Addictive Behaviors Reports 15 (2022) 100430

Contents lists available at ScienceDirect

Addictive Behaviors Reports

journal homepage: www.elsevier.com/locate/abrep

Perceived Racism-based police use of force and cannabis use among Black emerging adults

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ARTICLE INFO

Keywords:
Cannabis
Police Force
Racism
Black/African American
Media

ABSTRACT

Background: Racial discrimination and cannabis use among Black emerging adults in America is a growing public health concern. However, research examining the relationship between exposure to perceived racism-based police use-of-force and cannabis use for this population is scant. This study examined the frequency of exposure (direct and indirect) to racism-based police use-of-force and its relationship with past 30-day cannabis use for a sample of Black emerging adult men and women 18–29 years of age.

Methods: Black emerging adults (N = 300; 49% males, 51% females) in St. Louis, Missouri completed computer assisted surveys on frequency of exposure to perceived racism-based police use-of-force and cannabis use. Multivariate logistic regression analysis was used to examine the association between frequency of exposure to perceived racism-based police use-of-force and cannabis use, controlling for covariates (sociodemographic, police contacts, and community violence).

Results: Our findings revealed that females reported significantly higher rates of indirect exposure to perceived racism-based police use-of-force than males. Relative to Black females, indirect exposure to perceived racism-based police use-of-force increased the odds of cannabis use among Black males.

Conclusions: Study findings advance our understanding of the prevalence of exposure to perceived racism-based police use-of-force and its influence on cannabis use for Black emerging adults, specifically males. Results highlight the need for future research, behavioral health interventions, and policy targeting the interplay between indirect exposure to perceived racism-based police use-of-force and cannabis use.

1. Introduction

In recent years, we have observed a steady increase in the prevalence of cannabis use among adults in the United States (US). While rates have increased among an array of sociodemographic subgroups, several groups have been identified as experiencing especially elevated risk including males and emerging adults 18–25 years of age (Hasin, Shmulewitz, & Sarvet, 2019). And, critically, while rates of cannabis use among emerging adults are elevated for all racial/ethnic groups, data from the 2019 National Survey on Drug Use and Health indicate that—compared to their Asian, Hispanic, Native American, and White counterparts—a disproportionate number of Black emerging adults are current or past-month cannabis users (27% versus 22.5% of non-Black young adults) (Substance Abuse and Mental Health Services Administration. (2020, 2020).

Prior research has identified a number of predictors of cannabis use among Black emerging adults (King, Mrug, & Windle, 2020). One salient predictor is *racial discrimination.* Utilizing a longitudinal study design, Borrell et al. (2007) found that Black emerging adults who self-reported experiencing perceived racial discrimination across multiple life domains (e.g., at school, getting a job) at Time I (year 7) and Time II (year 15) were three times more likely to be frequent cannabis users compared with Black emerging adults who reported no perceived discrimination. Assari and colleagues (2019) found, in a longitudinal prospective study of Black adolescents, that exposure to perceived racial discrimination in late adolescence was associated with increased risk of cannabis use for

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https://doi.org/10.1016/j.abrep.2022.100430
Received 6 December 2021; Received in revised form 23 March 2022; Accepted 17 April 2022
Available online 19 April 2022

Black men but not Black women during their emerging adult years. Data from an experimental laboratory-based study with a sample (n = 100) of Black emerging adults aged 18–25 revealed that participants who thought they experienced discrimination due to being excluded by White players in a computer game reported more willingness to use cannabis than those who felt they were not excluded (Gerrard et al., 2012).

Another important predictor of cannabis use among Black emerging adults is *violent victimization*. In a longitudinal study, Pahl, Brook, and Lee (2013) found that violent victimization (e.g., being threatened, attacked, or injured) was robustly associated with increased cannabis use risk among Black emerging adult men. This is in keeping with work by Doherty, Robertson, Green, Fothergill, and Ensminger (2012) indicating that—in a prospective study of African Americans in Chicago—exposure to violent victimization during emerging adulthood predicts increased cannabis use. This finding is also consistent with a broad body of literature indicating that victimization is an important risk factor for substance misuse across the lifespan (Salas-Wright, Vaughn, & Reingle Gonzalez, 2016).

