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## Impacts of intergenerational substance use and trauma among black women involved in the criminal justice system: A longitudinal analysis

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## ABSTRACT

**Introduction:** Intergenerational substance use and trauma disproportionately impact racialized women. Yet, how these factors impact outcomes in women involved in the criminal justice system is understudied.

**Methods:** Using data from 443 participants in the Black Women in a Study of Epidemics, we assessed the impact of intergenerational substance use and trauma on participant drug use and open Child Protective Services (CPS) cases over 18 months. In repeated-measures logistic regression, intergenerational substance and trauma were independent variables, while participants' drug use at each follow-up and any open CPS case (s) served as separate dependent variables. Models were adjusted for criminal justice involvement, age, marital status, education, childhood guardian, number of children, and prior year homelessness.

**Results:** On average, participants were aged 35 years, 64 % had never married, and 44 % were raised by both parents. Two-thirds of women (67 %) reported intergenerational substance use ( $\geq 1$  parent and/or grandparent with alcohol/drug problems), while only 13 % reported intergenerational trauma. Each increase in the number of parents/grandparents with drug/alcohol problems was associated with 30 % increased odds of participants' drug use (aOR 1.30, 95 % CI: 1.07,1.57) and 40 % increased odds of having an open CPS case (aOR 1.40, 95 % CI: 1.11, 1.78). The association of intergenerational trauma and CPS cases was attenuated with sociodemographic/contextualizing factors.

**Conclusions:** Intergenerational substance use and trauma are associated with negative outcomes. Our findings highlight the need for substance use treatment to address the pervasive generational effects of substance use and trauma faced by racialized women in the criminal justice system.

### 1. Introduction

#### 1.1. Trends in substance use disorders and overdose deaths among women

Around 5.6 % of women in the United States (7.2 million) have substance use disorders (SUDs), and 15.4 % of US women (19.5 million) report past-year illicit substance use (SAMSHA, 2020; NIDA, 2020). Currently, the rate of increase in drug overdose deaths among women surpasses men, though overdose deaths are more common in men (Barbosa-Leiker et al., 2021; Lynn et al., 2020). From 1999 to 2017,

overdose deaths among women increased by 1643 % for synthetic opioids, 915 % for heroin, 830 % for benzodiazepines, and 280 % for cocaine (VanHouten et al., 2019). Yet scant literature addresses the intersection between gender, harm reduction, and women-specific experiences of substance use and access to services (Shirley-Beavan et al., 2020; Bardwell et al., 2021).

#### 1.2. Trauma and SUDs among women

Current literature on women and SUDs highlights the interplay

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between trauma and victimization on the initiation, trajectory, and severity of substance use and outcomes (Barbosa-Leiker et al., 2021; Bardwell et al., 2021; Cross et al., 2015; Jones et al., 2019; Roberts et al., 2015a, b). Trauma and victimization can shape how survivors view themselves (e.g., internalized stigma and self-blame) and behaviors (e.g., self-medicating through substance use) (Kennedy & Prock, 2018; Weiss et al., 2020). Among those in SUD treatment, over 85 % report a lifetime prevalence of trauma, with women five times more likely than men to report trauma in treatment (Cosden et al., 2015; Giordano et al., 2016; Keyser-Marcus et al., 2015; Sanford et al., 2014). The resulting psychological conditions, such as posttraumatic stress disorder (PTSD), are high and can complicate addiction recovery (Roberts et al., 2015a, b).

