Lillie-Blanton et al., 1993). Instead of presenting this social reality, Black women and men are scapegoated and presented as the primary sellers and users of narcotic drugs. Moral imperatives link controlling images to drug use among Black women through surveillance of Black mothers who are criminalized if they test positive for drugs (Finamore, 2022; Harp and Bunting, 2020). This is demonstrated by higher annual percentage rise of incarceration of Black women for drug related offenses, outpacing Black men who are not penalized as parents who uses drugs (Monazzam and Budd, 2023; Jordan-Zachery, 2008).

The rhetoric of the culture of poverty is pernicious, as a history of incarceration creates risk of relapse (and overdose death) by limiting opportunities for employment, education, and housing when Black women and men leave carceral institutions because of multiple forms of jeopardy tied to race and gender (King, 1988). So, by centering negative images of Black women and men, positive effects from drug use are undermined as Black people use drugs to cope with racialized and gendered oppression in

American society. The decision to use drugs despite stigma and marginalization is not maladaptive but reflects enactment of agency as Black people cope with the cumulation of emotional and psychological pain from social disadvantage using the resources available to them (Chang, 2023; Dennis and Plenaar, 2023; Jauffret-Roustide, 2023; brown, 2019). This includes decisional choices balancing pleasure with risk since Black women and men articulate an identity separate from controlling images, and their manifestations at political levels, to decide how and when to use drugs (Rudzinski and Strike, 2020).

Black Digital Life: Signifyin', Social Media, and Substance Use

Twitter (now called “X”) provides a venue to examine the drug-related experiences of Black women and men because Black subscribers make up a unique subgroup through cultural identity and engagement. Approximately twenty-three percent of Black people use Twitter, indicating that the site is popular among Black people who use the internet (Pew, 2024). “Black Twitter” refers to the unbounded network of Black subscribers who interact with one another on the platform to form a counterpublic discussing content relevant to a Black cultural identity (Brock, 2020; Stephens, 2018; Brock, 2012; Fraser, 1990). I use counterpublic because discussions by Black Twitter subscribers range from the benign to significant, as hashtags (or “blacktags”) are used to signify race when Black people talk to one other about pop culture, politics, media, activism, and everyday life, intentionally subverting negative media representations of Blackness (Florini, 2014; Sharma, 2013). As such, Black Twitter subscribers’ conversations become diffuse, making their way to trending topics despite dense social networks where they are more likely than subscribers of other racial groups to follow and interact with people they know on the site (Manjoo, 2010). This means that topics relevant to Black identity are discussed by Black Twitter subscribers though they are subject to a White gaze (Hamilton, 2020). It is a for-us-by-us method of social engagement where Black subscribers allow others to peak through the veil only ever so slightly (so to speak; DuBois, 1903).

Across Black Twitter, Black women and Black queer subscribers resist dominant frames of misogynoir (racialized sexism against Black women), such as those of controlling images, with humor and incisive commentary (Peterson-Salahuddin, 2022; Bailey, 2021; Jackson et al., 2020). In kind, Black

Twitter subscribers use posts as a site of memory in commemoration to the oral traditions of Black peoples and slave narratives to talk about lived experiences, especially in relation to racialized and gendered oppression (Morrison, 1998).

Whereas digital social life is perceived to lack the kind of racial stratification of real-world settings by being race neutral, colorblind racism is imbued within the fabric of technological landscapes via material aspects of digital design (Cottom, 2020; Hamilton, 2020; Maddox, 2017). For instance, in *Algorithms of Oppression*, Noble (2018) explains how Google reproduces sexualized imagery of Black women even as White women and men stand in as a default chaste category in search results. Compounding this is the often race- and gender-neutral approach of computational research, which does not examine how sociodemographic characteristics influence distinctive patterns of interaction online (Cottom, 2020). Although some of this is manifest in the anonymity social network sites, like Twitter, provide, researchers have increasingly predicted sociodemographic characteristics through natural language processing techniques (Yang et al., 2023; Preotiuc-Pietro and Unger, 2018).

Returning to our conversation on drug use, social media research about drug-related behaviors is often presented from the perspective of a gender- and race-neutral subscriber whose racial categorization defaults to White. When race is considered, it is because blacktags like #BlackLivesMatter push the war on drugs to the fore to understand vicarious trauma and politicization of Black Twitter subscribers who witness legal interventions (murder by police officers; Hawkins, 2023; Hawkins, 2022; Taylor, 2016). Nevertheless, Black people who use drugs remain peripheral to these kinds of conversations even as their deaths become battle cries in the mattering of Black lives. The murders of George Floyd and Breonna Taylor are emblematic of this, as Floyd's history of drug use was used by police to justify his murder. Ex-officer Thao's statement as Floyd was actively being killed by Derek Chauvin triangulates the war on drugs to policing and drug use, "This is why you don't do drugs, kids" (Karnowski, 2023).

While progress is being made to regard race and gender in social media research about drug behaviors, race and gender remain latent variables. For example, although Stevens et al. (2020) collected Twitter data from Black and White adolescents who used drugs, they only presented outcomes from a

non-racialized viewpoint. This kind of analysis is a necessary stepwise progression towards understanding how demographic characteristics (re: race and gender as fundamental causes) influence drug-related behaviors, but more research is needed to elucidate the effects of race and gender directly, especially since subgroups like Black Twitter interact and communicate with one another in unique ways online. Rai et al. (2023) highlight this as they showed racial distinctions in how Black and White Facebook subscribers talked about depression. Rai et al. found that current computational techniques do not readily account for racialized experiences through sentiment analysis and topic modeling, even when using posts by Black Facebook subscribers to predict depression among other Black people.

Summary of the Three Papers

My dissertation bridges the work of Al-Garadi et al. (2022) and Yang et al. (2023, 2021) by using thematic qualitative analysis and computational techniques (i.e., text analysis using natural language processing) to investigate the implication of controlling images and the war on drugs to worsening outcomes from nonmedical prescription opioid and stimulant use. Whereas Al-Garadi and Yang used natural language processing methods to classify subscribers by race, gender, and age to detect nonmedical prescription drug use (by gender), I augment their work by using text analysis to show how race and gender intersect to produce drug-related outcomes. I explain how Black women and men resist pejorative images through drug-related behaviors by finding pleasure in drug use despite adverse effects. I validate Rai et al.'s (2023) observations regarding the shortfall of computational techniques by clarifying how culture influences the ways Black people discuss topics like nonmedical prescription drug use on Twitter. Although my papers are exploratory in nature, they apply data-driven methods to center the perspective of Black women and men in retelling their experiences to inform future research to mitigate overdose among Black people who use drugs.

I explore nonmedical prescription drug use because of the mimicking effects of prescription medications on people who use illegalized drug products and the substitution of one for the other as drug use progresses overtime (Shearer et al., 2022). This is imperative since the dissemination of prescription opioids has expanded to Black people as patents have expired and newer (safer) versions are developed

and marketed to White people who use drugs (Herzberg et al., 2023). Black adults are gradually using prescription opioids in place of heroin (Jordan et al., 2021), which parallels rises in diagnosis and treatment of attention deficit hyperactivity disorder with stimulant medications among Black people (Shi et al., 2021; Fairman et al., 2020; Oehrlein et al. 2016).

In paper one, I assess adverse outcomes from nonmedical prescription opioid use among Black men using inductive thematic analysis. I allowed themes to emerge through repetitive readings (of Twitter posts) while being sensitive to reasons for use, patterns of use, and side effects from use. In paper two, I explore the role the controlling image of the strong Black woman plays in nonmedical prescription stimulant use to cope with labor-related tasks among Black women. I use the transactional stress process model as an analytic frame to determine Black women's stress and coping processes. Lastly, in paper three, I use sentiment and text analysis to evaluate differences in discussions of nonmedical stimulant use by gender among Black women and men. I compare the emotion valence of tweets by gender and prominent topics in nonmedical prescription stimulant use because it is the most dominant form of nonmedical prescription drug use among Black Twitter subscribers in our repository.

The overarching aims of this dissertation are summated as follows:

Paper 1: Identify reasons, patterns, and side effects of nonmedical opioid use among Black men Twitter subscribers.

Paper 2: Using the transactional stress process model, examine how prescription stimulants are used by Black women to cope with labor-related stress.

Paper 3: Evaluate the utility of natural language processing techniques to describe emotions and prominent topics of Black women and men's conversations about nonmedical prescription stimulant use.

All papers are co-authored and will be submitted to *Drug and Alcohol Dependence* and *Journal of Ethnicity in Substance Abuse*. I am the primary author responsible for designing the studies, drafting reports, and conducting natural language processing and qualitative analyses. However, Dr. Cooper participated in the manual coding and qualitative analysis of sample tweets, and Dr. Sarker guided and

supervised the computational analysis, providing the repository of nonmedical prescription drug use tweets from his lab.

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Chapter 2: “A Dose of Percocet”: How Black Men Twitter Subscribers Describe Experiences of Prescription Opioid Use

Abstract

Background: Black men who use prescription and other synthetic opioids are at increased risk of overdose death. However, the opioid epidemic has been framed as a problem facing White men. We explored how tweets from Black men Twitter subscribers can be used to explore nonmedical prescription opioid use.

Methods: We collected tweets from March 6, 2018, to April 30, 2021, using keywords and machine learning classifiers. Tweets were aggregated at the subscriber level (n=49), and we conducted natural language processing and thematic analysis to assess reasons for and patterns of nonmedical prescription opioid use, and undesirable side effects.

Results: Coping with physical, emotional, and psychological pain was the most prominent reason for use. Black men discussed using prescription opioids to intentionally overdose. Patterns of use like co-use with other drugs and alcohol were common, along with using Twitter to connect with others to describe drug-related experiences while under the influence and to form drug-using partnerships. Hip-hop lyrics describing drug use were quoted by Black men and provided a context for use by highlighting drug-use behaviors tied to sex.

Conclusions: Natural language processing techniques can be effective at informing qualitative methods of inquiry. Findings from this study indicate that social media holds promise for harm-reduction if intervention methods focus on Black men who use opioids by addressing their physical and emotional pain. Sites like Twitter can be used to create a safe space for Black men to discuss drug use with network members by using hip-hop to connect with others and to center drug use conversations through music.

Keywords

Natural language processing; nonmedical prescription drug use; opioids; overdose; race; thematic analysis; Twitter

Introduction

In 2020, the overdose death rate for Black Americans outpaced Whites for the first time since 1999 (Friedman & Hansen, 2022). Black people and Black men are at increased risk of opioid-involved deaths in comparison to their racialized and gendered counterparts (Han et al., 2022; Althoff et al., 2020), with many deaths attributable to prescription opioids, synthetic opioids like fentanyl, and heroin (CDC, 2022). For instance, a systematic review by Kyei and Leveille (2023) showed that Black men fifty-five and older experienced the highest increase in opioid overdose mortality in comparison to White men and women, and Black women across age cohorts. Further, Harris (2023) projects that by 2025 Black men 31 to 47 years and 48 years and over will continue to experience rises in opioid-related overdose deaths if post-Covid-19 trends continue unremitted.

While Black people use at a similar rate to Whites (Nicholson and Ford, 2018), Black men's drug-related experiences are understudied. Whereas current interventions target White men for treatment, Black men who use drugs are criminalized and incarcerated (Nicholson et al., 2022; Camplain et al., 2020; Mendoza et al., 2019; Cooper, 2015; Alexander, 2010). To give an example, medication to treat opioid use disorders like Vivitrol and buprenorphine (to control cravings and reduce positive drug experiences) and Good Samaritan laws (to eliminate penalization for contacting emergency services in the case of an overdose) have disproportionately accrued to the White middle-class because of geographic and structural access to primary care physicians, emergency medical care, and rehabilitation services irrespective of medical insurance coverage (Banks et al., 2023; Kariisa et al., 2022; Tierney et al., 2022; Earp et al., 2021; Drake et al., 2020; McCellan et al., 2018; Hansen and Netherland, 2016). When treatment is available Black people are less likely to utilize care and more likely to be undertreated or not treated for pain because of provider bias, neighborhood/community level inequality, stigma, and issues with access to prescription opioid analgesics at pharmacy and provider levels (Enzinger et al., 2023; Gondre-Lewis et al., 2022; Hargons et al., 2022; Jordan et al., 2021; Abbasi et al., 2020; Pro and Zaller, 2020; Buonora et al., 2019; Gaither et al., 2018; Phalen et al., 2018; Meghani et al., 2012; Staton et al., 2007).

Studies on the effectiveness of prescription monitoring programs in reducing consumption of high doses of opioids show that Black people are more likely to receive reduction or cessation of medications, though Whites are not affected by these practices (Townsend et al., 2022). Barriers such as these can be condensed into fundamental causes of disease (i.e., overdose death) due to poverty, racism, and residential segregation leading Black men to engage in polysubstance, prescription, and recreational drug use to cope with the cumulative effects of neighborhood disadvantage, financial insecurity, lack of social capital, and childhood trauma (Banks et al., 2023; Nicholson and Vincent, 2019; Anagnostopoulus et al., 2018; James and Jordan, 2018; Phelan and Link, 2015; Jackson et al., 2010; Phelan et al., 2010; Williams and Collins, 2001; Link and Phelan, 1995). More research is needed to determine how the personal experiences of Black men with access to prescription opioids contribute to use and overdose mortality given focus on White Americans as victims in the opioid epidemic.

Emphasis on treatment for Whites versus criminalization of use for Black men impedes strategies to address rising rates of overdose (Jordan et al., 2021; Marotta et al., 2019; Nicholson and Ford, 2018; Wu et al., 2016; Cooper, 2015; Alexander, 2010). We explored how Black men used Twitter (currently “X”) to talk about nonmedical prescription opioid use (NMPOU) to determine reasons for and patterns of use, and unwanted side effects like unintentional overdose since Black men use the site to discuss topics linked to mental health and suicide (Francis, 2021; Francis and Finn, 2021). Twitter and ‘Black Twitter’ as a nomenclature refers to the collective of Black Twitter subscribers who use the site to talk about events, experiences, and cultural artifacts relevant to Black identity when displaying commonality between network members (Brock, 2020; Florini, 2014; Brock 2012). However, what makes Black Twitter subscribers distinct is that Black subscribers have smaller social networks on the platform and are more likely to follow people they know (Brock, 2020; Brock, 2012; Manjoo, 2010), which indicates that communication about stigmatizing topics, like opioid use, by Black Twitter subscribers likely occurs among those having interpersonal relationships on and off the site (Dekerseredy et al., 2021; Samuel, 2017).

Methods

Data and Collection

As a group, Black social media subscribers prefer Twitter to other platforms, like Reddit, which has also been used to study drug-related outcomes (Bunting et al., 2021; Kaufman et al., 2021; Conway et al., 2019; Wojcik and Hughes, 2019). However, little is known about how racialized groups discuss opioid use outcomes on these sites (Fodeh et al., 2021; Jain et al., 2020; Graves et al., 2018). This is significant given that the median age of Black Twitter subscribers parallels age-adjusted opioid-related overdose death of Black men, with Black people 18- to 29-years old and 30- to 49-years old holding the largest shares of Twitter use by age and race (Wojcik and Hughes, 2019; Smith, 2014). To our knowledge, Twitter has yet to be used to study outcomes specific to Black men. For instance, despite Yang et al. (2023, 2021) and Al-Garadi et al. (2021a, 2021b) demonstrating the viability of Twitter to investigate nonmedical prescription drug use through natural language processing (NLP) techniques, including identifying gender differences in sentiment and topics in drug-related discussions, not much is known about Black men who engage in nonmedical prescription opioids as a group. We used Twitter to assess this in greater detail.

We collected tweets on nonmedical prescription opioids, prescription benzodiazepines, and prescription central nervous system stimulants from March 6, 2018, to April 30, 2021, using NLP techniques (Yang et al., 2023; Al-Garadi et al., 2021b; Fodeh et al., 2021). Researchers used keyword and machine learning classifiers to automatically flag posts representing self-disclosed nonmedical use, detecting the distribution of gender identity, age-group, and race with high precision (positive predictive value; age = 0.88, gender = 0.94, race = 0.90; Yang et al. 2023; Yang et al., 2021). Nonmedical use was defined as any prescription medication use that diverged from medical providers' recommendations, including use of other people's medications or for reasons other than prescribed. From this data, we sampled subscribers who identified as Black, were gendered as men, and tweeted about NMPOU (n=862). We did not stratify by age because of the small sample number of Twitter subscribers who provide this information. Although, age as a descriptive characteristic validated the similarity between our

sample and demographic characteristics of Black men who use Twitter and are at increased risk of opioid overdose (Althoff et al., 2020).

Analytic Methods

Natural Language Processing Methodology

We used Python to apply NLP-based text preprocessing (stopword removal, stemming, and lemmatization) to reduce the vocabulary sizes and convert words to their canonical forms. Tweets for each subscriber were combined to represent their entire NMPOU timeline as a single body of text. Our overarching intent was to characterize the subscribers' chatter in terms of frequency of lexical expressions. We computed the number of tokens (words), including unique tokens to understand the language Black men used to describe opioid use and the ubiquity of tokens to examine cultural significance (if they were repeated across the sample of subscribers). The most frequent word n-grams (unigrams, bigrams, and trigrams) were collected for Black men (n-grams are units of consecutive word/token sequences across a body of text; Srinidhi, 2019). We present results for Twitter subscribers in our sample based on our larger summative sample and our qualitative subsample, reporting the ten most common unigrams, bigrams, and trigrams (figures 2-4).

Qualitative Coding

For qualitative data analyses, we selected all Black men Twitter subscribers who had a minimum of three tweets to capture as much information as possible given Twitter's 280-character limit per tweet during the time of tweet collection (n=49; Twitter N.d.). Pre-defined codes were used to capture attribution of causes, addiction, overdose, and pain management using the framework of Jain et al. (2020). Jain et al. (2020) examined factors associated with Twitter subscribers' sharing content about opioid use. We began with these codes because they demonstrate the implication of structural racism Black men experience in access to prescription opioids (i.e., decreased access due to medical discrimination and residential segregation; SAMHSA, 2020). To supplement these methods and provide contextual information relevant to Black Twitter subscribers, we engaged in iterative inductive analysis of tweets to

pinpoint other dominant codes and emergent themes. NLP analyses were used to validate dominant themes from qualitative results (Esposito and Evans-Winter, 2021).

Two-coders (JW and HC) reviewed tweets to identify topics. After independently evaluating tweets and identifying common patterns, the coders selected every 10th Twitter subscriber to confirm a similar application of the coding framework. Following this, JW coded the remaining data. Multiple labels for each tweet were permitted to guarantee that the breadth of tweet content was captured. The final code list was truncated to determine themes relevant to reasons for use, drug behavior patterns, unwanted side effects of drug use including overdose, and hip-hop music (figure 1 and table 1). Hip-hop music was the most frequently occurring theme in our sample and was identified by searching Genius.com and Google using tweet text as keywords. We did this because the most frequent n-grams reflected popular hip-hop songs coinciding with song titles or lyrics listed by BMUO. As such hip-hop aided us in contextualizing major themes in relation to cultural artifacts significant to Black Twitter subscribers. We provided parenthetical and indirect quotes to increase anonymity of our sample and reduce the likelihood of surveillance because of the sensitivity of topics discussed. As such tweets reflect relevant themes without providing verbatim content.

[Figure 1 goes here]

Results

Our NLP and qualitative samples included 1,102 and 192 tweets, respectively, from Black men who engaged in nonmedical prescription opioid use. The average age of the sample was 31 years (NLP = 30.561, qualitative=28.429). Subscribers posted between 1 to 10 tweets about NMPOU. Overall, each Black man who used opioids (BMUO) listed between one to five medications across tweets. Percocet followed by morphine and Tramadol were the most frequently mentioned prescription opioids in the NLP sample, whereas Percocet, Tramadol, and Percocet and Vicodin were more likely to be named in the qualitative group. There was a minimum of a three-fold difference between the frequency of mentions between Percocet and other medications by each sample group (in favor of Percocet). N-gram distributions matched pipeline results for the two-most listed opioid analgesics in both samples, figure 2.