Racism is a common experience for many Black emerging adults, particularly when interacting with police. National survey data indicate that most (84%) Black emerging adults believe Black people are treated less fairly than White people when dealing with police and half (44–50%) report having been discriminated against when interacting with police (Anderson, 2019; Horowitz, Brown, & Cox, 2019). The use of methods like racial profiling (e.g., targeting individuals for suspicion of a crime based on their racialized group identity) and racial threat (e.g., coercive control of racialized minority groups for political ends) likely contributes to widespread concerns about injustice and discrimination toward Black people during police encounters (Chambliss & Seidman, 1980; Warren, Tomaskovic-Devey, Smith, Zingraff, & Mason, 2006). These types of racism-based policing practices have contributed to police contacts involving police use-of-force and associated deleterious mental health outcomes for Black emerging adults (DeVylder, Anglin, Bowleg, Fedina, & Link, 2021; Motley & Joe, 2018).

Most police departments in America utilize the use-of-force continuum to instruct police officers on how to respond to situations with the appropriate level of force to resolve a situation and keep officers and innocent bystanders safe (Institute, 2015). The use-of-force continuum begins with less-lethal force [i.e., officer(s) presence, officer(s) verbalization, officer(s) empty hand controls, officer(s) use of less-lethal technologies that include baton, chemical spray, or Taser] and ends with officer(s) use of lethal force [i.e., officer(s) discharge of their firearm]. Nationally, Black emerging adults are 2–3 times more likely than their counterparts from other ethnic groups to experience exposure to police threat or use of non-fatal force (DeVylder et al., 2018; Eith & Durose, 2011; Harrell & Davis, 2020; Hickman, Piquero, & Garner, 2008; Hyland, Langton, & Davis, 2015; Langton & Durose, 2013) and be killed as a result of police use-of-force (Edwards, Lee, & Esposito, 2019; Ross, 2015), with males having significantly higher rates than females. Moreover, research has documented a significant association between exposure to police use-of-force and increased poor mental health days (Bor, Venkataramani, Williams, & Tsai, 2018), stress and worry (Gomez, 2016), depression (DeVylder et al., 2017), manic symptoms (Meade, Steiner, & Klahm, 2015), anxiety symptoms (Geller, Fagan, Tyler, & Link, 2014;), suicide attempts (DeVylder et al., 2017), and trauma stress symptoms (Smith-Lee & Robinson, 2019) among Black emerging adult populations.

According to Carter et al. (2013), a racism-based event occurs when an individual is exposed to an event that is experienced as being sudden, out of their control, emotionally painful, and prejudicial/discriminatory. When police disproportionately use force toward certain groups (e.g., Black emerging adults), some members of that group can perceive the actions of police as racism-based (Motley, Joe, McQueen, Clifton, & Carlton, 2022). Recent evidence makes clear that direct (as a victim or witnessing in person) and indirect (seen in media) exposure to perceived racism-based police use-of-force can be detrimental to the wellbeing of Black emerging adults. For instance, English et al. (2017) found a positive association between direct exposure to police-based discrimination and depressive symptomatology among Black adult men. Similarly, Tynes, Willis, Stewart, and Hamilton (2019) observed that indirect exposure to videos of police violence against Black people was linked with greater depressive and posttraumatic stress symptoms among Black adolescents and emerging adults.

Although the aforementioned studies provide a critical foundation for understanding the consequences of exposure to perceived racism-based police use-of-force, they did not include cannabis use as a potential outcome. Extant research suggest that some Black emerging adults may engage in cannabis use as a form of self-medication to cope with their exposure to perceived racism-based police use-of-force (Breslau, Davis, & Schultz, 2003; Danielson et al., 2009; Gibbons et al., 2010; Motley, Sewell, & Chen, 2017). To fill this noted gap in science, the present study examined the relationship between direct (as a victim or witnessing in person) and indirect (seen in media) exposure to perceived racism-based police use-of-force and cannabis use among a sample of Black emerging adults. In particular, we assessed the predictive role of direct and indirect exposure to perceived racism-based police use-of-force in cannabis use for Black emerging adults. At a critical time in our nation's history, the present study provides new evidence to inform policies and practices related to both cannabis prevention and policing.

2. Materials and methods

2.1. Participants and procedures

2.1.1. Participants

A purposive sampling strategy was used to recruit Black emerging adults ages 18–29 ($n = 300$) in St. Louis, Missouri. All participants were college students. Individuals who identified as Black/African American; 18 to 29 years old; and reported experiencing exposure to at least one police use-of-force event in their lifetime were eligible to participate in the study. Individuals who did not meet the inclusion criteria or self-reported having a serious mental illness or disability that would prevent them from participating in a computer assisted survey were excluded from participating in the study.