The relationships between trauma and SUDs can be more pronounced in minoritized women, such as Black and Indigenous women, who must also navigate societal oppression and discrimination due to race/ethnicity and sex/gender (Bardwell et al., 2021; Cross et al., 2015; Florez et al., 2022; Galán et al., 2022; Kelly et al., 2022; Skewes & Blume, 2019). Evidence suggests that for minoritized women, trauma is associated with higher levels of substance use and other health outcomes, including mental illness, physical illness, and suicide (Galán et al., 2022; Nutton & Fast, 2015). Experiences of structural discrimination have been shown to limit Black women's likelihood of seeking formal sources of help (e.g., mental health treatment, legal help) (Kelly et al., 2022). Hakimi et al. (2018) found that while adverse social reactions increased PTSD severity among women who have experienced trauma, this effect was more pronounced among Black women than White women. Moreover, posttraumatic stress has been shown to have a stronger correlation with IPV in Black women than in White women; Black women are also more likely to experience IPV and severe and fatal injuries (Kelly et al., 2022). Yet, the literature examining the relationship between trauma and SUDs in minoritized women is primarily descriptive (Cross et al., 2015; Skewes & Blume, 2019), warranting quantitative studies assessing life outcomes over time. Trauma may also lead to a dysregulated stress response system, which, in turn, promotes negative affect and other health and social consequences, particularly in parenting (Cross et al., 2015; Edwards et al., 2022).

### 1.3. Intergenerational substance use and trauma among women

SUDs can both facilitate and exacerbate intergenerational trauma, trauma transmitted from parents to children, by increasing the odds of poverty and through disruptions in parental functioning and parent-child attachments (Isobel et al., 2019; Meulewaeter et al., 2019). In a meta-analysis of IPV among Black and White women, Kelly et al. (2022) found that abuse in the family of origin was a leading predictor of IPV among Black women. Women experiencing poverty, compared to women who are not, are more likely to be reported to Child Protective Services (CPS), suggesting an additional burden on minoritized women in poverty (Cross et al., 2015). Specific to minoritized women, Black women are twice as likely to be caregivers of children than Black men and are around ten times more likely to be referred to CPS than White women (Cross et al., 2015). At the intersection of racism, substance use, and child welfare, research has found that while Black pregnant women are as likely to use substances as White pregnant women, Black newborns were four to five times more likely than White newborns to be referred to CPS at delivery (Roberts et al., 2015a, b; Roberts & Nuru-Jeter, 2012). This Black/White disparity remains even as Black pregnant women who use substances have a higher likelihood than expected to enter treatment (Roberts & Nuru-Jeter, 2012). The legal ramifications of having a SUD and, subsequently, poverty, coupled with increased odds of social service involvement among minoritized individuals, contribute to an increased likelihood of criminal justice involvement (Jones et al., 2019).

### 1.4. Substance use and trauma among women involved in the criminal justice system

Women involved in the criminal justice system are especially vulnerable to the cyclical and mutually reinforcing issues of social disadvantage (Jones et al., 2019). The extreme forms of social disadvantage, trauma, and substance use are often the same factors that lead to criminal justice involvement and can continue both across the life course and intergenerationally (Edwards et al., 2022; Jones et al., 2019; Latuskie et al., 2019). Among those involved in the criminal justice system, women have been shown to have higher rates of SUDs and lifetime and current victimization than men (Edwards et al., 2022; Jones et al., 2019). Research examining the presence and quality of programs for minoritized women who use substances and are justice-involved highlights the need for trauma-informed care for optimum benefit (Henderson & Kroese, 2020; Jones et al., 2018; Saxena et al., 2016).

### 1.5. Current study

The literature examining intergenerational substance use and trauma among women involved in the criminal justice system and their children is limited. While there are studies examining the relationship between trauma and substance use in Black women, these are primarily descriptive, qualitative, limited to parent-child only, and thus limited regarding the magnitude of the effects (Cross et al., 2015; Skewes & Blume, 2019). Research examining interactions of trauma and abuse, interpersonal relationships, parenting, the context of health, and social disadvantage experienced by women across the spectrum of criminal justice involvement, particularly those of minoritized women, is needed (El-Bassel et al., 2022; Jones et al., 2019; Meyer et al., 2019). Addressing this gap, we quantify the association between intergenerational substance use (among paternal and maternal grandparents and parents) and trauma on life outcomes (continual substance use, child maltreatment charges) among Black women involved in the criminal justice system.