However, unlike the NLP sample BMUO in the qualitative subsample listed more medications per subscriber (NLP=1.056 medications and qualitative=1.429), which may indicate that those who tweet more about opioid use consume a greater variety of prescription opioids.

[Table 1 goes here]

[Figures 2-4 go here]

Reasons for Use: Coping, Recreational Use, and Suicidal Ideation

BMUO talked about opioid use to cope with emotions, pain, and distress with the remainder describing NMPOU for recreational purposes like to celebrate an event, create a particular mental state like getting in “mode”, or simply because they had been offered them. When discussing opioid use to cope BMUO mentioned using opioids to deal with unwanted feelings related to mental health. They described using Percocet or Tramadol to manage feelings associated with anxiety, suicidal ideation, or being mentally unwell. A BMUO whose wife passed from long-term nonmedical opioid use stated,

“For some, Tramadol makes them sleepy and sick. For me? I can put work in, I get that upper high. [I take it so] on [...]’s birthday, I won’t be all in my head ... I’ll be super charged ...”

Opioid use allowed subscribers to alleviate negative emotions like anxiety so they could function.

Rather than the temporariness that can come with opioid use, some BMUO sought permanent relief from negative emotions through suicide. A subscriber tweeted,

*“Never had the life my boys had
Slept inside the church next to grandad
Feeling d*mn good doing d*mn bad
But could you teach me how to overdose
I don’t want to die...”*

Feeling good while doing bad reflects the positive effects received from opioids while recognizing the salience of negative events triggering use; overdose becomes a pathway for BMUO to escape a life where troubles and painful feelings are abundant.

*“I’ve been on some bullsh** the last 2 ½ weeks. I’ve been getting drunk every day. I stay up all night I sleep until it’s time to go to work [and] I’ve been eating the worst foods. Last Sunday, I found myself drinking lean and poppin Percs. [I] don’t know who I am ... Last summer when that Kanye came out, I heard Ghost Town and thought that’s the perfect song to die to. I bought 11 Percs from [...] on payday, and went home and popped all 11.”*

Two BMUO linked opioid use with coping with grief, life experiences, and emotions. They perceived suicide through overdose to attain permanent escape from their suffering. These kinds of admissions along with naming hip-hop songs or using lyrical expressions reveals how important hip-hop music is to Black men’s voicing personal experiences and emotions. Hip-hop references were among the top 10 bigrams and trigrams in both samples showing coherence between them (e.g., pop_percocet; dose_percocet; percocet_pill; percocet_want_one; go_night_percocet; figures 3 and 4). In terms of “Ghost Town”, the sentiments, and themes in the lyrics match those conveyed by BMUO to cope wherein the artists rapped about death via overdose, overwhelm from trying to keep up with what was happening in their lives, and fentanyl use.

Opioid Use Patterns: The Relevance of Source and Social Interactions

In terms of opioid-use patterns, BMUO talked about sources, social interactions, and co-use as part of their drug using routines. Although co-use was a pattern of use, we discuss it in more detail in the next section due to its intersection with undesirable side effects.

The most prevalent opioid analgesic listed by those discussing sources was Tramadol – the third most common medication in our NLP analysis, and second most in our qualitative subsample. BMUO talked about buying or obtaining opioids like Tramadol from family members, friends, coworkers, “plugs,” and via online sources. “Plug” was a colloquial term used to describe a person(s) from whom drugs are purchased or obtained. For example, one man said,

“I get grams for free from the plug and family. Quality hydro syrup, promethazine, oxy, Vicodin, xans, and edibles.”

*“[Friend] was a bad influence. Ni**a met me drinking beer and volunteered to open 2
Tram in my drink. [crying laughing emoji]”*

While another wrote about securing Tramadol through online sources:

“Having an early 2000 kind of night. I’m ordering weed and Trammies online...”

Twitter subscribers engaged in social interactions online to disclose sources for drugs and to obtain them. To this extent the relationship between social networks/interactions was critical to sources for drugs, demonstrating how personal networks, on and off Twitter, were used to access opioids. BMUO would “@” network members (including another subscriber in tweet messages) or make general appeals to solicit drugs on Twitter (“@subscriber Trammies...you got more?”; “who can get some perc’s?”). In cases when the subscriber already had access to drugs, Twitter was used to facilitate drug-using partnerships. For instance, subscribers often tweeted,

“Percocet, you want one? @subscriber”

The phrase “Percocet, you want one?” gained popularity after rapper Lil Gotit stopped to ask an interviewer if they would like a Percocet because he was craving one (VladTV, 2019). Twitter subscribers referenced it when @ing one another, enabling drug-using partnerships and bridging the relationship between sources, social interactions, and hip-hop, as the same subscribers were likely to list or quote hip hop songs in their tweets. By invoking hip-hop songs with drug references, Black men were able to normalize drug use when interacting with network members on Twitter, generally, and when inviting them to use, specifically. Twitter facilitated social integration among BMUO by allowing them to share stories about sources with one other and inviting others to use with them.

Unwanted Side Effects: Sleepiness, Sexual Dysfunction, and Addiction

BMUO disclosed negative short-term physical outcomes and long-term ones like addiction from opioid use. They talked about feeling “too high” or overdoing it; experiencing sexual dysfunction; and overdose. Turning first to being “too high”, a BMUO noted how using Tramadol to treat pain led to feeling “loaded” with sensations moving beyond relief to overwhelm. Unanticipated effects like these occurred when taking larger than anticipated dosage using a single medication.

Other unintended effects included sleepiness. Although this occurred in various environments, one person discussed this normative expectation and compared it to his own (i.e., unlike others who became sleepy he felt energized). While another said,

*“I don’t know why I took that perc before work. SMH got my a** sleepy as hell.”*

Even though the subscriber does not clarify why he used prior to work, an examination of his tweets indicated that opioid use often coincided with work activities. It became clear that BMUO were not using opioids to fall asleep or stay asleep. Instead, they were using prescription opioids for other purposes, and sleepiness was an unwanted outcome.

When disclosing sexual dysfunction, BMUO named erectile dysfunction as unwelcomed. One subscriber said,

*“One of my friends told me he took 100mg of Tram when he was expecting a babe. He’s a doc. He liked the erection he got and decided to top it with another 100 before the girl shows up. D*** went flaccid.”*

Likewise, another reported an inability to ejaculate as displeasing:

“Nope. I popped a Perc. Ain’t no nutting that day.”

Sexual side effects were an unexpected albeit tolerated part of NMPOU, and subscribers used hip-hop to situate their expectations related to sex.

To explore the implication of opioid use in sexual dysfunction, we examined the link between sex behaviors and invocations of hip-hop when codes overlapped or occurred in proximity to one another. We learned that BMUO tweeted about NMPOU when discussing masturbation or having sex with others, referencing lyrics with similar themes. For instance, a BMUO tweeted,

“Drug sex. I throw back a Percocet n go to work [devil emoji]”

The subscriber described consuming Percocet during sex as “drug sex”, and the endurance it provided him as being able to put in “work” (energy and time). “Drug sex” is a nod to the song “Home Body” by

Lil Durk where he talks about taking Percocet and Xanax during intercourse. Another subscriber engaged in similar behaviors, using the cadence and themes of hip-hop to discuss opioid use and sex. He said,

*“I pop Percs like it ain’t nothing, then I f*** her from night until morning.”*

In this way, subscribers used lyrics from hip-hop songs to express expectations of increased endurance and pleasure when consuming drugs during sexual activities. The perception that opioids would permit BMUO to have sex for extended periods coincided with BMUO tweets and Lil Keed’s lyrics about “going all night” on Percocet pills. The song “Nameless” by Lil Keed was among the top ten bigrams and trigrams in NLP and qualitative samples (figures 2-4). Songs like these intimate positive sexual effects tied to opioid use without acknowledging side effects like sexual dysfunction.

Beyond sleep and sexual dysfunction, BMUO divulged incidents of overdose because of use, with more men describing unintentional rather than intentional overdose. While we examined intentional overdose to escape in the first section, we delve into unintentional overdose here. Whereas instances of overdose with a single medication occurred during suicide attempts (intentional overdose), BMUO talked about unintentional overdoses in relation to co-use (using more than one medication, drug, or alcohol during a drug using event). Prescription opioids associated with overdose of BMUO included oxycodone, Percocet, and Tramadol along with ecstasy, alcohol, or marijuana. BMUO attempted to assuage concerns of network members about the potential to overdose despite naming it as a possibility (“... *chilled Pepsi, 300mg of Tram, and top it off with marijuana. It’s ok. I won’t die*”). Furthermore, tweets about overdose co-occurred with disclosures of struggles with addiction.

Approximately one in five subscribers implicitly or explicitly revealed they were addicted to opioids. Time was central to these admissions and was conveyed in terms of dependence on drugs and subsequent discussions about overdose. A BMUO tweeted,

“I was taking Perc in high school. While you were struggling to read out loud, I was sitting there off 2 ER Oxy 80s reading. Weird flex, but I’m tellin you, stop doing Perc. They gonna stop working & you gonna need heroin.”

For these men, opioid use appeared to progress from recreational use to dependence, with withdrawal; co-occurring addiction; poly-substance use; and poor health listed as adverse outcomes.

“My wife didn’t have a chance. She was on methadone after having our baby. Having multiple surgeries after his birth. On top of years of abusing narcotics because of a foot injury back in [...]. Her body just gave up.”

To this extent, addiction was portrayed as adversarial, something subscribers were in battle with for their life and autonomy.

“The word in church was the solution god has for you may not be the one you were looking for. Some of us pray for our drug addiction and end up with jail time so we can sit down and fight it. I been trying to fight these percs for years.”

The kind of anguish displayed in tweets led this Twitter subscriber and others to engage in healthcare seeking behaviors.

“In other news. They gave me nasal sprays that will reverse the complications of an overdose in the event of a relapse. If you know someone battling opioids like Perc, I get them free of charge. Let me know! It could save a life if they overdose.”

The subscriber was the only BMUO in our subsample to talk about life-saving interventions like Narcan to reverse overdose.

Discussion

In this study we used natural language processing and thematic analysis to assess factors associated with nonmedical prescription opioid use among Black men Twitter subscribers. We learned that Black men used opioids to cope with pain, physical or emotional, and used multiple doses of a single medication when attempting to commit suicide, and co-used prescription opioids with other drugs or alcohol in the case of unintentional overdoses. Patterns of use involved using Twitter to connect to sources for medications, and to engage with other subscribers on and off the site to facilitate drug-using partnerships. Black men used hip-hop to foster these connections.

Signifyin' is a communication tool used by Black social media subscribers to demonstrate race without explicitly naming it through cultural artifacts and communication patterns (Brock, 2020; Florini, 2014). Hip-hop served this purpose for Black men by signifyin' race while talking about drug use (Peteet et al. 2021; Herd, 2008). This is not surprising as hip-hop evolved in the 1970s and was used by Black Americans to decry the effects of poverty, lack of access to employment, and drug use in metropolitan areas (Benvenga, 2022; Harlow and Benbrook, 2019; Speer, 2014; Assante, 2008; Clay, 2003). Hip-hop then [and now] was used to create a safe space to discuss drug use behaviors, like drug use during sex, by presenting drug use as normative and centering a Black-masculine identity. For example, when BMUO talked about sex and drug use, they used hip-hop lyrics about endurance to display prowess and bravado without posing health concerns like sexual dysfunction, assault, or transmission of sexually transmitted infections as risks of having sex under the influence of opioids (Griffin et al., 2020; Tettey et al., 2020; Smiley, 2017). As such, BMUO tied sex to their self-esteem (hooks, 2004).

BMUO used hip-hop as a form of self-expression and leaned into normative images of their racialized and gendered identities predicated on self-assurance through sex to connect with others. However, focusing on sexuality in hip-hop music can miss an important facet of how Black men used hip-hop to discuss other topics in tweets about opioid use. For instance, beyond sexual behaviors, BMUO used hip-hop to disclose personal struggles, including those connected to mental health. BMUO divulged instances of emotional pain and suicidal ideation wherein drug use helped them to cope. The prevalence of using drug use to manage emotions and stress have been validated by work documenting the utility of drugs by Black people to cope with stress to decrease symptoms of depression (Jackson et al., 2010; Mouzon, 2022), as Black people with a history of major depression are likely to engage in NMPOU (Nicholson and Wheeler, 2021).

Though suicide is a highly effective way to end suffering, it also creates other problems. BMUO talked about suicide and overdose as a means of escape. This is significant since Black people are dying by suicide at rising rates (Cofield, 2023; Stone et al., 2023; Tate, 2023; HHS, n.d.), including those with higher levels of educational attainment (Assari et al., 2019) and a history of overdose and depression

(Brown et al. 2021). BMUO sharing intent to commit suicide on Twitter parallels conversations about Black mental health online, as members of the hip-hop community like rappers Kid Cudi and Logic shared struggles with depression leading to trending hashtags (Francis 2021; Niederkrotenthaler et al., 2021). Kid Cudi's admission he would seek rehabilitation for depression and suicidal ideation led to Black men with similar concerns using #YouGoodMan to create a space for support. Like this, social relationships were central to social integration of BMUO Twitter subscribers, as BMUO used Twitter to reduce stigma of drug use and mental health.

The social relationships BMUO cultivated on Twitter seemed to move from online when soliciting drugs from network members to in-person when inviting others to use with them. Although sharing information was not limited to drug-using partnerships, as some men in our sample used Twitter to decry how opioid use could progress to addiction and forms of institutionalization like jail. This indicates that Twitter can be harnessed by network members to connect BMUO to resources related to drug use behaviors like addiction through diffusion of health information. Twitter has the potential for social marketing mental health care for those contemplating suicide (Torgerson et al., 2021) or emergency medications to treat overdose like Narcan in the case of an overdose. Hip-hop would likely be a preferable mechanism to facilitate these kinds of conversations since BMUO used it to express their thoughts and feelings. Nevertheless, the infrequency with which healthcare was mentioned as a source of prescription opioids by BMUO is unsurprising and signals decreased access to prescription opioids from medical providers. While BMUO received drugs from online sources, family members, and friends, this is not distinct to Black men, as other racial groups use personal networks or plugs to engage in nonprescription opioid use (Graves et al., 2018; McCabe et al., 2018; Jones et al., 2014).

Limitations

Though machine learning algorithms allowed us to classify a large swath of data by age, gender, and race, misclassification of some Twitter subscribers was likely despite high predictive accuracy. Limiting gender identity to men and using binary methods impeded our ability to assess drug use patterns among Black women, Black trans, and non-binary people. Opioid use patterns likely differ for these

groups due to the role of medical discrimination and the influence of stigma on drug-using behaviors and access to care (Paschen-Wolff et al., 2023). Furthermore, while our sample was not limited by source of drugs, meaning men who obtain opioid analgesics from unregulated illicit markets, it was restricted to those who had access to prescription opioids or were able to obtain them from plugs or network members. Whereas only one BMUO in our sample drew a direct connection between drug use and carcerality, this is not a common aspect of the Black experience because of the racialized and gendered attributes of the War on Drugs and policing that affects Black men (Mendoza et al., 2019; Cooper, 2015; Alexander, 2010).

The discrepancy in conversations pertaining to racial discrimination and carcerality in relation to NMPOU represents how the sociodemographic characteristics of Black Twitter subscribers (higher educational attainment and income) coupled with use of prescription opioids rather than illegalized drugs buffers them from negative interactions with police even while being less likely to receive prescription medication from medical providers. NMPOU may reduce frequency of police contact through access to drugs from loved ones or White drug dealers who are less likely to be surveilled and have greater access to providers and pharmacies supplying prescription medications (Jacques, 2017; Jacques and Wright, 2015). Special attention should be paid to incarcerated or formerly incarcerated Black people, and unhoused populations because of potential discordance in criminalization of drug use among higher-income Black populations. Future research should include these populations and those who engage in opioid use more broadly, including those who primarily use heroin and/or synthetic opioids independently and in combination with other drugs.

Conclusion

We hope this study honored the voices of Black men Twitter subscribers in expressing thoughts, feelings, and experiences related to opioid use. *We did not interpret drug use as maladaptive* but interpreted themes related to nonmedical opioid use behaviors within the context of reducing adverse drug events (e.g., multiple drug use in single drug-using event and overdose) since most people who engage in NMPOU do not develop problem drug use (Hart, 2021). In keeping with this, the oral history traditions of Black people were used by Black men Twitter subscribers as a form of discursive expression and

collective identity through signifyin' and hip-hop to make natural language processing possible (Boyd and Ellison, 2007).

The demographic characteristics of our sample and n-gram distributions from NLP analysis validated our race-based and NMPOU predictive pipelines, showcasing the importance of cultural artifacts like hip-hop in inferring subscriber race from tweets and understanding demographic differences in drug-related behaviors. Our analyses highlight the utility of drugs in coping with unpleasant emotions and events and need for greater attention to the emotional wellbeing of Black men given high rates of undertreatment of Black people's pain (physical and mental) and the correlation of mood disorders and somatic pain (Bailey et al., 2019; Wheeler et al., 2019; Trivedi, 2004). As such, opioid use was not always problematic since Black men experienced pleasure tied to opioid use in the form of recreation and connection with others, pain reduction, and positive emotions. Opioid use was an adaptive way to experience autonomy, self-governance, and pleasure, which is significant when we consider the criminalization of Black men, particularly those who use illegalized drugs (Dennis et al., 2023; Hart, 2021; Brock, 2020). More research is needed to understand the positive effects of nonmedical opioid use and when the threshold of use moves beyond this to unpleasant outcomes to reduce stigmatization and direct care for addiction, suicidal ideation, and opioid-related drug problems. Intervention efforts should incorporate hip-hop and target network members to increase knowledge of and accessibility to mental health and addiction treatment, and overdose prevention like Narcan to stop fatal overdose (Wallace, 2023; Kunins, 2020; Levy, 2020; Wright, 2019; Frank et al., 2018).

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Tables & Figures

Table 1. Prevalence of themes in qualitative sample of tweets from Black men who used opioids (n=49).

Theme	Definitions	Prevalence at the subscriber level (%)
Reasons for opioid use		
Coping	Describing use to self-medicate emotional, physical, or psychological pain or distress.	7 (14.3)
Recreational	Disclosing reasons for use other than coping with a likelihood tied to leisure activity.	6 (12.2)
Intentional	Describing current or past experiences of knowingly using prescription opioids to cause death or injury.	2 (4.08)
Patterns of opioid use		
Co-use	Discussing multiple drug use in a single tweet, intimating that the person is using more than one type of drug at the same time or within a finite period. This does not include use of multiple prescription opioids but can include using prescription opioids and opioids deemed to be illicit (e.g., using heroin and Percocet).	15 (30.6)
Social interactions	Engaging with other subscribers when using by @ing them or @ing others to talk about drug use experiences, as well as inviting other subscribers to use with them.	15 (30.6)
Sources	Disclosing transactions or sources to obtain drugs.	20 (40.8)

Side effects of use

Addiction	Directly or indirectly disclosing behaviors related to addiction or being addicted to drugs including worsening use over time or an inability to control drug use; overdose; recovery or relapse; withdrawal symptoms; and the opioid epidemic.	10 (20.4)
Sexual dysfunction	Mentioning side effects related to sexual functioning, including undesirable physical sexual effects.	3 (6.12)
Sleep issues	Talking about unintendedly feeling sleepy or falling asleep.	4 (8.16)
Unintentional Overdose	Describing current or past experiences of accidental overdose, including sickness associated with drug use.	5 (10.2)
Hip-hop	Listing song titles or quoting lyrics of hip-hop songs when discussing opioid use. This included tweets demonstrating the lyrical or poetic cadence of hip-hop music.	31 (63.3)

Note: Themes are not mutually exclusive. Prevalence is based on the number of subscribers who were coded for a particular theme rather than frequency of codes across tweets. Each tweet could be coded for multiple codes or themes.

Figure 1. Process for data collection NLP and thematic analyses.