2.1.2. Procedure

The current study was granted ethical approval by a university-based institutional review board and all participants completed an informed consent procedure. Recruitment took place on college campuses via paper flyers and email. All surveys were completed in private settings using a computer assisted survey design. Survey participants received remuneration in the amount of $25 cash.

2.2. Measures

2.2.1. Demographics

Participants were asked to self-report their sex (male, female), age (continuous), employment status (unemployed, part-time, full time), and personal income (< $10,000, > $10,000).

2.2.2. Police contacts

Participants were asked to report if they have ever experienced a voluntary (e.g., meeting with the police where you were free to leave) or involuntary (e.g., being pulled over, being arrested for a crime) police contact. Each police contact variable was measured on a dichotomous scale (yes or no).

2.2.3. Witness community violence (WCV)

WCV was assessed using Richters and Martinez (1993a, 1993b) Things I Have Seen and Heard measure that assesses the frequency of participants' exposure (through seeing or hearing) to violence in their

home and neighborhood. Things I Have Seen and Heard contains 12 items ranked on a four-point Likert scale ranging from *0 = never to 3 = many times to measure a respondent's exposure to violence in the community, and this scale has demonstrated good test–retest reliability, internal reliability, and validity in prior studies (*Richters & Martinez, 1990*; Richters & Martinez, 1993a, 1993b)*. Examples of survey items included *"I have heard guns being shot,"* "*I have seen gangs in my neighborhood,"* and "I have seen drug deals." Cronbach's alpha for this measure was 0.89 for the current sample.

2.2.4. Exposure to perceived racism-based police use-of-force

The 12-item direct exposure to racism-based police violence and 5-item indirect exposure to racism-based police violence scales from the Modified-Classes of Racism Frequency of Racial Experiences (M-CRFRE; Motley et al., 2022) measure was used to assess the frequency of participants direct (as a victim or witnessing in person) and indirect (seen in media) exposure to perceived racism-based police violence over the previous 12-months using a 6-point Likert scale (*0 = not at all, 5 = several times a day*). Examples of survey items included "*I have been with a person of my race who was unarmed and not doing anything illegal, and witness police use their weapon* (e.g., *Taser, pepper spray, baton, or firearm) on that individual*," and "*I have noticed that the majority of individuals physically abused* (e.g., *thrown to the ground, pushed, grab, punched/slapped, kicked, or weapon) by police in the videos I see in media* (e.g., *Television or internet) are people of my race*." The M-CRFRE instrument has demonstrated factorial and construct validity, measurement invariance between men and women, and internal reliability with a sample of Black emerging adults (Motley et al., 2022). Cronbach's alpha for the direct exposure to racism-based police violence scale was $\alpha = 0.95$ and $\alpha = 0.87$ for the indirect exposure scale for the current sample.

2.2.5. Cannabis use

The Illicit drug use measure from the PhenX Toolkit (Hamilton et al., 2011) was used to assess participants' past 30-days use of cannabis. Past 30-days cannabis use was measured on a dichotomous scale (yes or no).

2.3. Analytic strategy

First, univariate analysis and bivariate analyses were conducted to generate descriptive statistics for the overall sample and for each sex, testing sex differences across each variable using chi-square and F-test. In addition, logistic regression models were fit to assess the sex-disaggregated relationship between exposure to perceived racism-based police use-of-force and cannabis use. Results were disaggregated by sex due to the sex-specific nature of police use-of-force exposure and cannabis use for emerging adults which was used in this analysis. Statistical analyses were conducted using Stata SE 16.1. Preliminary power analysis was conducted using the G*Power software (Faul, Erdfelder, Lang, & Buchner, 2007). Using 0.33 proportion for cannabis use, $\alpha = 0.05$, and a sample of 300 participants, we found that our study is well powered to detect minimum effect sizes.