## 2. Methods

### 2.1. Study and sample overview

We utilized data on 643 participants of the Black Women in a Study of Epidemics (B-WISE), a study aimed to understand how the interrelated social issues of race, class, and gender influence substance use, criminal justice involvement, and health disparities among Black women (McLouth et al., 2022; Oser et al., 2019; Harp & Oser, 2018). The sample included Black women recruited from 3 settings: prison, probation offices, and communities (not involved in the criminal justice system). The study was a prospective longitudinal cohort study with data collected at baseline, six-, 12-, and 18 months by trained Black female research staff. Women in the prison sample were followed-up after their release into the community. To be eligible for this study, participants had to self-identify as Black, female, an English speaker, and be over the age of 18 years. To collect follow-up data, women recruited from prison had to be released within 60 days of their baseline interview, either through parole or completion of their sentence. Those recruited in the probation group had to self-disclose their status to be eligible, and those recruited in the community could not currently be involved with the criminal justice system.

Participant recruitment occurred in Kentucky and varied by criminal justice and drug use status. To balance substance use across the sample, for every participant enrolled in each recruitment group (prison, probation, and community) reporting past-year substance use (or past-year use before incarceration), an additional woman belonging to the same recruitment group was enrolled who had no past-year substance use. Overall, the participants varied on whether they were incarcerated at baseline, were on probation or parole at baseline, or were women recruited from the general population of the study area. Recruitment

occurred in Lexington, Kentucky, for women in the community, and flyers with study information were distributed in public areas such as public transit, beauty shops, and grocery stores. Women in the probation group were recruited from probation offices known to serve large populations of Black women in Kentucky, and women in the prison sample were recruited from 3 women's prisons. Participants received remuneration of \$20 for completing the baseline survey, \$25 for completing each follow-up visit, \$10 for completing urine drug screens, and \$5 for updating their contact information at each follow-up visit. An additional \$10 remuneration was given to participants who completed the baseline survey and every follow-up visit. Retention rates were 94 % (6 months), 92 % (12 months), and 90 % (18 months). This study was approved by the University of Kentucky's Institutional Review Board, and participants were protected by a Certificate of Confidentiality.

## 2.2. Exposures

### 2.2.1. Intergenerational substance use (Primary exposure)

Women were asked if their biological parents and/or maternal and paternal grandparents had known problems with alcohol or drugs using items from the Addiction Severity Index (ASI) (McLellan et al., 1992). Intergenerational substance use was defined as the sum of the number of parents and grandparents participants reported as having drug or alcohol use problems.

### 2.2.2. Intergenerational trauma (Secondary exposure)

Similar to intergenerational substance use, intergenerational trauma was assessed by asking women if their biological parents and biological grandparents were known to have PTSD. Intergenerational trauma was infrequent in the sample and thus dichotomized (present/absent) based on if any parent or grandparent had a history of PTSD.

## 2.3. Outcomes

### 2.3.1. Participant drug use

At baseline and each follow-up assessment, women were asked whether they had used drugs in the past 6-months. We use self-report substance use as this item was collected at every time interval and allows women to report on all possible drug use.

### 2.3.2. History of an open CPS case

Regarding potential child maltreatment, women reported on any prior (baseline) or current open case(s) with CPS at each follow-up interview.

## 2.4. Additional variables

Women reported their age, marital status (married/living as married, widowed, divorced, or separated, or single/never married), education (number of completed years), number of children living with them (biological, stepchildren, and adopted), ethnicity (Hispanic vs. Non-Hispanic), past year homelessness (yes vs. no), generation of African-American (1st, 2nd, or 3rd generation or greater), who raised them in their childhood (both parents, single parent, non-parents), agreement with the statement "I feel shame" about themselves as a proxy measure of self-esteem (strongly disagree, disagree, agree, strongly agree), number of physically abusive events in their childhood, and number of physically violent episodes in their households.