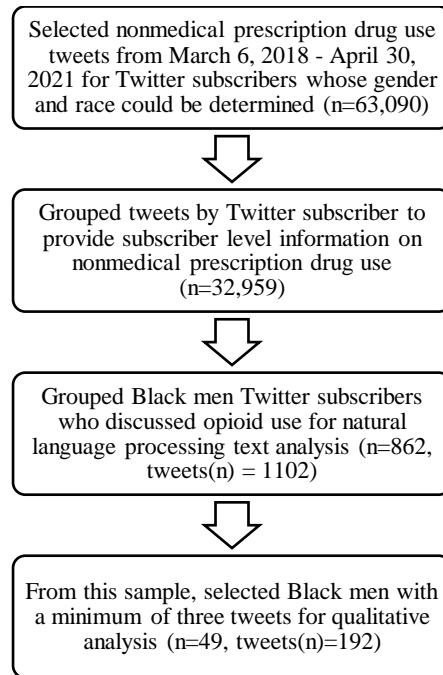


Figure 2. Most frequent unigrams among Black men Twitter subscribers who used opioids from the NLP sample.

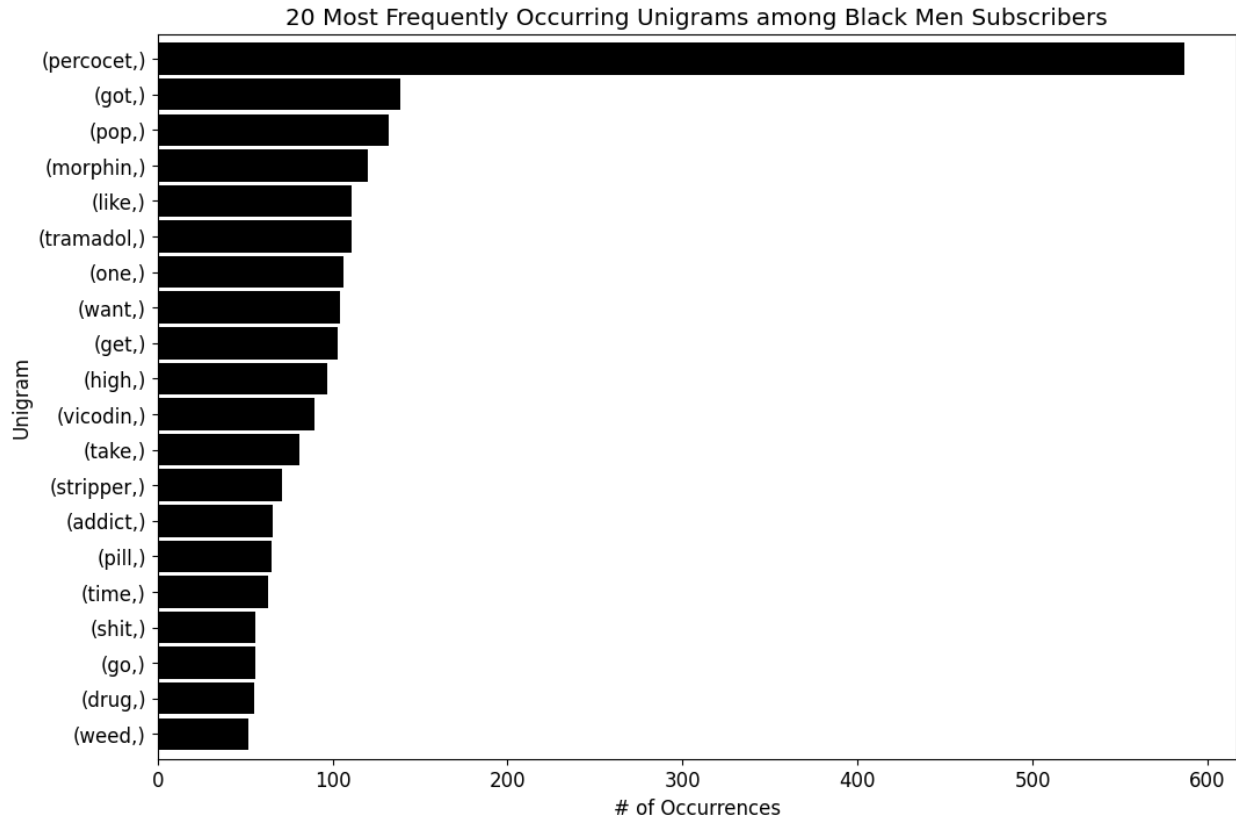


Figure 3. Most frequent bigrams among Black men Twitter subscribers who used opioids from the NLP sample.

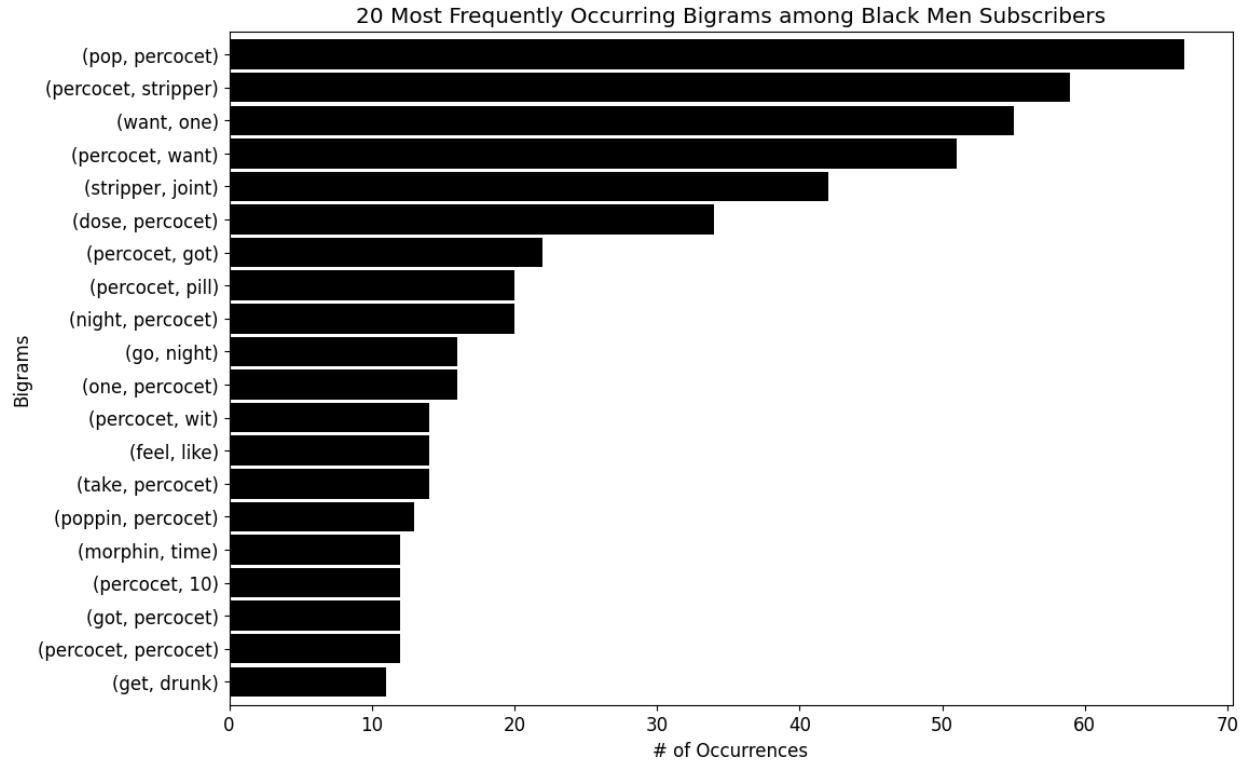
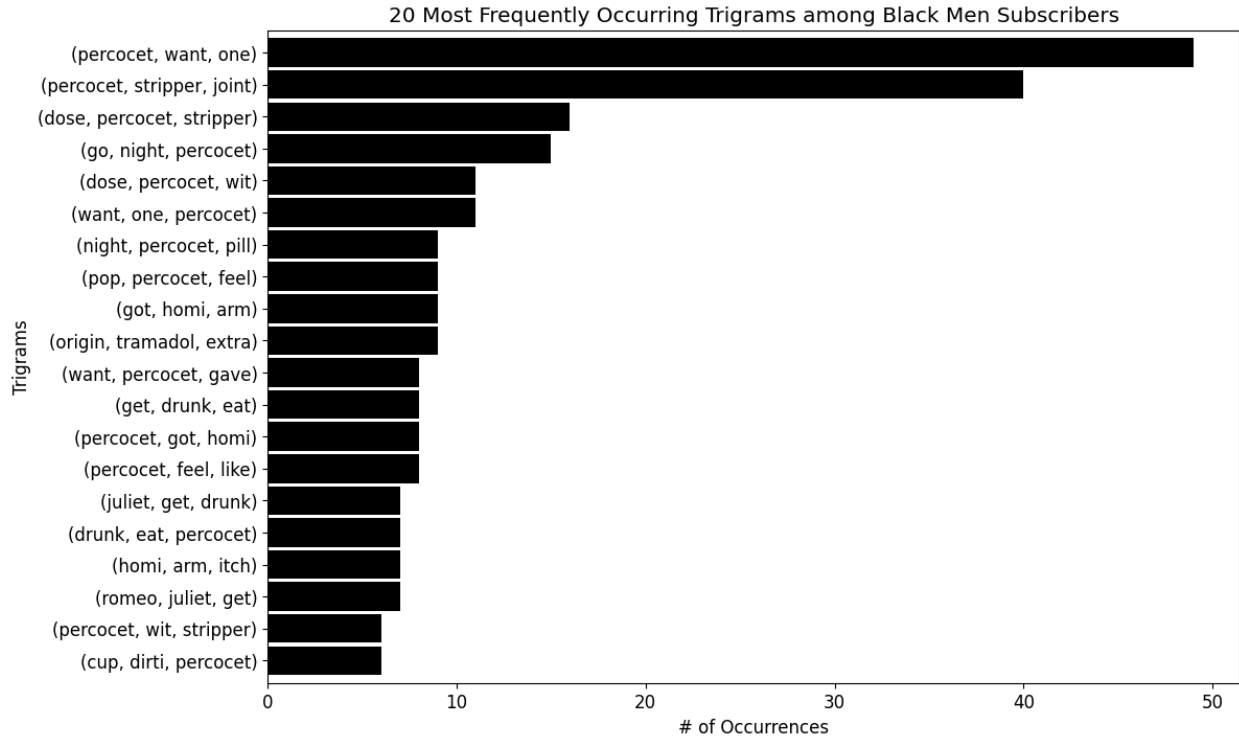


Figure 4. Most frequent trigrams among Black among Twitter subscribers who used opioids from the NLP sample.



Chapter 3: “Strong Black Women”: Prescription Stimulant Use as a Site of Resistance in the Context of Black Women’s Labor and Negative Images of Black Womanhood

Abstract

Black women are experiencing rising rates of mortality from stimulant-involved overdose. Yet research on the reasons for use of stimulants among Black women are rare. The present study evaluates how the war on drugs has used negative stereotypes of Black womanhood tied to labor through racial capitalism to create barriers in access to prescription stimulants for Black women. We applied the strong Black woman controlling image and transactional stress process model to evaluate how Black women talked about nonmedical prescription stimulant use on Twitter. Results indicated that the controlling image of the crack-addicted mother still affects the way Black women talk about and view their drug use. We found that stressors related to productivity at school, work, and in the home, as well as mental health and addiction determine how Black women cope with stress through nonmedical prescription drug use as a problem- and emotion-based coping method. Identifying how stressors influence Black women’s decisions to engage in nonmedical prescription stimulant use, especially in terms of barriers to care, can help to reduce overdose and poor mental health outcomes through decriminalization of drugs and increased access from medical providers.

Keywords

Attention deficit disorders; controlling images; coping; nonmedical prescription stimulant use; stress; strong Black woman

Introduction

Stimulant-involved overdose increased among all racial groups beginning 2007 (Jones et al., 2023b; Waila et al. 2021). However, Black adults show higher annual percentage of growth in fatality than White, Latinx, and American Indian adults (Townsend et al. 2022; Friedman and Hansen, 2022; Cano et al., 2020). Contamination of illegalized stimulant products by fentanyl and other synthetic opioids drives mortality (Ciccarone, 2021), yet Black people who use stimulants or opioids are less likely than White people to receive emergency medicine in the form of Narcan or to carry Narcan if an overdose occurs (Jones et al., 2023b; Khan et al. 2023; Kline et al., 2023; Kyei and Leveille, 2023; Townsend et al., 2022; Hansen and Netherland, 2016). This is compounded for Black women who are more likely to die from stimulant use than White women (Jones et al., 2023a). In kind, Black people who use stimulants are more likely to be surveilled by medical providers and state organizations like child welfare in comparison to White peers (Finamore, 2022; Mendoza et al. 2019; Roberts, 1991). For instance, Black women who are pregnant are more likely to be screened for drug use than White women and to be reported to child welfare and legal systems if they test positive for drugs, losing parental rights and facing incarceration (Harp and Bunting, 2020; Bishop et al. 2017). Higher mandatory minimum sentencing for possession of crack- versus powder-cocaine ensures this by racializing and gendering crack-cocaine as a drug of impoverished Black women and men (Ramsey, 2023; Windsor et al., 2012; Jordan-Zachery, 2008).

Despite the chemical similarity of crack-cocaine to powder-cocaine (Hart, 2021) and that Black people have a lower lifetime and past year rate of use cocaine use than Whites (Orndorff, 2023; Palamar et al., 2015), the severity of stimulant use among Black people is concerning and deserves further inquiry (Cano et al., 2022; Shearer et al., 2022; Townsend et al., 2022 Palamar et al., 2015; Lillie-Blanton et al. 1993). We analyzed Twitter data to determine how race and gender intersect to impact the stimulant-related outcomes of Black women who engaged in nonmedical prescription stimulant use (use of prescription stimulants not prescribed to you or in ways not recommended by medical providers). We investigated how the transactional stress process model can be used to understand Black women's coping processes through the strong Black woman framework. We focused on Black women's experiences

because of rapid transition from recreational drug use to stimulant use disorder among women in comparison to men (Bobzean et al., 2014); reduced likelihood of Narcan administration in the event of an overdose for Black women (Goetz et al., 2021); and the cumulation of social disadvantage tied to race and gender (Jones et al., 2023a; Jones et al., 2023b; Orndorff et al., 2023).

“Welfare Queens” and “Crack-Addicted Mothers”: Racialized and Gendered Images of Black Womanhood in the War on Drugs

Practices of racializing and gendering drug use and punishment have been instantiated since the early 20th century when the Federal Bureau of Narcotics was formed to eradicate marijuana use and to mitigate the importation of opium products by targeting Black, Mexican, and Chinese populations (Hari, 2015). Today, iterations of agencies and legislation continue to punish drug use among poor, Black, Latinx, and American Indian adults (Hansen et al., 2023; Jones et al. 2023a; Earp et al., 2021; Alexander, 2010; Provine, 2007). Though emphasis is now placed on harm reduction to decrease adverse opioid-involved outcomes, interventions have mainly targeted White people who use drugs (Hansen et al. 2023; Netherland and Hansen, 2016; Cooper, 2015). In fact, inequities persist in treatment of recreational drug use and addiction as a normal part of development of young White people and a moral failing of Black people who use drugs (Mendoza et al., 2019). In-line with this, no standardized medical therapy for stimulant use or stimulant overdose exists (Trevedi et al., 2021; Kapman, 2019; Ballester et al. 2017) despite rising mortality rates among Black populations (Jones et al., 2023a).

The Moynihan report, along with the Nixon and Reagan administrations helped to cement myths of Black women who use drugs through controlling images of the welfare queen and crack-addicted mother, linking them to illegalized drug use because of a nefarious “culture of poverty” (Hill Collins, 2009; Jordan-Zachery, 2009). Clinton amplified these images of Black women by foregrounding stereotypes of Black women as dependent on the state when cutting Aid to Families with Dependent Children, guaranteeing incarceration for drug-related crimes by tapping into White fear of Black men as “super predators”, and surveillance of Black families and mothers by child welfare systems because they were purported to birth crack-addicted children (Harp and Bunting, 2020; Roberts, 2014; Jordan-Zachery,

2009; hooks, 2004). Instead of redressing inequitable policies that left Black women and their children in conditions of poverty (Ramsey, 2023; Massey and Denton, 1993), personal blame was foisted onto Black women for the viability of Black families and communities without providing treatment for drug dependence (Finamore, 2022; Jemal et al., 2020; Beaubouef-Lafontant, 2009). Along these lines, images of the welfare queen and crack-addicted mother served as dog whistles to galvanize anti-Black and anti-drug sentiments to maintain White conservative (and liberal) hegemony by conjuring up destructive images of Black women that persist today (Harp and Bunting; 2020; Beaubouef-Lafontant, 2009; Roberts, 1991).

Portrayals of Black women as dependent on federal and state aid to buy drugs rather than to take care of their children ensures that resources are expended to aid “good [White] American” workers deserving of help (Finamore, 2022; Jordan-Zachery, 2008; DuBois, 1903) while ignoring the social reality of drug use. These tropes depict pregnant Black women as being more likely to use drugs obfuscating higher prevalence of drug use among pregnant White women to direct White women who use opioids to social services and all women who use cocaine to jail (i.e., the racialization of cocaine as a drug used by Black people; Harp and Bunting, 2020). Furthermore, although Black women are depicted as lazy and indigent, they have engaged in labor outside of the home be it involuntary (i.e., slavery) or for survival since their arrival in the United States, inextricably linking them to capitalism in a unique way (Davis, 1983). Even still, as a group, Black women make up a greater share of the employed workforce than White women (Roux, 2021). Yet, Black women and Black families who are impoverished receive fewer welfare benefits than White families who are less likely to be impoverished but constitute a greater proportion of welfare recipients (Administration of Children and Families, 2023; DeSilver, 2023; Shrider, 2023). This contradicts legislation and ideologies which racialize and gender poverty as endemic to Black women’s failure to work instead of confronting the state’s maintenance of the privileged status of White women in society (Ramsey, 2023; Cano et al., 2022). Black women continue to be responsible for the financial wellbeing of their children and communities.

“Strong Black Women”: Negotiating Strength and its Effects on Black Women’s Experience of Stress and Coping

In contrast to the welfare queen and crack-addicted mother, the image of the strong Black woman was established to showcase how Black women could become incorporated into American society through ideals of success and resilience (Abrams et al., 2014; Beauboeuf-Lafontant, 2009; Beauboeuf-Lafontant, 2007). Though harmful, the strong Black woman (SBW) controlling image has been used to justify the social hierarchy suppressing Black women by asking them to negotiate boundaries between racialized capitalism and family while never allowing full integration (Settles et al., 2008; Jones and Shorter-Gooden, 2003). Within the scope of the SBW, Black women engage in ethnic pride, spirituality, and strength-based and self-sacrificing practices to guarantee their economic wellbeing, and that of family members and communities (Abrams et al., 2014). As such, the SBW adapts to racial capitalism by diminishing her needs, overcoming obstacles, and accomplishing goals irrespective of available resources (Woods-Giscombe, 2010; Beauboeuf-Lafontant, 2009).

The SBW believes strength in the face of inequity is compulsory to survival. Whereas White women whose decision-making surrounding family life involves choosing to work or stay at home, Black women must engage in labor outside the home to support their families regardless of a desire to do so (Dow, 2015; Settles et al. 2008). In this sense, the success of Black women and their households is dependent on their continued labor in a capitalistic system while ignoring other arenas of labor in homes and communities. Like this, the SBW provides a counter valence within which Black women articulate their existence against the weakness of White women by always being strong, nurturing, and self-silencing (Hill Collins, 2009; Beauboeuf-Lafontant, 2005; Wallace, 1979). While there is variance in the degree to which Black women internalize and adopt these constructs (Nelson et al., 2016), the SBW provides Black women with armor to protect themselves against the negative effects of discrimination through a behavioral ideal of self-denial that involves being high achieving, hardworking, and showing emotional constraint (Nelson et al., 2016; Donovan and West, 2015; Beauboeuf-Lafontant, 2007; Shorter-Gooden, 2004). This can be helpful when dealing with instances of discrimination and racism within

society writ large (Bronder et al., 2014; Woods-Giscombe, 2010; Reynolds-Dobbs et al., 2008), however, it impedes Black women's ability to be vulnerable since displays of vulnerability would make them weak and not Black (Beauboeuf-Lafontant, 2005).