3. Results

3.1. Sample descriptive statistics

Participants' socio-demographics, police contact, exposure to perceived racism-based police use-of-force, witnessed community violence, and cannabis use are presented in Table 1. Half of the participants were employed part-time (50.33%) and 23% were unemployed. Male participants had significantly higher rates of unemployment (29.73%) than females (17.76%), whereas females had significantly higher rates of part-time (51.32%) and full-time (30.92%) employment rates than males (49.32% and 20.95 respectively). Female participants also reported significantly higher rates of indirect exposure to racism-based police use-of-force ($M = 11.7$) than males ($M = 9.1$). There were no other significant differences found between male and female participants for the other variables

Table 1
Baseline sample characteristics ($N = 300$).

Variable	Total (N = 300)	Males (n = 148)	Females (n = 152)	F-test or X^2
Age (Mean ± SD)	20.45 ± 0.2.72	20.35 ± 1.22	20.52 ± 1.18	0.29
Employment status (n/%)				
Unemployed	71 (23.67)	44 (29.73)	27 (17.76)	7.47*
Part-time	151 (50.33)	73 (49.32)	78 (51.32)	
Full-time	78 (26.00)	31 (20.95)	47 (30.92)	
Annual Income (n/%)				0.60
Less than 10 k	188 (62.67)	96 (64.86)	92 (60.53)	
Greater than 10 k	112 (37.33)	52 (35.14)	60 (39.47)	
Voluntary Police contact (n/%)				
Yes	131 (43.67)	60 (40.54)	71 (46.71)	1.16
No	169 (56.33)	88 (59.46)	81 (53.29)	
Involuntary Police contact (n/%)				
Yes	129 (43)	60 (40.54)	69 (45.39)	0.72
No	171 (57)	88 (59.46)	83 (54.61)	
Exposure to racism-based PUF (mean ± SD)				
Direct exposure (range 0–38)	5.85 ± 8.96	5.99 ± 9.24	5.71 ± 8.70	0.07
Indirect exposure (range 0–25)	10.43 ± 5.87	9.12 ± 5.69	11.70 ± 5.79	15.10***
Witness Community Violence (mean ± SD)	10.77 ± 8.11	11.11 ± 8.65	10.44 ± 7.55	0.50
Past 30-day Cannabis Use (n/%)				0.48
Yes	101 (33.67)	47 (31.76)	54 (35.53)	
No	199 (66.33)	101 (68.24)	98 (64.47)	

Note: PUF = Police use-of-force.
*p < .05, ***p < .001

3.2. Exposure to perceived racism-based police use-of-force and cannabis use by sex

Table 2 presents the results of the multivariate logistic regression analysis assessing correlates of past 30-day cannabis use for total sample and across sex. For the total sample, the odds of cannabis use for participants that experienced voluntary police contact were 2.29 times higher compared to those who did not experience voluntary police contact (OR = 2.29, 95% CI = 1.26–4.17). In addition, the odds of cannabis use among participants that experienced involuntary police contact were 2.12 times compared to those that did not experience involuntary police contact (OR = 2.12, 95% CI = 1.11–4.06). Every additional indirect exposure to perceived racism-based police use-of-force increased the odds of cannabis use by 7 percent (OR = 1.07, 95% CI = 1.02–1.12). In the same way, every additional frequency of lifetime exposure to WCV increased the odds of cannabis use by 5 percent (OR = 1.05, 95% CI = 1.01–1.09).

Sex disaggregated analysis indicated that among males, voluntary police contact, indirect exposure to perceived racism-based police use-of-force, and frequency of WCV were associated with cannabis use, whereas among females, employment status was associated with cannabis use. Specifically, the odds of cannabis use among males that experienced voluntary police contact were 2.84 times higher compared to those who did not experience voluntary police contact (OR = 2.84,

Table 2
Multivariate Logistic Regression results of exposure to perceived racism-based police use of force on past 30-day marijuana Use (n = 300).