## 2.5. Missing data

The majority of the missing data was among 194 women who did not report parent/grandparent substance use and PTSD, our exposures of interest. However, we observed that these variables were missing most commonly among individuals raised by a single parent (1 % missing maternal substance use or trauma, 29 % missing paternal substance use

or trauma, 14 % missing grandparental substance use or trauma) or non-parents (10 % missing maternal substance use or trauma, 30 % missing paternal substance use or trauma, 19 % missing grandparental substance use or trauma) compared to women raised by both parents (0 % missing maternal substance use or trauma, 1 % missing paternal substance use or trauma, 15 % missing grandparental substance use or trauma). Thus, it is likely that these data are missing not at random; *i.e.*, the reason for the missingness is related to the missing value itself. Specifically, parental/grandparental absenteeism could be a result of the parent/grandparent's substance use or PTSD, and because of this absenteeism, participants were unable to report whether their absent parent/grandparent had a history of substance use or trauma. Recent simulation studies suggest that a complete-case analysis is unbiased when data are missing not at random and the missingness is unrelated to the outcome under study (Bartlett et al., 2015; Hughes et al., 2019), which is likely in the present data. For this reason, we opted to perform a complete-case analysis in the current study. We excluded 6 women (1 %) who were missing data on covariates to facilitate our complete-case analysis further.

## 2.6. Statistical analyses

Sample characteristics were calculated by criminal justice involvement (prison, probation, or community member) and overall. Continuous variables were reported as mean and standard deviation, while categorical variables were reported as frequency and percent in each category. We used repeated-measures logistic regression analyses to assess the association of intergenerational substance use and intergenerational trauma with participant drug use and the presence of an open CPS case (separate models for each outcome). Minimally adjusted models included criminal justice involvement as a covariate. Multivariable adjusted models additionally included age, marital status, education, childhood guardian, number of children, and prior year homelessness as covariates. We accounted for correlation among multiple observations per person using generalized estimating equations with an autoregressive-1 (AR-1) correlation structure.

All analyses were completed in SAS 9.4 (Cary, NC), and a two-sided  $p$ -value < 0.05 was considered statistically significant.

## 3. Results

### 3.1. Overall sample characteristics

Our sample included 443 women with complete data; 148 were recruited from the community, 139 were recruited while on probation, and 156 were recruited in prison. The average age of women in our sample was 35 years; 64 % were single/never married, and the average years of education was 12, equivalent to a high school diploma (Table 1). Fewer than 1 % of participants identified as Hispanic, and 98 % were 3rd or greater generation African-American, meaning they, their parents, grandparents, or greater were born in the United States. In terms of family structure, participants, on average, had two children living with them, and 18 % reported past-year homelessness. Thirty-nine percent of women were raised by a single parent, and 18 % were raised by non-parents. Physical abuse during childhood was reported by 21 % of women, and 52 % reported witnessing violence in their childhood homes. When asked whether they feel ashamed of themselves as a proxy for poor self-esteem, 30 % of the women "agreed" or "strongly agreed."

Intergenerational substance use was prevalent in 67 % of our sample. Over one-third of participants reported 2 or more parents/grandparents with alcohol/drug problems; 13 % reported one parent and one grandparent, 12 % reported both parents, and an additional 12 % reported both parents and grandparents with drug and alcohol problems. Overall, 13 % of women reported familial PTSD, with most reporting that they had one parent with PTSD. Regarding participant drug use, 60 % reported past-year use at baseline, 54 % at the 6-month follow-up, 55 % during the 12-month follow-up, and 54 % at the 18-month follow-up.