The inner world of Black women does not reflect impenetrability because bearing the burden of stress within families, communities, and in their working lives leads to weathering of the body and mind (Geronimus et al., 2006; Geronimus, 2001) transmuted intergenerationally through behavior and genes (Burnett-Zeigler, 2022; Menakem, 2017). Continued self-sacrificing behaviors by placing responsibility to others above responsibility to self comes at great personal cost, resulting in poor physical health, depression, substance use, child abuse and neglect, and eating to manage emotional pain (Moody et al., 2023; Matsazuka et al. 2023a; Goodbolt et al. 2022; Harrington et al., 2010; Jackson et al., 2010; Woods-Giscombe, 2010). Engaging in multiple forms of labor (at work, in homes, and in communities) without assistance causes Black women to experience psychological distress when overwhelmed and overextended (Black and Peacock, 2011). In this way, self-sacrificing behaviors augment negative consequences by requiring Black women to not acknowledge emotional pain and normalizing struggle as part of the Black experience. This attenuates Black women's ability to reap the benefits of social support and emotionally focused coping on wellbeing (Black and Peacock, 2011).

Self-silencing behaviors mediate the relationship between strength and depression among Black women (Abrams et al. 2019). Although, internalization of the SBW can be beneficial when used towards achieving goals like recovery from stimulant use by helping Black women to distance themselves from discrimination (Bronder et al., 2014; Woods-Giscombe, 2010) through the frameworks of strength, racial identity, and community/family values (Sypher et al., 2023), it comes at a price. We used the transactional stress process model to examine this and the continued relevance of the SBW framework in Black women's lives (Woods-Giscombe, 2010; Reynolds-Dobbs et al., 2008). We did so because the drug-related experiences of Black women are understudied from their perspectives. We scrutinized how Black women used stimulants to cope with labor related stressors, due to the multidimensional effects of the SBW framework on Black women's health.

For our purposes labor was not limited to the workplace but included efforts to engage in work in the home and at school – places not traditionally considered environments of racialized capitalism because of the gendered realities of Black women and the legacy of their enslavement and domestic work in White households (Katznelson, 2005; Browne and Misra, 2003; Davis, 1983). To this end, we explored prescription stimulants in particular because of its association with illegalized stimulant use like cocaine, as use can be interchanged between stimulant substances because of mimicking effects (Shearer et al., 2022). Though illegalized stimulant use is linked to neighborhood availability (Cano et al., 2022), illegalized or nonmedical stimulant use can arise when barriers in access to care are not addressed. For example, like disparities in overdose, studies demonstrate that in comparison to White children, Black girls have higher incidence of not being diagnosed with ADHD (attention deficit hyperactivity disorder) and are less likely to be prescribed stimulant medication to treat it (Glasofer and Dingley, 2021; Shi et al., 2021). When Black girls become Black women, symptoms of ADHD remain undiagnosed and undertreated (Glasofer and Dingley, 2022; Fairman et al., 2020; Chung et al., 2019) indicating higher likelihood that Black women will need to seek alternative resources to address psychological needs through illegalized stimulant use in the form of cocaine. Thus, we highlighted the relevance of racial capitalism and the SBW archetype in the lives of Black women as they reject permissible coping strategies in response to controlling images of Black women as crack-addicted mothers and welfare queens. We believed that Black women were likely to engage in nonmedical use of prescription stimulants to help manage labor-related stress as a strength-based practice, and in response to barriers in care notwithstanding potential risks.

The Transactional Stress Process Model as an Analytic Frame

The transactional stress process model has been used to examine how stress affects health and includes three components – the presence of stressor(s), their appraisal (primary, secondary, and reappraisal), and coping responses (emotion- and/or problem-based). The coping responses chosen are dependent on how stressors are evaluated - as being a threat (potentially harmful), a challenge (something that can be overcome), or a harm (negative effects have already occurred), and perception of availability

of resources to deal with them (adequate or inadequate; Lazarus, 1987). The cumulation of which affects health based on whether emotion-based or problem-based strategies are used.

Though, emotion- and problem-based coping methods generally occur together, they affect stress experiences in discrete ways. For instance, emotion-strategies are indirect and use psychological and emotional tools to accept or reframe stressors when they are viewed as unchangeable whereas problem-based strategies attempt to directly mitigate the effects of stressors or to eradicate them when they are believed to be manageable (Mouzon, 2022). A study of young Black people perceived to be overweight or obese found that those who experienced discrimination, interpersonal stress, and financial difficulties as main sources of stress and evaluated stressors and resources negatively were more likely to engage in emotion-based methods (Quattlebaum et al., 2021). Thus, the degree to which emotion- or problem-based strategies exacerbates health is based on the chronicity of the stressor.

Since stressors are not time limited, can recur, and be contemporaneous, evaluation does not only happen prior to coping, but afterwards to gauge the effectiveness of methods used (re-appraisal; Folkman, 2010; Lazarus, 1989; Folkman et al. 1986; Folkman and Lazarus, 1980). For instance, when older Black adults used emotion-based strategies, they experienced greater psychological distress than when they engaged in problem-based methods (high active coping) for short-term stressors (Mouzon, 2022). However, when stressors were more long-lasting acceptance of stressors and substance use reduced distress. This indicates that at minimum substance use can provide positive outcomes among Black adults who use drugs to cope with stress by attenuating emotionally intense responses in the case of unchangeable stressors (Jackson et al., 2010; Mezuk et al., 2010).

The strong Black woman framework allows us to investigate the relationship of stress and coping by explaining why Black women might choose nonmedical prescription stimulant use as a coping strategy. For instance, whereas the transactional stress process model walks us through the process, the SBW framework elucidates the conditions within which Black women perceive certain coping strategies to be necessary based on the kinds of stressors they experience. Using labor as an example, the SBW helps us to understand why Black women might use prescription stimulants to cope by drawing on a

racialized and gendered behavioral ideal that necessitates being high achieving irrespective of obstacles and how self-silencing strategies support this by using food to numb emotional pain (Harrington, et al., 2010; Woods-Giscombe, 2010). In this example, nonmedical prescription stimulant use is a problem-based response to stress while eating is an emotion-based strategy.

Methods

Twitter provides a medium by which we can assess how stimulant use acts as an emotion- and problem-based coping tool for Black women who engage in nonmedical prescription stimulant use in the face of persistent and coexistent stress. Research indicates that Black women use Twitter to connect with one another from shared race and gender identities, as well as relevant characteristics shaping identity (Bailey, 2021; Jackson et al., 2020). As such, Black women use Twitter to discuss issues relevant to them, their communities, and experiences like mental health, racialized sexism, pop culture, and resistance and activism (Hawkins, 2023; Pendleton, 2023; Peterson-Salahuddin, 2022; Bailey, 2021; Francis and Finn, 2021; Brown et al. 2017; Stanton et al., 2017).

Black women interact with one another on Twitter to challenge stereotypes and controlling images, reforming what Black womanhood means to them, from their perspective, and in display to other social media subscribers using humor and other acts of signifyin' (displays of Black identity in ways that are understood by other Black people; Brock, 2020; Florini, 2014). Our research questions were: 1) In what ways can the transactional stress process elucidate coping strategies of Black women who engage in nonmedical stimulant use? 2) In what ways, if any, does ADHD or the gatekeeping practices of medical providers impact nonmedical prescription stimulant use? 3) How does the strong Black woman controlling image impact nonmedical prescription stimulant use as an emotion- or problem-based coping strategy?

Data Collection and Sampling

To evaluate nonmedical prescription stimulant use (NMPSU), we engaged in thematic analysis of tweets from Black women Twitter subscribers who talked about NMPSU between March 6, 2018, and

April 30, 2021. We used Python programming language to extract tweets from Twitter (currently called “X”) and machine learning pipelines to extrapolate age, race, and gender using keywords and Twitter profile characteristics from subscribers who self-identified as Black in their tweets (Yang et al., 2023; Al-Garadi et al., 2021; Fodeh et al., 2021). The mean age of subscribers was 28.5 years (minimum age = 17, maximum age = 73) with an average of 5 tweets per subscriber. We extracted 889 tweets from 174 Black women Twitter subscribers using a three minimum parameter for tweets per subscriber. While our unit of analysis was individual tweets, we believed that setting a minimum number of tweets would allow us to understand the stress process of subscribers at the personal level and in individual instances of stress and coping.

Analytic Methods

After data collection we used MAXQDA to conduct thematic analysis. First, we reviewed tweets for mentions of labor-related stress and only kept tweets from subscribers who talked about labor as a stressor at least once in their body of tweets. As a result, our final sample was 542 tweets from 98 Twitter subscribers. Following this, we employed iterative analysis of tweets using Braun and Clarke’s (2006) methods to assess how Black women interpreted stress and engaged in NMPSU to cope. Although labor-related stress was our primary stressor of interest, subsequently listed as productivity throughout (in-vivo coding), we included other prominent stressors identified by the Black women in our sample like stress related to finances, interpersonal issues, mental health and addiction, and body image and weight. We explored the influence of these stressors because stress does not exist in a vacuum and as a result its accumulation affects how Black women use strength-based or self-sacrificing strategies to survive.

While any tweet could be coded for stressors or coping responses, tweets without reference to a stressor were not evaluated for appraisal since appraisal is a mediating concept within the transactional stress process. We evaluated primary appraisal based on whether a stressor was perceived as a challenge, harm, or threat, as well as subscribers’ perceptions of resources including, but not limited to, NMPSU. We determined whether subscribers engaged in reappraisal after coping to assess the effectiveness of coping strategies and consequent side effects, grouping reappraisal with other appraisal concepts. Primary and

secondary appraisal occurred on more subconscious levels with Black women using memes and gifs to express thoughts and emotions about stressors and coping mechanisms. To account for this, we used tone, word tense, and emojis to infer whether Black women evaluated stressors as a challenge, harm, or threat when interpreting tweets.

Coping was analyzed as emotion-based if the methods were used to change thoughts or feelings about stressors, and problem-based if they impacted the stressor directly. In this sense, subscribers could use both emotion- and problem-based strategies to change thoughts and feelings while also addressing stressors directly. Stimulant use was perceived to provide both. It was categorized as problem-based when it impacted productivity or body image through weight loss by helping subscribers to stay awake or focus on tasks or was emotion-based when it helped them to become more motivated or enhanced mood.

We present themes and subthemes as a proportion of tweets at the subscriber and tweet level (Tables 1-2). Themes and subthemes were not considered mutually exclusive, and tweets could be coded for multiple themes at once. We did not present verbatim tweets but used edited (paraphrased) versions to safeguard Twitter subscriber privacy. We superimpose the SBW framework on the transactional stress process below (Figure 1).

In the subsections below, we present the process from stress to coping (transactional stress process) based on problem-based and problem and emotion-based coping strategies for stressors. We did this to give attention to the distinct ways Black women engaged in NMPSU independently and in concert with more than one stressor. Whereas Black women primarily engaged in NMPSU as a problem-based coping method for productivity-related and financial stressors, they employed problem- and emotion-based strategies for mental health and addiction, interpersonal stress, and stress-connected to body image and weight. Within each subsection, we first present the stressor, followed by aspects of appraisal or reappraisal, and then coping, connecting the interaction of stressors with each other when appropriate.

[Figure 1 goes here]

[Tables 1-2 go here]

Results

Overview

Productivity was the most mentioned stressor in our sample due to our emphasis on labor-related stress and strength-based practices of the strong Black woman controlling image, with every woman in our sample describing productivity-related stress at least once. However, Black women also talked about stress from mental health challenges and addiction, interpersonal issues, body image and weight, and finances (Tables 1-2). These stressors co-occurred with productivity or were listed in single tweets without productivity mentioned. Nevertheless, co-occurring stress demonstrated how NMPSU could become generalized among Black women if they moved from prescription stimulant use for one stressor to NMPSU for multiple purposes. To assess this in greater detail we examined how Black women transitioned from stress and coping through primary and secondary appraisal, and reappraisal.

Stress and Coping: Problem-based Methods

Productivity

Black women Twitter subscribers discussed feeling stressed because of work, school, and household responsibilities, with approaching deadlines increasing a sense of urgency. Black women talked about staying up late or going without sleep to meet demands, engaging in NMPSU to bolster these methods by helping them to get up early, remain awake, be alert, become more motivated or more efficient, or focused.

Whereas some posts drew clear distinctions in terms of productivity settings like school, work, and the home, others depicted productivity as a general concept. In these tweets it was difficult to ascertain specific arenas where Black women felt the need/demand to produce. In this way, the terms “work” and derivatives of “productivity” (i.e., productive) were used to describe labor-related stress broadly and in relation to tasks for school and employment/jobs specifically. For our purposes, if work was not connected to a specific role, it was attributed to productivity as an overarching concept, as such

Black women talked about NMPSU as part of their daily routines, with use coinciding with getting ready for the day.

“I don’t know if I’m overtired, took too much CBD or allergy medicine. What day is it? My swivel chair feels like a cloud and I’m pretty sure I’m high. Come on Adderall! Do your job!”

“Eating addies at 7am, because productivity.”

Nevertheless, Black women engaged in problem-based strategies to cope with productivity through organizational methods and by supplementing prescription stimulants with other drugs or caffeine. This was salient across tweets since Black women used productivity as a gauge of functioning, the absence of which signaled a lack of wellbeing. Like this, productivity became a coping mechanism of its own, helping Black women to distract themselves from stress or to modulate negative feelings and emotions.

“Me when I’m upset but take addy and am feeling productive”

*“D*** near went crazy and embarrassed the f out myself the other day all for the sake of not being alone....It’s amazing what staying busy and productive (and Addies [upside down smiling emoji]) can do for you.”*

Productivity at School

Productivity-related to school was linked to Black women pulling all-nighters to complete schoolwork. Black women expressed feeling stressed and anxious because of requirements and expectations in college (and high school), especially when facing immediate deadlines or having to balance work- and school-related responsibilities. Black women talked about engaging in high-active coping through NMPSU in anticipation of the amount of schoolwork to be finished, displaying a willingness to miss out on sleep or take higher doses of stimulants.

“I just took 5 mg of addies against my better judgement because I NEED to get this paper done. I won’t be sleeping tonight. #ADHDLife”

“Just popped 50mgs of Vyvanse. I’m ready for these three finals!!”

“It’s finals week. That means anxiety is high, GPAs are low and the only thing to get us through this tough time is 20mg addies and \$15 old tests.”

Consumption of prescription stimulants often occurred before class or while at the library to get homework assignments done including readings and writing papers. This was common when Black women procrastinated or put off work, or during exam season.

“Ms [name]: Sleep is more important than cramming!!

Me: Ma’am I’m going to take 40 mg of Adderall in the morning and stay up all night”

“It’s 3:55 am. I’ve been studying since like 10:30 last night [staring off into the distance emoji] addy is that girl!”

Inadequate rest can be risky since tiredness affects functioning leading to poor performance during high stake periods.

“I’m pretty sure I’ll be taking about 10 years off my life with all the heart problems I’m going to develop from abusing addies so much this semester [crying laughing emoji]”

Negative outcomes were not anticipated, with some students conveying frustration when NMPSU was ineffective. Black women talked about unwanted side effects like difficulty focusing or becoming easily distracted especially when they consumed larger doses of prescription stimulants. Ineffectiveness of NMPSU was compounded for students who struggled to finish work or were unable to access prescription stimulants through physicians.

“I think it’s pathetic that I take 10mg of Adderall every day and still struggle academically and can only function barely normally. I still have to go to the library every day, and every weekend, even on a reduced courseload [crying smiling emoji]”

Inability of school administrators or medical providers to empathize with the demands placed on Black women worsened feelings of frustration when they internalized poor performance.

“Was late to my first exam because I was getting vyvznz for my second exam. And that’s college folks”

*“approach to academics will always be slow and unresponsive. If it happens at all! It’s not like I want to sit and stare at the same f***** paragraph for 3 hours but that’s what f***** happens no matter how much Adderall I take.”*

Black women viewed NMPSU as compensatory, it was an accepted part of their toolkit for survival as students. When they did not have access to prescription stimulants through medical providers, Black women found sources within their networks including loved ones and other students.

“@subscriber it’s true. When I was in college, I constantly had people wanting me to sell them my Adderall. But I was like “I need it to function? Please just drink a monster and leave me alone.”

“Having white friends so you can get their parents Adderall”

Two Black women noted differences in access tied to race, however, NMPSU was normalized at collegiate institutions indicating that it was used to meet the demands of college life whether or not you were racialized as White and/or received treatment for ADHD. In this way, NMPSU acted as a life preserver helping Black women to feel unconquerable.

“got a 99%, 98%, and 88% for 3 of my finals [tear sniffing emoji] couldn’t be here today without addy [heart emoji celebration emoji]”

“My gpa is cute but I’m about to get an addy script and actually flex on the whites in 2019”

When they completed schoolwork objectives, Black women continued to study so as not to waste the benefits they received from NMPSU, enhancing their ability to get work done, including during short windows.

“I just finished studying and have an hour to kill but I want to study more cause I don’t wanna waste this Adderall [hand emoji]”

This is noteworthy since Black women would reminisce and express longing for NMPSU when they moved beyond college because of how it helped them to meet demands during stressful times in their past.

Productivity at Work

Despite the efficacy of NMPSU to meet school-related tasks, work-related stress was also a challenge to Black women. Black women Twitter subscribers talked about working long hours, including multiple shifts, and managing school- and work-responsibilities in tandem with entrepreneurial endeavors. They worked in varied industries like creative arts and entertainment, business, and service.

“5 classes and a full-time job. AIN'T ENOUGH ADDIES IN THE WORLD!”

“I have ADHD, a fulltime job, a bunch of side hustles and kids including a toddler. My life is currently managed by a ridiculous amount of coffee. Can't wait until I stop breastfeeding so me and addy can get reacquainted. [crying laughing emoji]”

Like school, NMPSU helped Black women to wake-up if they stayed up late. However, for women with work-related stress, staying up late was due to participation in recreational activities rather than getting work done. Meaning Black women used stimulants to help them wake-up or be alert during the workday, with some engaging in NMPSU to alleviate boredom or to become motivated to work.

“Getting readjusted to Adderall which means 2 straight days of sleeping before I start churning out art again. See y'all later”

“Crap! I have to wake up for work at 4 am. Oh well. This is why I have addy. For late nights. Let's go #Eagles!”

Black women exhibited ambivalence towards work activities, with some gaining esteem from their jobs whereas others just tried to get through the day. NMPSU to meet deadlines was not as frequently mentioned as NMPSU to stay awake for this group. For instance, wherein NMPSU was normative in academic settings, it did not appear to be so within the specific roles/industries of the women sampled (or they did not mention it). Instead, NMPSU vacillated by the individual and their needs/demands.

“There better be a coffee shop in this fancy place my new job is. Since my yerba mate mysteriously disappeared from the fridge. If not, addy is gonna get tagged in.”

Consuming caffeine including coffee, energy drinks, and tea were common, with women looking to augment the effects of prescription stimulants. However, coping primarily included the use of substances to increase energy. Coping strategies outside of NMPSU were less likely to be mentioned or were not valued in the same way.

“When I first moved to the city I secured a doctor to give me Adderall so I could WORK instead of finding a real counselor. The clown suit is 24/7 round these parts girls!”

“2019 was the best year of my career but the worst year of my life. Jay-Zs Blueprint plus forced FT and check-ins from friends who love me really got me through. And addy. Prob mostly addy. But thank you friends, it meant the world.”

For the most part, Black women talked about support in the form of NMPSU.