	Total Past 30-day Marijuana Use		Males Past 30-day Marijuana Use		Females Past 30-day Marijuana Use		Coefficientcomparison
Variable	*OR(SE)*	95% CI	*OR(SE)*	95% CI	*OR(SE)*	95% CI	z
Sex (ref: male)	0.96 (0.27)	0.55, 1.65	–	–	–	–	–
Age	1.00 (0.05)	0.91, 1.11	0.95 (0.07)	0.82, 1.11	1.05 (0.08)	0.91, 1.21	0.95
Income	0.78 (0.31)	0.36, 1.70	0.57 (0.34)	0.18, 1.84	0.89 (0.49)	0.30, 2.60	0.29
Employment status (ref: Unemployed)							
Part-time	0.57 (0.20)	0.29, 1.13	0.89 (0.45)	0.33, 2.41	0.33(0.17)*	0.12, 0.89	1.93
Full-time	1.39 (0.56)	0.63, 3.04	1.59 (0.99)	0.47, 5.38	1.03 (0.57)	0.35, 3.03	0.28
VPC (ref: no)	2.29 (0.70)**	1.26, 4.17	2.84 (1.27)*	1.18, 6.84	2.04 (0.89)	0.87, 4.80	0.27
IPC (ref: no)	2.12 (0.70)*	1.11, 4.06	2.11 (1.12)	0.74, 5.98	2.05 (0.91)	0.86, 4.88	~0.00
Exposure to racism-based PUF							
Direct	0.98 (0.02)	0.95, 1.02	0.99 (0.02)	0.94, 1.03	0.98 (0.03)	0.93, 1.03	0.04
Indirect	1.07 (0.03)*	1.02, 1.12	1.13 (0.05)**	1.03, 1.22	1.03 (0.03)	0.97, 1.10	2.58
WCV	1.05 (0.02)*	1.01, 1.09	1.07 (0.03)*	1.01, 1.14	1.05 (0.03)	0.99, 1.11	0.38
Constant	0.08 (0.09)*	0.01, 0.72	0.08 (0.14)	0.00, 2.09	0.07 (0.12)	0.00, 1.61	~0.00
F-value (df) or X^2 *(df)*	50.43(10)***		33.81 (9)***		24.31(9)**		

Note: VPC = Voluntary Police Contact; IPC = Involuntary Police Contact: PUF = Police Use-of-Force; WCV = Witnessed Community Violence; *OR* = Odds ratio; *SE* = Standard error; *CI* = confidence interval.
*p < .05, **p < .01, and ***p < .001

95% CI = 1.18–6.84). Furthermore, every additional indirect exposure to perceived racism-based police use-of-force among males increased the odds of cannabis use by 13 percent (OR = 1.13, 95% CI = 1.03–1.22). Similarly, higher frequency of WCV among males increased the odds of cannabis use by 7 percent (OR = 1.07, 95% CI = 1.01–1.14). Moreover, among women employed part-time, the odds of cannabis use were 0.33 times lower compared to unemployed women (OR = 0.33, 95% CI = 0.12–0.89). No other variables were associated with cannabis use and we did not find any significant coefficient differences between males and females.

4. Discussion

To our knowledge, this is the first study to examine sex differences in the association between exposure (direct and indirect) to perceived racism-based police use-of-force and cannabis use among Black emerging adults. Our findings revealed significantly higher rates of indirect exposure to perceived racism-based police use-of-force for females in comparison to male participants. Videos of police using excessive fatal and non-fatal force against citizens, particularly Black, are salient on social media platforms (e.g., Facebook, Instagram, and TikTok). Furthermore, emerging adult females use social media platforms more frequently than their male counterpart (Perrin & Anderson, 2019). Thus, the high rates of indirect exposure to perceived racism-based police use-of-force among female participants in the current study may be attributed to their high usage of social media which put them at vulnerability for seeing videos of these types of events. For example, Campbell and Valera (2020) found that roughly 85% of a community sample of emerging adult college students (61% Black, 45% female) reported learning about incidents of police violence from social media and 91% reported watching videos of these incidents on social media.

Our findings revealed that male participants who reported higher rates of indirect exposure to perceived racism-based police use-of-force were significantly more likely than females to report cannabis use, which is congruent with previous studies that have found a significant positive association between racial discrimination and cannabis use among Black emerging adult males (Assari, Mistry, Lee, Caldwell, & Zimmerman, 2019; Gerrard et al., 2012; Parker, Benjamin, Archibald, & Thorpe, 2017). Male participants in the current study may have engaged in cannabis use as a way to cope with their emotional responses to indirect exposure to perceived racism-based police use-of-force events (Campbell & Valera, 2020; Gibbons et al., 2010). Motley, Chen, Johnson, and Joe (2020) found that exposure to videos of police using force against civilians was significantly associated with feelings of fear, sadness, and anger for a convenient sample of Black emerging adult males (n = 101) detained in a medium size midwestern city jail. However, future research is warranted to explicate whether Black emerging adult males use cannabis as a coping mechanism for their experiences with indirect exposure to perceived racism-based police use-of-force events.