*“I work 35 hours a week and take 7 classes. I pay my rent, my phone bill, my car note and other necessities all by myself. My mom and dad don’t support me emotionally or financially. It’s just so draining to the point I have to take hella Adderall just to get sh** done. I hate it.”*

This may explain a willingness to engage in NMPSU in spite of negative side effects like difficulty sleeping, shakiness, and gastrointestinal issues when stressors mounted.

Black women who talked about stressors focused on sources of NMPSU to supplement their needs, with sources largely going unnamed. However, Black women with work-related stress listed doctors and therapists more often in their conversations about NMPSU while college students talked about prescriptions. This may showcase differential access to prescription stimulants through medical providers, as older Black women either have difficulty obtaining medications through providers, already have a stable source, or are less likely to engage in regular NMPSU. Nonetheless, NMPSU allowed Black women to feel powerful at work.

“Taking an Adderall and furiously sending 20 work emails is just as powerful as playing a full game of professional basketball”

Productivity at Home

In terms of productivity in the home, Black women gained a sense of pride from taking care of chores and household responsibilities. Household responsibilities ranged from routine cleaning and laundry to cooking, shopping, getting ready to spend time with loved ones, and the begrudged wash day (when Black women wash their hair and do natural styling). Although productivity in the home placed demands on Black women, they were not perceived as negative since the ability to engage in these tasks were a sign of wellbeing for Black women, who assessed their functioning from them (i.e., an absence of functioning in the home signaled sadness/depression). Black women engaged in NMPSU to complete routines and to experience pleasure from medications when finishing chores, just as they did for productivity as a general stressor.

“I’m gonna wash this hair and do a twist out. Let me drop this Adderall prescription right now!”

“you know things are looking up (and I have some addy) when my room is this clean and organized! I let it get so bad when I’m sad hahaha”

“I decided waking up at 8am, taking vyvnx, and bleaching my whole bathroom is better than crack (to future employers, this is in no way an admission that I am a crackhead)”

Productivity in the home can act as a signal for wellbeing and be a coping method along with NMPSU.

Finances

Following productivity related to the household, financial stressors were the least mentioned stressor in our sample. Black women described needing money to support their Adderall addiction, with one woman expressing willingness to exchange sex for drugs. Others highlighted financial deficits and engaging in NMPSU to help them create artwork to sell to meet financial needs or a willingness to sell their own medication to take care of monetary deficits. These examples show how productivity intersects with financial stressors to help Black women support themselves. However, this can be encumbered by poor mental health. One woman described financial barriers in her ability to get mental health care.

“I don’t want to be dependent butcan I please have sum Zolofit? Adderall? Affordable therapy? Anything?”

Like the role social disadvantage plays in the lives of Black women leading to NMPSU to cope with negative emotions from stress, Black women harnessed NMPSU to meet their financial needs and to be more productive, likely so they could attain economic success or be financially stable. This is part of the grind of racial capitalism.

“@subscriber no one cares at certain levels. They can’t risk testing their best to find out they are on drugs. When I was broke, I used to sell my addy to tech bros.”

With this in mind, we turn to NMPSU as an emotion- and problem-based coping method.

Stress and Coping: Problem- and Emotion-based Methods

Mental Health and Addiction

Black women assessed stress related to mental health and addiction to stimulants based on adequacy of resources to meet needs or the ability to function and engage in pleasurable activities. It is difficult to discern the timeline of events from NMPSU. However, we present mental health conversations in which Black women did not state that stimulant use caused poor mental health. Although, this may have been the case. For Black women Twitter subscribers, struggles associated with mental health and addiction included depression, anxiety, stimulant use dependence, and suicidal ideation.

“I’m so depressed I cannot function. I can’t read. I can’t study anymore. I sit in the library alone and cry. I can’t even focus with adderall. I can’t do my laundry, cook, or change my sheets.”

Concurrent stress negatively affected Black women who reported stress from the demands of school-based productivity.

*“trigger warning// speaking of college if I don’t get my d*** Adderall and a reason to live. I’m not about to get into any [sad face emoji]”*

“so my first day of school went a little like this: hit snooze on my alarm 6x. An addy cloud macchiato. Loved my first class. Anxiety. Disassociated in my 2nd class. Took a nap in my 3rd class because the professor loves me. Bomb threat. Panic attack.”

Feelings of sadness could progress over time based on ability to address contemporaneous stressors, with women moving towards tolerance, dependence, or generalized NMPSU.

*“I now take Adderall and have atypical anorexia....but not adderexia. The way I’m still f***** up but at least I don’t abuse addy. At this point that’s my greatest accomplishment.”*

*“Wait until I have money to afford my addiction. It’s over for you h***”*

*“Instead of my usual 5 mg of addy. Today I briefly thought about doing crack. But the d*** conservatives got rid of it all. Ronald Reagan has taken everything from me.”*

Black women tended to evaluate mental health and addiction stressors as challenges or threats similarly despite employing emotion-based coping more often than problem-based methods. Though both provided a way to modulate thoughts and emotions, NMPSU helped Black women to distract themselves from unwanted thoughts or feelings.

“I really need an adderall so I can focus on something other than suicide. I know I’m annoying y’all. Raise your hand if you muted my tweets”

Whereas Black women subscribers often experienced two or more stressors simultaneously, mental health and addiction was most affected by interpersonal stressors. Although social support and integration can mitigate the relationship between stress and adverse health outcomes, Black women described difficulties in relationships with parents and other loved ones. They talked about conflict in relationships and not receiving adequate support, with some questioning if their lives were worth living. This created greater mental health stress in connection to interpersonal stressors as Black women engaged in NMPSU to numb emotional pain from poor relationships or to quell feelings of loneliness.

*“My mom is really on some s*** today but I love her regardless. I might do uppers tonight.”*

“is anyone listening. can anyone hear me. Does my life matter. Is the sims game fun or is it just something to do. who’s got Adderall”

This is concerning since Black women considered suicide to escape negative evaluations of self, because of inadequate support. Suicidal ideation was discussed by a total of five women in our sample, with Black women contemplating the value of their lives or NMPSU to die by suicide.

“2:30am why doesn’t anyone want to watch me deep clean my apartment on addy... why does no one value me”

*“Remembering I will never be loved. Even by my parents because I am pathetic. GOD I wish I had enough Adderall to f***** destroy my liver and die.”*

Interpersonal

For Black women, interpersonal stressors generally regarded difficulty accessing prescription stimulants or not having enough support/strong connections to others. We discussed support in the previous section and focus on access issues here.

With regards to access, Black women expressed frustration about physicians’ reticence to prescribe stimulants that affected their psychological wellbeing. As literature states receiving a diagnosis for attention disorders does not guarantee care for Black women who engage in NMPSU to manage demands outside of their mental health, including those related to productivity.

“I got some adderall from my nephew and have been having the most productive day. I told my counselor that we thought my anxiousness and sadness was exacerbating my ADHD but I think it was the other way around.”

Medical practitioners appeared to be unwilling to prescribe stimulants or to impede the process of moving from diagnosis to treatment with prescription stimulant medication, making access cumbersome. Often, Black women did not explicitly state why being diagnosed was important to them. However, some talked about difficulty completing assignments and wanting to compete with others academically.

“Help! Where can I get some addies. My doctor won’t prescribe it because they don’t believe in diagnosing adults with ADHD.”

Black women perceived academic success as demonstrative of being able to function normally, and not like someone with ADHD. They noted difficulty completing work without the help of prescription stimulants and that tasks took them longer than expected to finish in comparison to their peers.

“I hate school. Everyone thinks I’m a smart over achiever when actually I’m high on adderall everyday so I pay 100x more attention to everything”

In this way, gaining access to prescription stimulants was an added stressor when Black women struggled to achieve academically or at work. However, the quantity of stimulants prescribed could also reflect shortfalls in care.

“I did no homework the entire break and here I am wasting the past 4 hours...if she doesn’t just file my Adderall and go”

“As if they’d give me more addy [eye roll emoji] @subscriber”

This subscriber described using other methods to supplement prescribed stimulants and taking more than recommended when they experienced increased demands to be productive. Whether dosage was inadequate cannot be determined from the tweet. Irrespective of this, Black women found alternative sources to get medications in response to impediments in care.

“The next doctor I see I’m lying out my teeth for da addy [red angry face emoji]”

Body Image and Weight

Body image and weight issues permeated Black women’s lives, as women across age cohorts discussed this as a stressor (19-24 years and 25-46 years), indicating that weight issues remain prominent as Black women age. Although Black women did not talk about where ideas regarding their body image emerged, it was evident that the physical ideal was slimness.

“I was at my lowest weight at Howard my freshman year. Between walking up and down them stairs, walking to class and not eating because of addy and stress I got down to 135.”

“Just took addy. : D We getting skinny AND a 4.0”

NMPSU helped Black women to decrease appetite and increase focus on exercising and sticking to diets. Black women talked about wanting to be “skinny” and how NMPSU helped them to do just that by distracting them from thoughts about food instead of weight management. Weight loss rather than weight gain was paramount, and Black women subscribers engaged in purging behaviors, purposely missing meals, or limiting what they ate to a few items, and supplementing this with prescription stimulants and caffeine. NMPSU was part of their “diet”, and “working out” was part of their weight management routine. For those who also experienced stress related to work and school, NMPSU’s ability to address co-occurring stressors was a favorable outcome.

*“I can sell all my extra addies or I can start double dosing, lose a bunch of weight, and get a lot of s*** done”*

However, not eating could be the result of being highly focused on other tasks, with women not remembering to eat until later in the night.

Black women relied on caffeine and NMPSU to help them get through the day while reducing their appetite and engaging in cycles of not eating or eating past fullness. Prescription stimulants enabled Black women to cope with the demands of work and school, as well as self-imposed (or societally imposed) demands regarding their bodies.

“I’ve been missing whole days of eating. Then having days of overeating. Was takin coke everyday for like 2 weeks. [But I’m] currently on addy which helps me focus while I work out and eat less. [crying smiling emoji]”

*“ate so much just now cause I’m f*t. I’m gonna take Adderall later today to stop that”*

Conversely, Black women also expressed pride when they were able to be productive without NMPSU.

“I DID IT! I’M STILL UP W/ no Addy, coffee, or monster”

“@subscriber @subscriber I wasn’t prescribed Adderall but I used to buy it off people to help me study and get things done. But when I was more active and eating healthy and

sleeping...I was able to manage school and work and extracurricular better and had increased motivation. but idk your situation.”

Nevertheless, when NMPSU caused Black women to become distracted or unable to focus, they demonstrated dexterity by engaging in alternate activities.

“I will never mix Adderall and black coffee again. I’m like vibrating and can’t sit still and somehow even more distracted than usual. It’s like I’m pumped with adrenaline but nothing scary or exciting is going on. I wonder if I can go run some laps. Wtf”

“So I was TIRED today. Doubled the Vyvanse and got venti cold brew extra shot. I just noticed I’ve been listening to “Through the Fire and Flames” for 2 hours straight...SO FAR AWAY WE WAIT FOR THE DAYEAY [URL for meme or gif]”

Lack of access to or inadequate amount of prescription stimulants could impede problem-based coping and pose a threat to achieving body image goals. Yet, Black women sought alternative sources through strangers when they didn’t have access to stimulants.

*“So I asked this guy for some of his Adderall cuz I just knewww when I came back to work after a week of vacation it would be hell. N**** should’ve told me no coffee with this. [surprised face emoji]”*

*“When I sold uppers a N**** tried to pay me in head lmao college students are irritating.”*

Black women subscribers engaged in nonmedical prescription stimulant use to increase motivation for productivity and to improve body image, as well as to produce positive emotions. In conjunction with emotion-based coping, problem-based coping produced positive affect through self-esteem, self-control, and self-efficacy over stressors. Problem-based coping enhanced emotion strategies by helping Black women to shift their feelings by motivating them to overcome challenges and attend to other activities like cleaning or work.

Discussion

Black women engaged in nonmedical prescription stimulant use for a panoply of reasons. For some, it enabled them to be distracted, to have fun, or to interact with peers. For others, NMPSU helped Black women Twitter subscribers to address stressors ranging from productivity to mental health and addiction, and finances. All in all, Black women relied on studying, lists, routines and schedules, self-care activities like exercising, interpersonal relationships, and medication for depression and anxiety to deal with stress in combination with NMPSU.

For stressors pertaining to productivity, Black women upped doses or avoided sleeping. These were thoughtful responses, as Black women placed higher value on demands irrespective of immediate or future risks to health. In kind, the Black women in our sample did not talk about instances of overdose from stimulants outside of suicidal ideation, though it is a risk of use. But they did acknowledge that NMPSU could lead to negative effects on their hearts. Like this, NMPSU represented the nuance of Black women's experiences, especially when NMPSU progressed towards dependence and became more generalized across stress and recreational experiences. What is certain, is that the pejorative image of the crack-addicted mother remains salient for Black women (mentioned 10 times by 8 different women) as some conceived of their drug use from this perspective.

Black women drew parallels between the effectiveness of crack-cocaine (or illegalized stimulants more broadly) in place of prescription stimulants. However, only focusing on negative ascriptions of Black women's stimulant use belies reappropriation of controlling images among Black women who view cocaine use as an alternative to prescription stimulants like Adderall or Vyvanse, showing agency in nonmedical stimulant use. In this way, Black women used humor to supplant negative imagery of the crack-addicted mother to juxtapose the utility of prescription stimulants with crack-cocaine to cope with demands. Black women balanced NMPSU to avoid unwanted outcomes from stress or in the space of decreased access to prescription stimulants from medical providers.

For the most part, Black women Twitter subscribers considered stressors as challenges, and used positive language and beliefs of self-efficacy, self-control, and self-esteem to choose problem-based

coping methods. While the controlling image of the crack-addicted mother is used to present Black women as lazy and lacking control, the Black women in our sample engaged in stimulant use to increase productivity in resistance to the image as they detached themselves from it. Productivity was a source of pride, and Black women used it as a sign of functioning to evaluate their wellbeing as they engaged in NMPSU to cope with demands. For instance, when Black women excelled in school, work, or home settings they experienced positive self-image and perceived themselves as powerful and unconquerable. However, when they failed to meet their own expectations, or the expectations they internalized from others, Black women struggled to complete tasks and responsibilities, engaging in self-criticism and comparisons.

Valuations of strength through success without considering its limitations impedes Black women's wellbeing and sense of self which likely triggers feelings of anxiousness and sadness, leading to depressive and anxious symptoms. This is concerning since several women in our sample expressed suicidal ideation when they endeavored to be successful in ways aligned with the American ideal of placing work above all.

Although Black women are increasingly obtaining higher levels of educational attainment (DOL, 2022; Everett et al., 2005), there is a sense of diminishing returns when their mental health comes at the cost of success (Assari et al., 2019; Assari et al., 2018). While the strong Black woman framework can increase positive emotions and reduce symptoms of depression through a racial and gender identity of resilience and overcoming obstacles (Castelin and White, 2022; Green, 2019; Bronder et al., 2014), it is limited when Black women engage in perfectionism, contributing to increased psychological distress (anxiety, depression, and stress) and suicidal thoughts or behaviors (Liao et al., 2020; Green, 2019). This is especially true for younger, college-aged Black women who experience lower self-esteem compared to older Black women or those not in school (Stanton et al., 2017). Furthermore, while refrains of #BlackGirlMagic and similar statements are used to create a counterframe for Black women, beliefs of perfection do not allow Black women to be whole and sometimes weak (Porter and Byrd, 2023; Beaubouf-Lafontant, 2009) because of the impact of racism and sexism in their lives. Black women may

engage in self-silencing to the detriment of their psychological wellbeing to protect themselves in spaces, like universities, colleges, and work, that are unsupportive and unsafe, when they lack supportive networks (Porter and Byrd, 2023; Thompson and Dale, 2022; Abrams et al., 2019). Racialized capitalism encourages Black women to continue to labor while reaping fewer rewards for mental health and striving against structured racism that makes economic success more difficult.

Whereas stressors connected to mental health and addiction were perceived to be threats or harms, with Black women appraising stressors more negatively when coping strategies were insufficient, Black women still responded with problem-based coping methods. Though, they also used emotion-based strategies. When describing relationships with loved ones, Black women tended to express a lack of support that coincided with using Twitter to express frustrations, seemingly to connect with others online to supplement in-person relationships and to diminish feelings of loneliness (Matsuzaka et al., 2023b). It appears some Black women judged their worthiness based on parental figures, the absence of support from whom, along with managing multiple stressors, an inability to meet expectations, or co-occurring addiction to stimulants, anxiety, or depression, worsened mental health. Although studies showcase the negative effects social media can have on psychological wellbeing (Berryman et al., 2018; Stanton et al., 2017; Vogel et al., 2014), Black women have a history of cultivating supportive spaces with one another online to pushback against racialized gendered oppression (Bailey, 2021; Francis and Finn, 2021; Cottom, 2017). This may explain why the women in our sample, used Twitter as a space to share their struggles and wins. This is significant since research has shown that people who use drugs utilize Reddit to connect with one another for support and to provide health information (Bunting et al., 2021), circumventing traditional modes of connection. Twitter may allow Black women who embody the strong Black woman framework, and who feel lonely and unsupported, to engage in help-seeking to reduce symptoms of loneliness through collective compassion (Maclin-Akinyemi et al., 2021; Liao et al., 2020). However, if deficits in support remain unmet worsened mental health may result. More research is needed to determine whether Black women's utility of Twitter to supplement relationships offline increases or worsens wellbeing.

White et al. (2023), found that while the mask of strength can lead Black women to avoid help-seeking behaviors, Black women college students who demonstrate self-reliance are more likely to seek out formal types of care. The effects of which were showcased when Black women Twitter subscribers talked about getting/looking for help from doctors, psychiatrists, and therapists when struggling with mental health and addiction and productivity. Even still, medical discrimination and cost were prohibitive for these women, as they talked about instances of gatekeeping and having to jump through “adderallhoopz” to access medications. This can be discouraging and can exacerbate stress in and of itself when there is another impediment to overcome in getting needs met.

Black women engaged in resilience when interacting with physicians to ensure their diagnoses led to treatment, otherwise, they would have to contend with the negative effects of the behavioral ideal of the SBW despite high-active coping practices and struggling to meet productivity-based demands. It is difficult to determine whether the women in our sample, struggled with attention disorders on an aggregate level or used prescription stimulants primarily to compete in educational or work settings as part of a normative practice to meet demands at work or school. Nonetheless, our research validates the persistence of disparities in treatment since younger Black women were more likely to describe using their own prescription stimulants in comparison to Black women 25 years and older, who talked about interactions with doctors and therapists more often.

Engaging in nonmedical prescription stimulant use rather than seeking therapy can trigger negative self-perception, as using medications is perceived [by Black women] to be something White women do because of access to and racialization of drug use by medical practitioners, including viewing White women as emotionally weak (Jones et al., 2015; Gubrium, 2008). However, Black women find alternative sources to access prescription stimulants through loved ones, peers, plugs, and online to meet perceived needs at home and to compete in academic and work settings (Murphy et al., 2018).

Limitations

We acknowledge several limitations to our study. First, although our sample focuses on the strong Black woman controlling image, a key construct of this image deals with how Black women engage in

caretaking practices. However, only one woman in our sample talked about any kind of caretaking role. The other women in our sample did not mention these kinds of responsibilities. Another shortfall is that although mental health was an important outcome, it was difficult to decipher the time-order of when women developed symptoms of psychological distress since we only collected tweets about nonmedical prescription stimulant use. As such, poor mental health could be a side effect of use or may have preceded NMPSU which we were not able to ascertain. Lastly, our research was limited to Black women who experienced labor-related stress in the form of productivity. This restricted our sampling pool and impeded our ability to detect how other stressors affected the wellbeing of Black women and could coincide with NMPSU more broadly.

Conclusion

We used the strong Black woman controlling image to examine nonmedical prescription stimulant use as a coping method for Black women experiencing stress connected to productivity at school, work, and in the home. We found that Black women engaged in NMPSU as a problem- and emotion-based coping method, as well as for pleasure, and in resistance to negative images of the crack-addicted mother while experiencing co-occurring stressors. Although only one woman in our sample identified as a parent, our work validates other studies regarding the positive and negative effects of SBW on Black women as they attempt to navigate racialized and gendered oppression aligned with American ideals of financial success. The women in our sample expressed similar motivations to engage in NMPSU for study and work (Fairman et al., 2021) as White people who engage in NMPSU. However, unlike White people who use drugs, Black women experienced distinct obstacles tied to their race and gender and were less likely to mention co-use with opioids, including prescription opioids (Mendez et al., 2023; Shearer et al., 2022; Compton et al., 2018; Jones, 2017; McCabe and West, 2013). Even more, one subscriber in our sample pointed to Reagan's war on drugs to highlight access issues in obtaining stimulants. Whereas Raza et al. (2023), Al-Garadi et al. (2022), and Guntuku et al. (2019) used Twitter to showcase motivations and side effects of use like our sample, our analysis showed distinct stressors among Black women in relation to nonmedical prescription stimulant use like suicidal thoughts, lack of

social support, barriers to care, and body image and weight issues. Future studies should incorporate mixed method strategies to distinguish group level differences in nonmedical prescription drug use, especially considering growing nonmedical prescription use among Black people and should provide recommendations to increase access to care for conditions like ADHD and decriminalization of drugs (Herzberg et al., 2023; McCabe and West, 2023 Fairman et al., 2020).

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Tables & Figures

Table 1. Theme definitions and example tweets.

Theme	Definition	Example
Stressors		
Productivity	Describing generalized effort towards a non-specified goal; or in school-; employment- or occupation-; or home-related settings.	<p>“Eating addies at 7am, because productivity.”</p> <p>“Just popped 50mgs of Vyvanse. I’m ready for these three finals!!”</p> <p>“Getting readjusted to Adderall which means 2 straight days of sleeping before I start churning out art again. See y’all later”</p> <p>“I’m gonna wash this hair and do a twist out. Let me drop this Adderall prescription right now!”</p>
Body image/weight	Describing views of physical self, weight, or eating behaviors, especially in a negative regard.	<p>“@subscriber I’m about to start popping Vyvanz again and not eating.”</p>
Financial	Disclosing concerns about money.	<p>“I’m late to work. Dropped my Dunkin when I walked in. Out of addy and my car started smoking. It’s really expensive to fix. Straight terrible.”</p>
Interpersonal	Mentioning conflict with others, including medical providers and coworkers.	<p>“My mom is really on some s*** but I love her regardless. I might do uppers tonight.”</p>
Mental health and addiction	Acknowledging mental health diagnosis or	<p>“I got some adderall from my nephew and have been having the most productive day. I told my counselor that we thought my anxiousness and</p>

dependence on drugs (prescription or illegalized).	sadness was exacerbating my ADHD but I think it was the other way around.”
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Appraisal

Primary	Explaining perception of stressor as challenge, harm, or threat.	“Crap! I have to wake up for work at 4 am. Oh well. This is why I have addy. For late nights. Let’s go #Eagles!”
Secondary	Analyzing resources to deal with stressor (e.g., sufficient, insufficient).	“I almost had a moment of weakness. BUT I bought a red bull so that helped. Gonna take another Adderall when my mom picks me up so I can study all night.”
Re-appraisal	Evaluation of coping response or its effects in the past tense. Re-evaluation of stressor.	“I just took 5 mg of addies against my better judgement because I NEED to get this paper done. I won’t be sleeping tonight. #ADHDLife”

Coping

Emotion-based	Indirect action to change feelings or thoughts about stressors.	“Finna take some addy to keep me busy and to get my mind off things and keep from eating s*** I don’t need.”
Problem-based	Direct action to remove or reduce a stressor.	“@subscriber have you tried snorting 4 pounds of addies to stay awake? Works like a charm”

Note: Themes were not mutually exclusive. Tweets could be coded for multiple themes simultaneously.

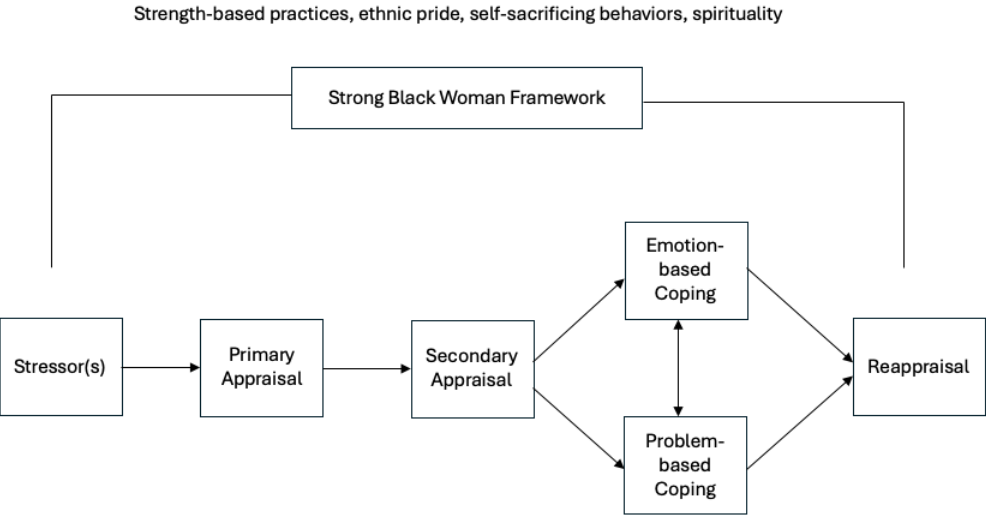
Table 2. Theme distribution across tweets and subscriber representation

Theme	Prevalence at the subscriber level (%)	Prevalence at the tweet level (%)
Stressors		
Productivity (general)	38 (38.8)	57 (10.5)
Productivity at school	51 (52.0)	92 (17.0)
Productivity at work	39 (39.8)	62 (11.4)
Productivity at home	13 (13.3)	17 (3.14)
Body image/weight	21 (21.4)	27 (4.98)
Financial	8 (8.16)	12 (2.19)
Interpersonal	25 (25.5)	31 (5.72)
Mental health and addiction	33 (33.7)	52 (9.59)
Appraisal		
Primary	54 (55.1)	96 (17.7)
Secondary	64 (65.3)	127 (23.4)
Re-appraisal	84 (85.7)	170 (31.4)
Coping		
Emotion-based	46 (46.9)	82 (15.1)
Problem-based	98 (100)	258 (47.6)

Note: Prevalence at subscriber level is based on n = 98 Twitter

subscribers. Prevalence at tweet level is based on n = 542 tweets. Out of total samples of Twitter subscribers or tweets.

Figure 5. Strong Black Woman Framework and Transactional Stress Process Model



Chapter 4: “I Been Taking Adderall Mixing it with Lean, Hope I Don’t Wake Up Out My Sleep”: Harnessing Twitter to Understand Nonmedical Prescription Stimulant Use among Black Women and Men Subscribers

Abstract

Background. Black women and men outpace other races for stimulant-involved overdose mortality despite lower lifetime use. Growth in mortality from prescription stimulant medications is increasing in tandem with prescribing patterns for these medications. We used Twitter to explore nonmedical prescription stimulant use (NMPSU) among Black women and men using emotion and sentiment analysis, and topic modeling. *Methods.* We applied the NRC Lexicon and VADER dictionary, and LDA topic modeling to examine feelings and themes in conversations about NMPSU by gender. We paid special attention to the ability of current natural language processing techniques to detect differences in emotion and sentiment among Black women and men. *Results.* We found that although emotion and sentiment outcomes match the directionality of emotions and sentiment observed (i.e., Black Twitter subscribers use more positive language in tweets), this belies ineffectiveness of NRC and VADER dictionaries to distinguish emotion and sentiment for Black people. However, LDA topic models showcase the relevance of hip-hop, dependence on NMPSU, and recreational use as consequent to Black Twitter subscribers’ discussions online. Though, gender shapes the relevance of topics for Black women and men. *Conclusion.* Greater attention needs to be paid to how Black women and men use social media to discuss important topics like drug use. Natural language processing methods and social media research should include larger proportions of Black, Hispanic/Latinx, and American Indian populations in development of emotion and sentiment lexicons, otherwise outcomes will not be generalizable to populations writ large.

Keywords

Gender; nonmedical prescription stimulant use; NRC; race; topic modeling; Twitter; VADER

Introduction

Between 2007 and 2019, Black people experienced rapid growth in mortality from co-involvement of stimulants and opioids, with a 575 percent increase in death attributable to cocaine and opioids, and 16,200 percent increase in death involving methamphetamines and other stimulants and opioids (Townsend et al., 2022). Contamination of stimulant products with fentanyl and other synthetic opioids is driving rises in overdose deaths of Black women and men (Kline et al., 2023; Ciccarone, 2021; O'Donnell et al., 2020). Yet, mortality is not limited to Black adults, as Black people of all ages, including adolescents and young adults, demonstrate higher mortality from stimulants than White peers (Walia et al., 2021).

Illegalized stimulants like those previously mentioned are not the only culprits. Prescription medications like Adderall, used to treat attention disorders like ADHD, have increased stimulant-involved burdens of death among Black American and American Indians, outpacing White people who use drugs (CDC, 2023; Kariisa, 2021). Although diagnosis and treatment for ADHD have coincided with higher mortality rates, gaps in diagnosis and treatment of ADHD among Black people persists, with Black women and Black girls being less likely to be diagnosed with ADHD than White adults and children, and in some cases Black men (Bergey et al., 2022; Glasofer and Dingley, 2022; Shi et al., 2021; Fairman et al., 2021; Fairman et al., 2020; Chung et al., 2019). Underdiagnosis of ADHD can lead to self-medicating symptoms through nonmedical prescription stimulant use for Black adolescents contributing to mortality among this group (Goodhines et al., 2020). Nonmedical prescription drug use is the use of medications in ways not prescribed by medical providers, which includes using medications not prescribed to you.

Like young people of all races, Black adolescents and young adults gain access to prescription stimulants through social networks including friends, family members and peers, and medical providers (Mendez et al., 2023; Fairman et al., 2021; Goodhines et al., 2020; Hulme et al., 2018). Of significance is the likelihood of exchanging one form of stimulant for another because of similar effects, like in the case of prescription stimulants and cocaine (Shearer et al., 2022). More research is needed to understand the role nonmedical prescription stimulant use (NMPSU) plays in mortality from stimulants given lower rates

of use among Black adults (Shearer et al., 2022) and lack of evidence of demographic differences in patterns of use among Black adolescents in comparison to White peers (Goodhines et al., 2020). Twitter provides an opportunity for us to examine this in greater detail, as Black women and men use the site to communicate with one another and share experiences relevant to a Black cultural identity and to talk about mental health including drug use (Francis and Finn, 2021; Brock, 2020; Florini, 2014).

Black social media subscribers talk about NMPSU on Twitter more often than they discuss other forms of nonmedical prescription drug use (NMPDU; Yang et al., 2023). However, research examining the intersection of race and gender on drug use behaviors using social media data is limited. While studies may account for race and gender in their sampling frames (Yang et al., 2023; Stevens et al., 2020), these variables are not examined together to observe differences in Twitter conversation topics about NMPDU. This is concerning since race and gender are fundamental causes of drug behaviors through racism, sexism, and other forms of oppression, as well as from socio-environmental risks like poverty and exposure to adverse childhood experiences (Banks et al., 2023; Silverstein et al., 2023; Gondre-Lewis et al., 2022; Nicholson, 2020; Miguel et al., 2019; Kramer et al., 2009; Link and Phelan, 1995). Plus, race and gender intersect to create graduated effects on drug related outcomes among Black women and men. For example(s), women are less likely than men to be given Narcan in the case of an overdose (Jones et al., 2023a), and Black women are more likely to die from stimulant use than White women (Jones et al., 2023b). Even more, exposure to violence, be it interpersonal or at community levels, increases risk of testing positive for HIV and using drugs like stimulants for Black women and men in different ways (Stockman et al., 2021; Nydegger et al., 2021; Saadatmand et al., 2020; Miguel et al., 2019; Lichtenstein, 2004; Crenshaw, 1991).

Nevertheless, race and gender are unobserved outside of survey methods and qualitative research. For instance, although Al-Garadi et al., (2022) used novel methods to account for how gender rather than biological sex influenced emotion and sentiment in tweets about nonmedical NMPDU among women and men, they did not attend to how race complicated these differences online, including the influence of race and gender on topics about reasons for NMPDU. Even more, despite race and gender affecting likelihood

of diagnosis of and prescription treatment for attention disorders, Guntunku et al. (2019) did not incorporate these characteristics into their study of how Twitter subscribers discussed ADHD, including use of prescription stimulants and other drugs to treat symptoms of ADHD, to self-medicate, or to engage in recreational drug use. While Raza et al. (2023) provided a robust framework to investigate nonmedical use of Adderall, Alprazolam, morphine, and fentanyl through named entity recognition (NER) and BERT classification models to detect and evaluate topics about adverse events, and symptoms of use, race and gender were not evaluated.

Studies regarding race and gender highlight linguistic and thematic distinctions in conversations online, and the need for greater consideration of these socio-demographic variables in analytic methods. Preoțiu-Pietro and Ungar (2018) showed that race affects communication patterns and conversations on Twitter, and Sun et al. (2020) demonstrated that gender determines the kinds of emotional language used and topics discussed by women and men online. For instance, Black people on Twitter use Black American vernacular and other signifiers of a Black cultural identity to ensure safety when communicating with one another, to disclose personal information related to activities and whereabouts, and to express emotions of positivity, anger, disgust, fear, and sadness in comparison to Hispanic/Latinx, Asian, and White Twitter subscribers (Brock, 2020; Preoțiu-Pietro and Ungar, 2018; Florini, 2014). However, Blodgett et al. (2016) and Kiritchenko and Mohammad (2018) observed that lapses of inclusion of Black social media subscribers in digital research leads to biasing of NLP algorithms in the form of language classifiers and emotion/sentiment lexicons causing failure to detect Black Twitter subscribers' speech patterns including syntactic abbreviations, grammar, and emotions that challenges the validity and interpretability of computational methods when they are included in social media research. This means that the collective gap in digital inquiry accounting for race and gender in social media research undermines the reliability of results by whitewashing outcomes, defaulting to a White subscriber when developing NLP tools (Hampton, 2021; Noble, 2018).

By not attending to differences in communication patterns about drug-behaviors online and not observing the significance of gender and race in NLP techniques social media research regarding drug-

related harms is limited in its generalizability across populations. For instance, TF-IDF (term frequency-inverse document frequency) is a good measure of differentiating between important topics across groups, however, results from topic models incorporating TF-IDF may be mislabeled by human annotators if important demographic characteristics are not evaluated. Al-Garadi et al. (2021) disambiguated between nonmedical and medical consumption of prescription medications, revealing the influence of pop culture references like the YouTube video of a man consuming Adderall with whiskey while wearing diesel jeans in tweets labeled for nonmedical use. Although Al-Garadi et al. (2021) accurately labeled the term whiskey with co-consumption of drugs, this label, in reference to the YouTube video, is not generalizable across Twitter subscribers as it may in fact represent interest in cultural objects linked to NMPDU rather than concomitant drug behaviors. In a similar way, Stevens et al., (2020) accounted for race in their sampling frame and analytic methods but did not report the implication of race on results regarding drug-related keywords and topics. While they used “slang” terms and song lyrics to construct classifiers, they did not inspect their effects at inter-group levels to understand Black and White distinctions in drug-behaviors and communication patterns on Twitter. We explore the implication of this in greater detail as it concerns NMPSU, because emotion expression and topics about NMPSU by Black women and men are likely distinct due to the intersection of race and gender as a fundamental cause of drug use for each group. We attend to emotion and topic analysis specifically, because Al-Garadi et al. (2022) showed gendered differences wherein women Twitter subscribers were more likely than men to express positive emotions, anticipation, sadness, and joy in comparison to men, who were more likely to express feelings of anger in tweets about NMPSU.

Methods

Data Collection

We augment work by Raza et al. (2023), and Al-Garadi et al. (2022) to determine how Black Twitter subscribers talk about nonmedical prescription stimulant use, and how gender shapes these conversations. Tweets were collected from March 6, 2018, to April 30, 2021 (Al-Garadi, 2021). Keyword-

based pipelines were used to extract gender and race from Twitter profile content, with race assigned by self-identification in historical tweets as someone who is Black (e.g., “I am Black”). Pipelines produced high levels of predictive accuracy for gender and race (Yang et al., 2023; Yang et al., 2021). We extracted approximately 2,418 tweets from women and 2,702 tweets from men from a total of 1,506 Black women and 1,703 Black men Twitter subscribers (Table 1). All tweets were publicly available, and usernames were removed to maintain privacy.

Analytic Methods

Emotion Analysis

We conducted emotion analysis using the NRC lexicon, which uses English words to identify the emotional content of text depicting feelings of anger, anticipation, disgust, fear, joy sadness, surprise, and trust, as well as their positive and negative valence (Mohammad and Turney, 2013; Plutchik, 2001). Values for each emotion are dependent on their proportion representation across each tweet. However, we removed tweets assigned a value of 0 for all emotions, indicating an inability of NRC to detect emotions overall, reducing the number of tweets in our sample to 1,631 tweets for women and 1,755 tweets for men. We did this because emotion and sentiment dictionaries fail to distinguish Black American English vernacular and syntax for Black versus White Twitter subscribers, and to increase accuracy of our comparative assessments by gender (Blodgett et al., 2016). We used median values for each emotion to exclude outliers, leaving approximately 440 tweets for Black women Twitter subscribers and 436 tweets for Black men subscribers. The Mann-Whitney U Test helped us identify statistically significant differences in emotions expressed by women and men considering non-normality of data (Table 2; McKnight and Najab, 2010; Nachar, 2008).

Sentiment Analysis

To account for potential accuracy limits of the NRC Lexicon emotion analysis, we supplemented these methods using the VADER sentiment dictionary, which determines the degree to which language in text is considered positive, negative, or neutral, assigning a compound score to detect polarity (Czarnek

and Stillwell, 2022; Ribeiro et al., 2016; Hutto and Gilbert 2014; Table 3). Whereas positive, negative, and neutral scores can range between 0 and 1, compound scores are between -1 and 1, with neutrality assigned to values -0.05 to 0.05. We used the original sample of tweets by Black women and men subscribers who talked about NMPSU and removed those with compound scores showing high degree of neutrality because this signified difficulty assigning sentiment to each tweet. As such our tweet sample was reduced for women and men, with 1,597 and 1,665 tweets remaining, respectively. We followed the same procedures from our emotion analysis and conducted Mann-Whitney U Tests for each sentiment to determine gender differences in sentiment valence for Black women and men Twitter subscribers following the removal of outliers (final tweet sample of 1,544 tweets for women and 1,630 tweets for men).

Topic Models

For topic modeling, we used LDA (Latent Dirichlet Allocation), a probability-based model that assigns words to topics based on the likelihood of co-occurrence across documents (Blei et al., 2003). This is an unsupervised approach, which does not incorporate annotation methods, dictionaries, or data categorization to predict relevant topics. We assessed topic models for a range of 5 to 40 topics for each group (Black women and Black men), and inspected coherence values for each model. Coherence measures are used to identify how much words in a topic are related. We chose models with higher coherence values by gender and located the five-most prevalent topics across each model. Finally, we selected a 40-topic model for women and 30-topic model for men using the average percent distribution (minimum of 60 percent mean contribution) of prominent topics per tweet. We did this to ensure appropriate labeling of data, as coherence scores along with topic relevance, and word exclusivity, are important to model interpretation while considering gendered differences in topic representation (Tables 4-5; Weston et al., 2023; Yoon et al., 2013). We present labels before and after manual inspection of tweets alongside sample tweets to demonstrate the utility of qualitative inquiry in natural language processing to evaluate topic models of understudied populations. We observed 10 tweets per topic (when possible) with the highest percentage contribution to ensure themes closely reflected topics. Some topics

were given multiple labels because the same word combinations could be used to describe various aspects of NMPSU.