We found no significant association between direct or indirect exposure to perceived racism-based police use-of-force and cannabis use for female participants. These findings may be due to socialization around masculine and feminine gender roles in the American society that have contributed to women internalizing their emotions, which can lead to anxiety and depression, and men externalizing their emotions in the form of risk-taking behaviors such as cannabis use (Eaton et al., 2012; Grant & Weissman, 2007; Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993, 1994).

The findings of this study must be considered in light of several limitations. First, our cross-sectional study design limits our ability to make causal inferences about the relationship between indirect exposure to racism-based police use-of-force and cannabis use for Black emerging adult males. Without temporal ordering of variables, it is possible that relationships in this study may be bidirectional or may have different causal ordering. Second, reliance on self-reported accounts of exposure to perceived racism-based police use-of-force events and cannabis use may minimize findings due to recall biases that are inherent in self-report. Third, the sample used in this study is a convenient sample of Black emerging adult college students in St. Louis, Missouri and cannot be generalized beyond this population. Ferguson is a suburb of St. Louis, Missouri, and the ensuing protest after the killing of Mike Brown and failure by the St. Louis County prosecutor to charge police officer Darren Wilson for the killing of Mike Brown, which may have introduced bias regarding our participants reporting of exposure to perceived racism-based police use-of-force. Lastly, the dichotomous nature of our cannabis use variable did not allow us to quantify the number of days in the past-30 days that a participant engaged in cannabis use, the severity of cannabis use, the age a first use of cannabis, and motives for using cannabis.

The current study provides evidence that indirect exposure to perceived racism-based police use-of-force contributes to past 30-day

cannabis use and support extant literature suggesting that Black emerging adult males engage in cannabis use as a form of self-medication to cope with their potentially traumatic experiences (Lee-ies, Pagura, Sareen, & Bolton, 2010; Vedelago et al., 2022).

Overall, our results suggest that future research and interventions targeting the interplay between indirect exposure to perceived racism-based police use-of-force and cannabis use is needed. Future studies would benefit from a prospective longitudinal design that implemented both quantitative and qualitative methods to gather data at multiple time points in order to investigate the frequency of exposure (direct and indirect) to perceived racism-based police use-of-force and cannabis use and potential factors (coping styles) that could mediate the relationship between exposure to perceived racism-based police use-of-force and cannabis use. Qualitative interviews would help to identify themes and coping profiles of cannabis using Black emerging adult males that are not necessarily obtainable via quantitative methods.

In the context of America's inequitable law enforcement practices, it is crucial to expand our understanding of the mental health impacts of racism-based policing if we are to make progress on improving health equity for marginalized groups. Including the direct and indirect exposure to perceived racism-based police violence scales during assessments of trauma exposure with Black emerging adults in community and college/university mental health care settings would provide clinicians and practitioners with a more holistic understanding of the types of traumatic events Black emerging adults experience and enable them to provide appropriate services for this population.

The current milieu in America is also filled with strong demands for transformative policies that attenuate gratuitous police use-of-force toward Black citizens and hold police accountable for these senseless acts. Knowledge gained from this study could inform the development of culturally relevant law enforcement policy and trainings that focus on safe and effective methods for procedurally just policing for Black emerging adults. Moreover, findings can provide guidance to social media outlets on the behavioral health impact of exposure to videos of police violence, encouraging these outlets to place warning messages on all videos involving police violence that are posted on their platforms.

In summary, the current study provides novel findings regarding the relationship between exposure to perceived racism-based police use-of-force and cannabis use for Black emerging adults. Study findings advance our understanding of the prevalence of exposure to perceived racism-based police use-of-force and its influence on cannabis use for Black emerging adults, specifically males. Further research is needed to ascertain if Black emerging adult males engage in cannabis use as a form of self-medication to cope with their indirect (seen in media) exposure to perceived racism-based police use-of-force events.

5. Role of Funding Sources

Research reported in this publication was supported by the National Institute On Minority Health And Health Disparities of the National Institutes of Health under Award Number F31MD013386. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

CRediT authorship contribution statement

Robert O. Motley: Conceptualization, Methodology, Funding acquisition, Project administration, Formal analysis, Writing – original draft, Writing – review & editing. **William Byansi:** Formal analysis, Writing – review & editing. **Rebekah Siddiqi:** Writing – review & editing. **Kaycee L. Bills:** Writing – review & editing. **Christopher P. Salas-Wright:** Investigation, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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