All assessments were conducted using Python programming language and standard preprocessing techniques (i.e., lowercasing; removal of stop words, hyperlinks, and phone numbers; lemmatization). We present modified versions of tweets to ensure subscriber confidentiality due to the sensitive nature of our study.

[Tables 1-3 go here]

Results

The mean age of Black women and men Twitter subscribers who engaged in NMPSU rounded to 29 years for both groups (Table 1), showing comparable representation between our larger study and Twitter subscribers who talk about nonmedical prescription stimulant use on the site (Raza et al., 2023; Yang et al., 2023). Women and men used the same mean number of stimulant medications (1.01 with a standard deviation between 1,3). Adderall followed by Vyvanse, and Ritalin were the most common medications in our dataset across groups. However, compared to men, women were slightly more likely to tweet about nonmedical prescription stimulant use based on proportion of tweets by gender. This reflects differences in posting patterns by which Black women post Twitter messages more often than Black men, instead of representing differential rates of use by gender (Bailey, 2021; Hargittai 2020).

Emotion Analysis

In comparison to men, median proportion of tweets dedicated to expressing positive emotions and trust were higher for women (0.222 and 0.125 for women and 0.200 and 0.111 for men; Table 2). Whereas those describing negative, anticipatory, or fear-based emotions were greater for men (0.200, 0.0833, 0.0833 for men versus 0.167, 0.0646, 0.000 for women, respectively). Despite this, Mann-Whitney U Tests did not detect differences in emotion scores for women and men at significance levels of 0.05 or less. Though, there was a marginally significant difference in negative emotion expression for men versus

women, with men being more likely to describe negative feelings in relation to NMPSU in their tweets ($p = 0.0634$). The effect size of this was negligible.

Sentiment Analysis

Using the VADER sentiment analyzer, women and men's tweets reflected similar proportions of positive, negative, and neutral language, with greatest proportion of tweets highlighting neutral, followed by positive, and negative sentiment (neutral = 0.770 vs 0.776; positive = 0.120 vs 0.122; negative = 0.0950 vs 0.0870 for women and men, respectively; Table 3). Although, compound scores were higher for women (0.202 versus 0.153), indicating slightly more positive language in women's tweets, matching NRC results about use of more positive language by women. Like Mann-Whitney results for the NRC Lexicon, differences in valence of scores for Black women and men for all sentiments were not significant. Effect size scores mirrored these results.

[Tables 4-5 go here]

Topic Models

Moving to topic models, we found gendered differences in themes discussed by Black women and men in relation to nonmedical prescription stimulant use. Exploring women's tweets first, we found that the most prevalent topics in order of most to least predominant were labeled for cravings; addiction/dependence; experimentation; how NMPSU affects the subscriber's day or how time determines NMPSU; and taking higher dose of prescription medications or supplementing prescription stimulants with caffeine (Table 4). Labels prior to annotation corresponded to those after reviewing tweets, except for the label for experimentation. Experimentation contained "like", "know", "Adderall", "never", "drug", "said", "let", "asked", "girl", and "need" as dominant words, which we inferred to indicate willingness to try prescription stimulants because of "like", "never", "drug", and "asked". However, further inspection showed that these tweets were about the effects of prescription stimulant use, including noticing the effects NMPSU on others or others noticing the effects of NMPSU on the Twitter subscriber.

Unlike posts by women, we had more difficulty correctly labeling tweets for men. We mislabeled prominent themes for 3 out of 5 topics. Whereas women's tweets were about experiences of NMPSU or dependence, men talked about pop culture via song lyrics along with accessing prescription stimulants or finding a source, and recreational use or using Twitter for information seeking about NMPSU (Table 5). For instance, we coded topic 22 for men as NMPSU for different activities including schoolwork. But, upon reading tweets linked to the topic we realized that Black men were in fact quoting lyrics from a song by Lil' Wayne featuring Takeoff, "I Don't Sleep". The topic words were "Adderall", "really", "sleep", "f***", "give", "school", "good", "play", "call", and "year old". The song lyrics are "F*** a bed, f*** a spread, f*** a sheet (I don't sleep), f*** a Xanny, give me Adderall and weed (I don't sleep)". Our original label was not far off from the content of lyrics which describe NMPSU for various activities like sex, productivity towards reaching goals, and recreational use. However, we were unable to infer whether song lyric content matched Black men's NMPSU patterns in relation to the topic identified. Conversely, we were able to recognize lyrics of YoungBoy Never Broke Again for topic 8 matching the song, "Genie". Based on these lyrics, Black men expressed passive suicidal ideation in relation to consumption of prescription stimulants without providing context as to what might trigger listing these kinds of lyrics in tweets. Including how researchers from populations of interest can improve topic model labeling.

Discussion

This study examined the utility of natural language processing (NLP) techniques like emotion analysis, sentiment analysis, and topic modeling to identify race- and gender-based patterns of NMPSU among Black women and men Twitter subscribers. Our results indicate that while NLP methods offer a way to examine large swathes of social media content, outputs are not generalizable across populations and require further inspection to ensure accurate interpretation of results. For instance, although the lead author (JW) identifies as a Black woman, who is a Twitter subscriber, her gender identity as a woman limited her ability to detect gendered differences in conversations about NMPSU for Black men, including topics about hip-hop as a relevant cultural signifier in Black men's tweets. While other research notes the prevalence of song lyrics in tweets, they are usually discarded and not considered to reflect

personal instances of drug use in social media research (Kim et al., 2020; Preotiuc-Pietro and Ungar, 2018). We recommend against this, since music can provide domain level knowledge not easily recognizable to researchers wherein subgroups of people who engage in nonmedical prescription drug use purposely invoke lyrics to denote subjective experiences tied to use (Semenza, 2018). For example, the invocation of hip-hop songs when talking about suicide and thoughts of overdose were reflected in tweets by Black men who use opioids (paper 1 of this dissertation). This indicates that music, especially hip-hop, is not just a marker of identity (Roy and Dowd, 2010), but a tool by which Black people seek safety and peace when struggling with mental health (Wright, 2019; Harper and Jackson, 2018; DeNora, 2013). Even more, there may be intergroup differences where those racialized as White quote lyrics or mention media intrinsic to their own cultural repertoire, which is not consonant with groups racialized in other ways. Like in the case of hip-hop music and Black men Twitter subscribers.

Whereas past studies show gender-based differences in emotional expression for women and men who engage in NMPSU (Al-Garadi et al., 2022), we did not find this despite pulling data from the same corpus. This may be due to us exclusively analyzing tweets by Black Twitter subscribers whose gender could be predicted. As a result, using these characteristics to categorize data showed the limitations of current emotion and sentiment lexicons, like the NRC Lexicon and VADER dictionary, to detect emotion and sentiment for subscriber tweets since studies accounting for gender still default to White men social media subscribers. It is possible that greater representation of tweets by White women and men in training models used to create these dictionaries obfuscates results at subgroup levels, leading to an inability to elucidate cultural distinctions in linguistic expressions for Black women and men Twitter subscribers (Kiritchenko and Mohammad, 2018).

Though language is not a barrier in dictionary-based emotion analysis of our tweets, as all tweets were in English, NRC and VADER failed to detect the emotions and sentiments of more than 30 percent of tweets, with NRC demonstrating more restrictions. Even still, there were inconsistencies in which tweets were likely to be rated as neutral or showing no detectable emotion across dictionaries. Meaning, VADER tweets showing no sentiment were not always similarly assessed by NRC or vice versa.

However, this could be due to differences in the words used by each lexicon, as NRC has a more robust dictionary (Al-Garadi et al., 2022).

At closer study by sampling and reviewing missing tweets by dictionaries, we found that tweets about time did not show sentiment distinctions for VADER, and that colloquial patterns of speech impeded the NRC lexicon from detecting emotions (per the assessment of JW). Further, among tweets removed for emotion and sentiment scores across [both] dictionaries, we noticed that they concentrated on language about need and functioning in relation to NMPSU, substantiating our claims regarding the potency of dictionaries to assess group-level patterns in speech across racialized and gendered populations.

Still, topic models revealed gendered differences in nonmedical prescription stimulant use behaviors for Black women and men Twitter subscribers. While both groups talked about negative side effects from use, like cognitive impairment. The most prominent topics among women were related to dependency. Women were more likely to talk about craving prescription stimulants or relying on NMPSU to meet their needs, with Black women describing taking higher amounts of prescription stimulants and co-using stimulants with caffeine. This aligns with reports of women moving more quickly towards dependence than men (Bobzean et al., 2014). However, this does not mean that prescription stimulant dependence was not relevant to Black men since it was also among their most prevalent topics. Yet, unlike Black women, Black men were more likely to quote song lyrics about NMPSU, and to talk about issues accessing or finding sources for prescription stimulants, as well as engaging in information seeking about NMPSU on Twitter.

Hip-hop was significant in Black men's conversations about NMPSU, as song lyrics from artists like YoungBoy Never Broke Again and Lil Wayne were featured in two out of five of men's most prominent tweet topics. Future studies should evaluate how pop culture shapes or informs nonmedical prescription stimulant use among Black women and men since they display different degrees of influence in tweet content. Although Black women were less likely to include music in tweets, trigrams (word combinations that exist in context of text documents) ranked by gender show that cultural markers about

hip-hop, comedy, and popular online videos were important to Black women’s conversations about NMPSU (Supplementary Tables & Figures: 1-5).

Since hip-hop as a genre is associated with galvanizing online discussions related to mental health for Black social media subscribers, computational studies should incorporate hip-hop to analyze the co-occurrence of mental health disorders among people who use drugs (Raza et al., 2023; Cenat et al., 2023; Banks et al., 2023; Francis 2021, Francis 2018). For instance, rises in conversations about suicide and mental health on Twitter and higher call volume to the National Suicide Prevention Lifeline followed the release of Logic’s song, “1-800-273-8255”, about seeking help when struggling with suicidal ideation (Niederkröthaler et al., 2021; Torgerson et al., 2021). While these studies did not account for race-based differences in Twitter conversations linking mental health to hip-hop, Francis (2021, 2018) showed that Black men discussed mental health and depression on Twitter following rapper Kid Cudi’s disclosure of suicidal ideation and depression on Facebook, with Black men being more likely to seek help about their depressive symptoms. This supports topic 8 of our model about Black men’s tweets, wherein, YoungBoy Never Broke Again’s lyrics from “Genie” describe passive suicidal ideation, and a willingness to mix prescription stimulants with lean (a candy and soda mixture with opioids, like liquid codeine, and promethazine) to die. We do not believe this is innocuous since listing lyrics in tweets coincides with the presentation of mental health concerns for conditions like depression, and content about mental health struggles are rife in hip-hop songs (Alavijeh et al., 2023; Kresovich et al., 2021; Wright, 2019; Harper and Jackson, 2018; Bailey, 2013). Moreover, Al-Garadi infer the words “taking mixing” are about dosage in NMPDU tweets, however, we hypothesize they reflect the song by YoungBoy Never Broke Again we described above.

Limitations

Although our study advances research on drug related outcomes using Twitter to account for how race and gender, as fundamental causes of disease, shape health, there are limitations. For instance, our corpus contained a little more than 5,000 tweets by Black Twitter subscribers who engaged in NMPSU. A larger sample may account for discrepancies in detecting emotion and sentiment across tweets, as posts in

our sample may not be generalizable to all Black Twitter subscribers who engage in NMPSU. Even still, we do not believe this is the case since investigations of sentiment dictionaries display racialized disparities in detecting emotions, with stereotypical emotions assigned to Black social media subscribers (Kiritchenko and Mohammad, 2018) and an undercounting of depressive symptom words for Black Facebook subscribers in comparison to White (Rai et al., 2023). Moreover, topics detected in our analyses match those of Raza et al. (2023) which investigated NMPSU and identified topics about mental health, side effects, and addiction/dependence.

Although a strength of our study is that we focus on the implications of race and gender on stimulant use, we do not assess differences across racial groups or across drug categories (i.e., opioids, benzodiazepines, polydrug use) for nonmedical prescription drug use. Because race is inferred, we were unable to determine whether all subscribers in our repository self-identified with a specific race, impeding our ability to predict races for all subscribers in the full dataset at subgroup levels. As a result, race-based differences for drug behavior patterns among Hispanic/Latinx, Asian, and American Indian populations were limited because of lower volume of tweet representation in our dataset. More work is needed to detect tweets for Black, Hispanic/Latinx, and American Indian populations given rising rates of opioid- and stimulant-involved overdose deaths among these groups, and because their experiences are rarely investigated (Kariisa et al., 2022; Kariisa et al., 2021).

Conclusion

To our knowledge our study is the first to use Twitter to investigate how race and gender intersect in meaningful ways to shape drug-related discussions online using natural language processing techniques, with special attention paid to Black Twitter subscribers. We find that Twitter offers a space for public health researchers in the digital domain to delve more deeply into conversations about nonmedical prescription stimulant use among Black people who use drugs, enabling them to evaluate whether topics relevant to subscribers on the site match real world drug-related experiences more broadly. We believe understanding group level differences can create opportunities for targeted interventions to mitigate drug-

related harms through social media, like in the case of Twitter discussions spurred by rappers Kid Cudi and Logic in relation to suicide and depression.

Though our results show less robust emotion and sentiment detection than Al-Garadi et al. (2022), we believe the inclusion of Black Twitter subscribers as part of analytic teams can improve NLP methods to augment current lexicons by providing domain specific knowledge of Black American vernacular and culture, and its significance in shaping syntax and conversations online (i.e., Black Twitter as a digital community and cultural phenomenon; Aguilar et al., 2023; Frey et al., 2020; Blevins et al., 2016). Furthermore, scrutinizing the implication of hip-hop in tweets can create opportunities for more robust detection of cultural signifiers in the conversations of Black Twitter subscribers (Deas et al., 2023). We hope future researchers, take care in attending to how their racialized and gendered identity influences data interpretation, and how race and gender, as fundamental causes of disease, influence group level differences in conversations online (Aguilar et al., 2023). Black women and men are more vulnerable to overdose-related deaths than their racial cohorts, and we hope this study showcases the imperative of other researchers to pay closer attention to their needs and that of Hispanic/Latinx, and American Indian populations than presently exists in drug-related research.

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Tables & Figures

Table 1. Black Twitter Subscriber Tweet Distribution

Gender (n)	Mean	Num of Tweets	Mean num of	Top 5 meds	Num of Tokens
	Age (min, max)		Meds (min, max)		
Women (1506)	28.7 (15, 78)	2418	1.01 (1, 3)	Adderall Vyvanse Ritalin Adderall and Vyvanse Adderall and Ritalin	22303
Men (1703)	29.2 (15, 78)	2702	1.01 (1, 3)	Adderall Vyvanse Ritalin Adderall and Vyvanse Adderall and Ritalin	23600

Table 2. NRC Lexicon Emotion Analysis

Emotions	Mann-Whitney U Test			
	Median: Women	Median: Men	p-value (p)	Effect size (r)
Positive	0.222	0.2	0.206	-0.0427
Negative	0.167	0.2	0.0634	0.0627
Anger	0	0	0.851	0.00636
Anticipation	0.0646	0.0833	0.702	0.0129
Disgust	0	0	0.452	-0.0254
Fear	0	0.0833	0.422	0.0271
Joy	0	0	0.531	-0.0212
Sadness	0	0	0.568	-0.0193
Surprise	0	0	1	0
Trust	0.125	0.111	0.456	-0.0252

Size effects(*r*): *Small difference ($0.1 \leq r < 0.3$). **Medium difference ($0.3 \leq r < 0.5$).
 Large difference ($0.5 \leq r < 0.7$). *Very large difference ($r \geq 0.7$)

Table 3. VADER Sentiment Analysis

Sentiment	Mann-Whitney U Test			
	Median: Women	Median: Men	p-value (p)	Effect size (r)
Positive	0.12	0.122	0.794	0.00463
Negative	0.095	0.087	0.493	0.0122
Neutral	0.77	0.776	0.239	-0.0209
Compound	0.202	0.153	0.346	-0.0167

Size effects(*r*): *Small difference ($0.1 \leq r < 0.3$). **Medium difference ($0.3 \leq r < 0.5$).
 Large difference ($0.5 \leq r < 0.7$). *Very large difference ($r \geq 0.7$)

Table 4. Women Most Prominent Topics (40-Topic Model)

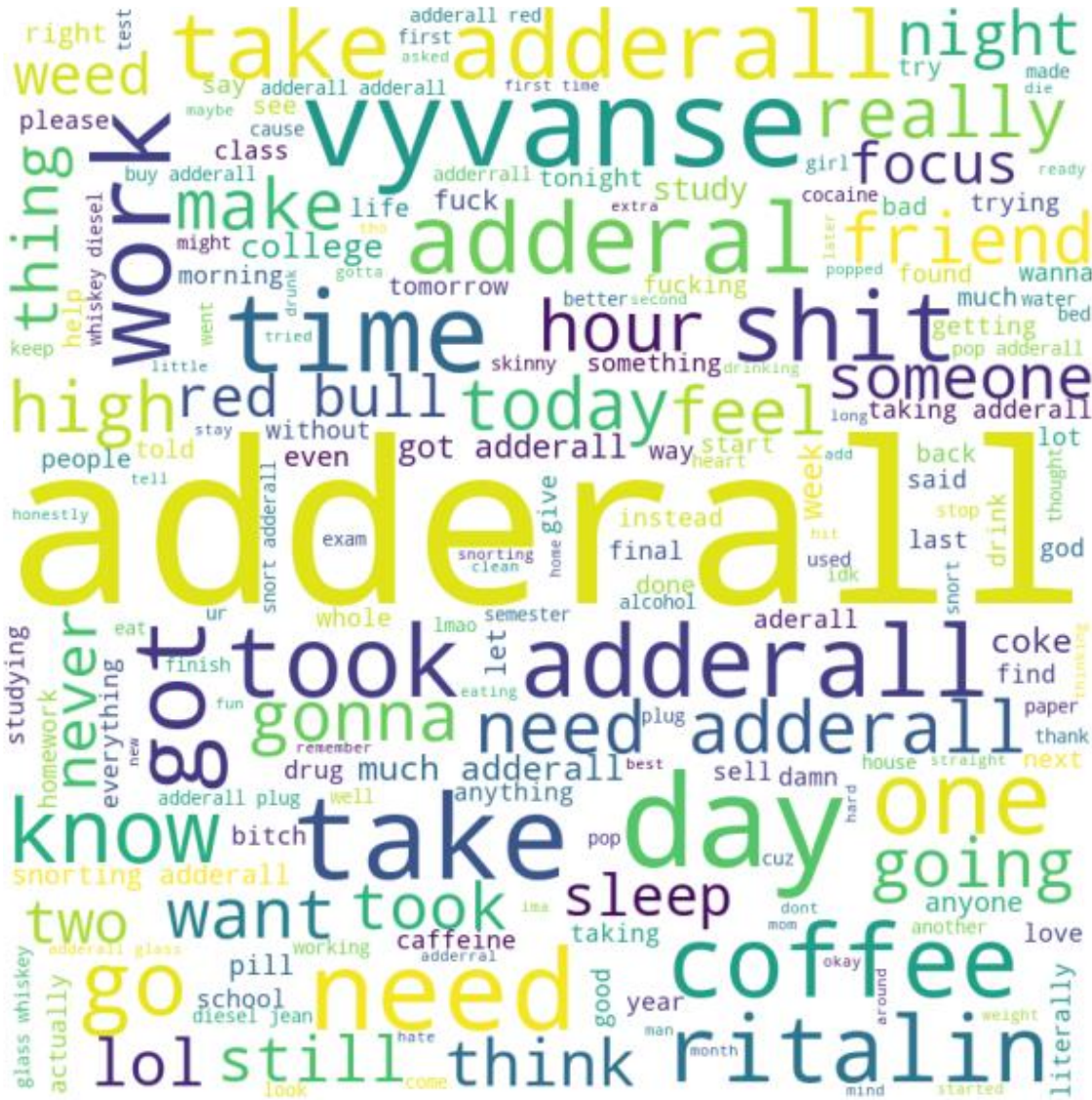
Topic Number	Topic Ngrams	Label (Before Annotation)	Label (After Annotation)	Sample Tweet
17	take; need; adderall; drink; full; bottle; feel_like; m; feel; thank god; every; fun; white; addiction; accidentally	Cravings	Thoughts/feelings about stimulants (including cravings)	"I need more adderall or another brain"
0	day; adderall; think; give; addiction; accidentally	Addiction/dependence	Addiction/Dependence	"@subscriber yea...it was an addy day #adderalldon [crying laughing emoji]"
1	like; know; adderall; never; drug; said; let; asked; girl; need	Experimentation	Effects of prescription stimulant use (includes noticing effects on others or others noticing the effects on self)	"what I look like after binging some adderall"
4	feel_like; feel; two; like; adderall; last_night; tomorrow; used; night; last	How use affects the day (e.g., at night, next day, etc.)	Storytelling about NMPSU (including based on time of day)	"getting drunk and on addies feels like youre stupid but faster"
32	much; coffee; adderall; taking; extra; lot; getting; please; ritalin; ive	Taking higher dose or supplementing prescription stimulants w/ caffeine	Negative effects of NMPSU (side effects from consuming large quantities or with caffeine)	"vitamin r - crushed. kmf/dm - on repeat. coffee - extra strong. hydros - why not."

Table 5. Men's Most Prominent Topics (30-Topic Model)

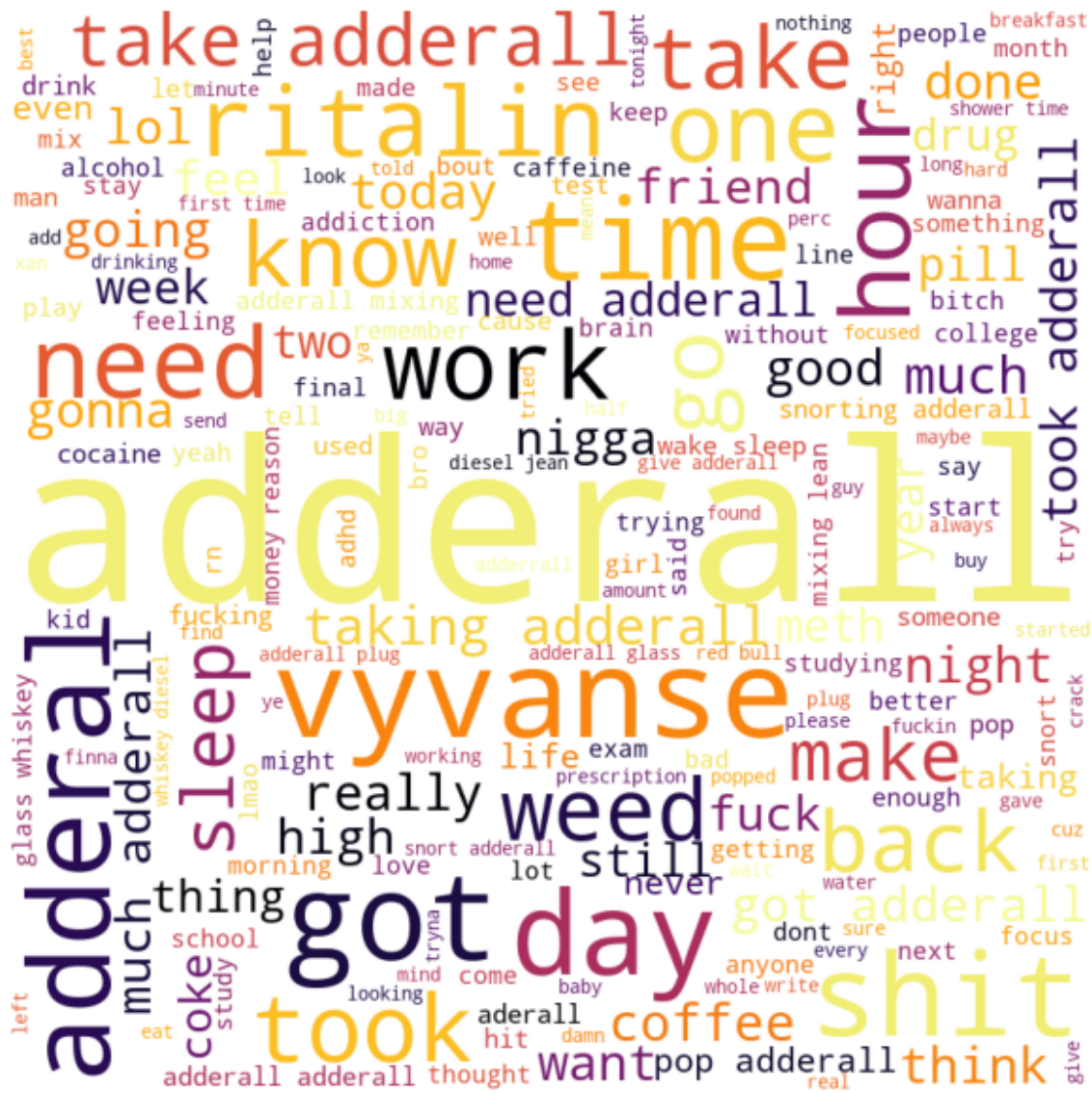
Topic Number	Topic Ngrams	Label (Before Annotation)	Label (After Annotation)	Sample Tweet
8	taking; adderall; adderall; taking; feel; mixing; better; mixing_lean; eat; snorted; tonight	YB NBA - Genie lyrics	YB NBA - Genie lyrics	"I'm taking adderall mixing it with lean hope I don't wake out my sleep"
19	get; day; work; adderall; know; want; caffeine; damn; three; 14	Stimulant use to get through the day (including caffeine)	Access or source	"someone bring me an adderall to my job. I will pay you \$\$\$"
11	take; back; adderall; make; study; lot; made; I'll; tweet; good; like	Distracted from studying (side effect)	Dependence on stimulants (and cognitive side effects)	"a solid 80% of my tweets are while under the influence of addy. My bad"
22	adderall; really; sleep; f***; give; school; good; play; call; year_old	Stimulant use for different activities including schoolwork	Lil Wayne ft. Takeoff - I Don't Sleep	"I don't sleep...f*** a bed...f*** a spread...f*** a sheet...f*** a xan...give me adderall and weed"
14	like; adderall; weed; year; help; cup; pop; house; beer; yet	Polydrug use	Recreational use/information about drug experiences	"please god can I find adderall on the floor again like the day before"

Supplementary Tables & Figures

S1. Unigram Wordcloud for Women (Top 200 words)



S2. Unigram Wordcloud for Men (Top 200 words)



S3. TF-IDF Top 10 Ranked Unigrams for Women vs Men

	Women	Men
1	adderall	adderall
2	get	like
3	take	get
4	like	got
5	need	time
6	day	take
7	took	vyvanse
8	time	day
9	vyvanse	need
10	got	took

S4. TF-IDF Top 10 Ranked Bigrams for Women vs Men

	Women	Men
1	took adderall	taking adderall
2	take adderall	take adderall
3	need adderall	took adderall
4	red bull	much adderall
5	much adderall	got adderall
6	snorting adderall	need adderall
7	get adderall	pop adderall
8	got adderall	adderall got
9	taking adderall	snorting adderall
10	adderall get	get adderall

S5. TF-IDF Top 10 Ranked Trigrams for Women vs Men

	Women	Men
1	whiskey diesel jean	taking adderall mixing
2	glass whiskey diesel	adderall mixing lean
3	adderall red bull	adderall glass whiskey
4	adderall glass whiskey	whiskey diesel jean
5	alright alright alright	glass whiskey diesel
6	time adderall glass	shower time adderall
7	shower time adderall	time adderall glass
8	adderall mixing lean	money reason gotta
9	taking adderall mixing	reason gotta take
10	day adderall red	gotta take ritalin

Chapter 5: Conclusion

In *Men We Reaped: A Memoir* (2013), author Jesmyn Ward traced the effects of stress from racism in her life through the lens of the Black men she loved. These men, and invariably Ward, traversed poverty while maintaining relationships with women and girls who would eventually mourn their early deaths. Although some lost their lives because of accidents, systemic oppression was commonplace in each man's story as they presented with feelings of depression, thoughts of suicide, and drug use to cope with unemployment, discrimination, limited options, and feelings of hopelessness. While Ward considered her place in society with respect to each man, she, along with her mother and sisters, was rarely centered in the memoir outside of her connection to men.

By de-centering herself, Ward showcases the lasting effects of strong Black womanhood in her life and in the lives of Black women closest to her. The systems that oppressed the Black men she cared for and valued, simultaneously and differentially subjugated Ward, causing bouts of depression and dependence on alcohol to manage feelings of sadness, helplessness, and loss. Ward's memoir was her way of resisting, and pushing back against controlling images that made her experiences and those of the men she loved illegible, because they strayed from American ideals of propriety and success (Neal, 2013; DuBois, 1903). Ward's memoir was her way of saying, "Hello. We are here. Listen." (Ward, 2013, pg. 250).

In this way, as I found in this dissertation, Black women and men Twitter subscribers make their lives legible to one another against the backdrop of the war on drugs and stereotypes of hypersexuality and waywardness by showing us they are still here. They have found ways to survive and seek pleasure in connection to one another and with drug use. This dissertation stands as a testament to the lives of Black women and men who use drugs, not just those who disclose their use on Twitter, but Black women and men writ large.

Black women and men Twitter subscribers challenge inequality and attempts at social control enacted upon them by finding ways to survive, even as they are incarcerated and penalized for drug use. Black women and men redefine NMPDU (nonmedical prescription drug use) by finding alternative

sources for drugs as access to legalized drugs are denied irrespective of need (or medical conditions). They use Twitter as sites of memory to articulate how pain and pleasure coalesce through NMPDU, and bear witness to one another as they manage their pain (Morrison, 1998). They are here.

Black women and men Twitter subscribers memorialize themselves, to defy controlling images that present them as unworthy of victimhood or treatment by humanizing themselves and normalizing NMPDU with their network members (Monier, 2023; Taylor, 2022).

In paper one, I examined how Black men discussed nonmedical prescription opioid use (NMPOU) on Twitter, paying close attention to reasons for, patterns of, and side effects from use. I observed that Black men engaged in NMPOU to cope with emotional, physical, and psychological pain and distress; to have fun and relax; and to die by suicide. Twitter allowed Black men to manage unpleasant emotions like anxiety by engaging in NMPOU when interacting with other subscribers on and off the site. However, the relationships they cultivated on Twitter were not limited to forming drug-partnerships, which could be protective in the case of an unintentional overdose. Instead, Black men also used Twitter to provide information to increase safer practice of NMPOU (and nonmedical prescription stimulant use) to network members, and to find sources for drugs online. Nevertheless, addiction, unintentional overdose, sleep issues, and sexual dysfunction were negative outcomes tied to NMPOU for Black men, with hip-hop offering a way to normalize their experiences, as well as to set expectations.

Although Black men subscribers sometimes used hip-hop to present aspects of Black masculinity oriented in hypersexuality and braggadocio as real and cool (Neal, 2013; hooks, 2004; Assante, 2008), others used hip-hop to mark transitions in NMPOU. I understand these distinctions to be part of rising mortality of Black men from opioids in the early 2000s. The fact that hip-hop and its commercialization marked shifting trends in overdose death is unsurprising since popular songs across genres act as records of the marketing and proliferation of pain killers by pharmaceutical companies (Herzberg et al., 2023; Peteet et al., 2021; Hanba and Hanba 2018; Oksanen, 2012). What is more important to me, however, is that Black men used hip-hop to create a safe way to talk about their grief and thoughts of death. This was profound since Black men commiserate with one another to move through stress from discrimination and

the silencing it causes (Young, 2021; Jackson, 2018; Evans and Moore, 2015; Watkins, 2010; Wingfield, 2007). Disclosures of sadness, depression, and grief in tweets and through hip-hop mimics how popular rap artists use creative expression to deal with the ramifications of structural inequality in their lives by naming it as a thing and managing its effects with drugs (Pendleton, 2023; Francis, 2021; Wright, 2019; Harper and Jackson, 2018).

In kind, paper two showed how Black women rearticulated identities tied to the war on drugs by distancing themselves from controlling images of the crack-addicted mother and welfare queen. Black women engaged in nonmedical prescription stimulant use (NMPSU) to establish autonomy while navigating traditional modes of success in a racialized capitalist system that offered diminishing returns for their productivity at school, work, and at home (Assari et al., 2019; Assari et al., 2018).

Black women often employed strength-based practices based on the strong Black woman (SBW) controlling image to manage demands, because the SBW is perceived less negatively than the crack-addicted mother and welfare queen (Collins, 2022; Morgan, 2000). As such, Black women reshaped the expectations they, and others had of them, with frames of success and high achievement with NMPSU. However, this came at a cost, as Black women, like Black men, struggled with thoughts of suicide, and feelings of depression and sadness.

Primarily engaging in problem-based methods impeded Black women's ability to consider the emotional toll more active coping took on their physical and psychological health. When stressors mounted, Black women found it more difficult to function, attenuating their ability to draw esteem from accomplishing goals. As a result of this, and the cumulative effects of multiple stressors, Black women's mental health worsened, and they experienced challenges like addiction and low self-esteem. This was more detrimental to Black women when they did not perceive support from loved ones or faced difficulty accessing prescription medications from medical providers. For Black women for whom the SBW was a difficult ideal to attain, they received diminishing returns while sacrificing their health, especially when their attempts to meet their needs were hindered by systems of power through medical care (Cottom,

2019; Mingus, 2015; Geronimus et al., 2006; Geronimus, 2001). Even still, when Black women were able to manage stressors effectively, they felt indomitable.

Paper three highlighted how innocuous race-neutral research in digital realms appear, until the intersection of key demographic variables is incorporated into analytic frames (Cottom, 2020; Bonilla-Silva and Zuberi, 2008). By not including Black researchers or Twitter subscribers in drug-related research in meaningful ways, outcomes are not generalizable and text analysis results are misinterpreted because they only produce information that defaults to a White (man) subscriber (Noble, 2018). For instance, I observed that unlike prior research, which validates the NRC Lexicon and VADER sentiment dictionary as measures of emotion and sentiment for tweet data across social media populations, these mechanisms do not produce reliable results when extended to Black women and men Twitter subscribers.

The syntactic and grammatical differences of Black American English vernacular is not recognized by NRC and VADER, and so, they fall short of measuring Black women and men's emotions and sentiments. Even more, hip-hop is not usually considered cultural markers of evaluation despite its proliferation and popularity among younger populations who are more likely to use Twitter. Thus, misinterpreting validation results across populations is likely because Black people use comparative language when they engage with one another online, including when they use humor and hip-hop songs in tweets to convey thoughts and emotions (Deas et al., 2023; Taylor, 2022; Brock, 2020; Preotiuc-Pietro and Ungar, 2018). Moreover, outcomes from topic models established that issues of dependence on prescription stimulants is something that affects Black women and men who engaged in NMPSU. However, dependence was more pronounced in Black women whereas polysubstance use and suicidality seemed to affect Black men across nonmedical prescription drug categories (stimulants and opioids).

The prevalence of suicidal thoughts was not surprising. In fact, many Black researchers pushback against the Black-White mental health paradox, which establishes that resilience explains why Black women and men have lower rates of affective disorders like depression and anxiety (Keyes, 2009). Some Black researchers (including myself) find it difficult to accept that rates of these disorders are lower since Black people (as a proportion of the population) show higher risk factors associated with mental illness

(e.g., poverty, discrimination; Mouzon et al., 2016; Soto et al., 2011; Brown et al., 2003; Clark et al., 1999). Nonetheless, it is not apparent how the mental health paradox can be explained away using my results.

Although Twitter permits a longitudinal approach to evaluation, the information gleaned is not enough to determine causation. The Black Twitter subscribers in my sample describe comorbid disorders (or symptoms of comorbidity), yet it is not possible to determine the time order of when these symptoms began in relation to the onset of NMPDU. As such, symptoms of depression, including suicidal thoughts, may be a side effect of use rather than a precursor to it. Though, I do not believe this to be true by and large. I believe it is more likely that stressors increase susceptibility to negative side-effects from drug use, but for those who become dependent on NMPDU to cope, underlying mental health struggles are likely to have already been present. Furthermore, mental health disorders are only comorbid if nonmedical drug use meets the diagnostic criteria of addiction and if symptoms for affective disorders meet the threshold of those conditions. Because I was unable to establish causality regarding affective symptoms and NMPDU, more research using historical tweets of Black Twitter subscribers is needed to determine whether they are side effects of NMPDU or precede use. Computational methods should be supplemented with interviews, surveys, and instrument testing to detect if Black populations who talk about drug use online differ in significant ways from Black Twitter subscribers who do not talk about NMPDU.

Nevertheless, Black Twitter subscribers in my sample (and Black people who use drugs more broadly) showcase dexterity in their decisions to engage in NMPDU. Often their use was not linear and could be associated with specific events. However, for those who engaged in NMPDU as a general coping strategy or who experience addiction, I believe harm reduction practices that place value in the individuals' right to self-determination regarding NMPDU should be used. Expectations of complete abstinence support recidivism and re-institutionalization, while I do not mean that abstinence is not necessary for some, it should be a decision made by the person who uses drugs of their own accord (Chang et al., 2023; Dennis and Pienaar, 2023; Herzberg et al., 2023; Jauffret-Roustide, 2023).

Furthermore, abstinence without tangible support in the way of therapy, employment, housing, and reinvestment of drug sales back into communities impacted by criminalization of drug use, is a Band-Aid that does not attend to how social disadvantage creates use in the first place (Herzberg et al., 2023; Dennis and Pineaar, 2023; Rudzinski and Strike, 2020; brown, 2019; Phelan and Link, 2015; Phelan et al., 2010; Williams and Collins, 2001). This is salient as pleasure and rest are part of an African cultural ethos to establish wellness when engaging with systems of inequality to reduce stress (Monier, 2023; Collins, 2022; Taylor, 2022; brown, 2019; hooks, 2004; Morgan, 2000).

Racialized capitalism through the legacy of slavery and continued inequality creates deaths of despair (Herzberg et al., 2023; Case and Deaton, 2015). These deaths are predicated on the invisibility of white racialism that impedes full integration into American society (Omi and Winant, 2014; Feagin, 2006; Bonilla Silva, 2006; DuBois, 1903). Yet, and still this kind of social disconnection produces suicide as Black women and men, must constantly peak through the veil to manage their emotions and social location when pushing back against controlling images (Herzberg et al., 2023; Collins 2022; brown, 2019; Morgan, 2000; Collins, 2004; DuBois, 1903; Durkheim, 1897). This weathers the body, mind, and soul (Geronimus, 2010; Jackson et al., 2010; Geronimus et al., 2006). While I do not believe nonmedical drug use is “enuf,” decriminalization and social support nets in tandem with resistance can help Black women [and men] who are “movin to the end of their rainbows” (Shange, 1997, pg. 25; Jones et al., 2019; Jones, 2014). Indeed, I find especially helpful the key principles of harm reduction identified by the Harm Reduction Coalition:

- “Accepts for better and or worse, that licit and illicit drug use is part of our world and chooses to work to minimize its harmful effects rather than simply ignore or condemn them....
- Calls for the non-judgmental, non-coercive provision of services and resources to people who use drugs and the communities in which they live in order to assist them in reducing attendant harm....

- Affirms drugs users themselves as the primary agents of reducing the harms of their drug use, and seeks to empower users to share information and support each other in strategies which meet their actual conditions of use.
- Recognizes that the realities of poverty, class, racism, social isolation, past trauma, sex-based discrimination and other social inequalities affect both people’s vulnerability to and capacity for effectively dealing with drug-related harm.” (brown, 2019, pg. 100; Harm Reduction Coalition, n.d.)

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