**Table 1**  
Baseline characteristics stratified by criminal justice status.

Characteristic <sup>a</sup>	Criminal justice status			Total (N = 443)
	Community (N = 148)	Probation (N = 139)	Prison (N = 156)	
Age, years	36.5 (14.2)	34.0 (10.1)	35.3 (9.4)	35.3 (11.4)
Marital Status				
Married/Living as Married	20 (13.5 %)	17 (12.2 %)	24 (15.4 %)	61 (13.8 %)
Widowed, Divorced, or Separated	34 (23.0 %)	30 (21.6 %)	34 (21.8 %)	98 (22.1 %)
Single, Never Married	94 (63.5 %)	92 (66.2 %)	98 (62.8 %)	284 (64.1 %)
Education Completed, years	12.9 (2.3)	11.9 (2.0)	11.8 (2.3)	12.2 (2.3)
Number of Children	1.9 (1.7)	2.4 (1.7)	2.7 (2.1)	2.3 (1.9)
Hispanic Ethnicity	1 (0.7 %)	1 (0.7 %)	0 (0.0 %)	2 (0.5 %)
Homeless in last year	15 (10.1 %)	98 (29.5 %)	24 (15.4 %)	80 (18.1 %)
Generation African American <sup>b</sup>				
1st Generation	0 (0.0 %)	1 (0.7 %)	0 (0.0 %)	1 (0.2 %)
2nd Generation	2 (1.4 %)	5 (3.6 %)	1 (0.6 %)	8 (1.8 %)
3rd or Greater Generation	145 (98.0 %)	132 (95.0 %)	155 (99.4 %)	432 (97.5 %)
Raised By				
Both Parents	78 (52.7 %)	53 (38.1 %)	63 (40.4 %)	194 (43.8 %)
Single Parent	54 (36.5 %)	56 (40.3 %)	61 (39.1 %)	171 (38.6 %)
Non-Parents	16 (10.8 %)	30 (21.6 %)	32 (20.5 %)	78 (17.6 %)
I feel shame				
Strongly Disagree	53 (35.8 %)	46 (33.1 %)	39 (25.0 %)	138 (31.2 %)
Disagree	57 (38.5 %)	57 (41.0 %)	58 (37.2 %)	172 (38.8 %)
Agree	32 (21.6 %)	29 (20.9 %)	44 (28.2 %)	105 (23.7 %)
Strongly Agree	6 (4.1 %)	7 (5.0 %)	15 (9.6 %)	28 (6.3 %)
Physically Abused in Childhood				
Never	124 (83.8 %)	106 (76.3 %)	120 (76.9 %)	350 (79.0 %)
Once	6 (4.1 %)	5 (3.6 %)	10 (6.4 %)	21 (4.7 %)
Twice	4 (2.7 %)	5 (3.6 %)	3 (1.9 %)	12 (2.7 %)
Three Times	1 (0.7 %)	2 (1.4 %)	2 (1.3 %)	5 (1.1 %)
Four Times	0 (0.0 %)	0 (0.0 %)	1 (0.6 %)	1 (0.2 %)
Five Times	0 (0.0 %)	1 (0.7 %)	2 (1.3 %)	3 (0.7 %)
More than Five times	13 (8.8 %)	20 (14.4 %)	18 (11.5 %)	51 (11.5 %)
Physical Violence in Household				
Never	72 (48.7 %)	62 (44.6 %)	78 (50.0 %)	212 (47.9 %)
Once	13 (8.8 %)	11 (7.9 %)	11 (7.1 %)	35 (7.9 %)
Twice	14 (9.5 %)	11 (7.9 %)	10 (6.4 %)	35 (7.9 %)
Three Times	7 (4.7 %)	3 (2.2 %)	7 (4.5 %)	17 (3.8 %)
Four Times	0 (0.0 %)	3 (2.2 %)	1 (0.6 %)	4 (0.9 %)
Five Times	0 (0.0 %)	1 (0.7 %)	3 (1.9 %)	4 (0.9 %)
	42 (28.4 %)	48 (34.5 %)		

**Table 1 (continued)**

Characteristic <sup>a</sup>	Criminal justice status			Total (N = 443)
	Community (N = 148)	Probation (N = 139)	Prison (N = 156)	
More than Five times				46 (29.5 %)
Intergenerational Substance Use				136 (30.7 %)
None	58 (39.2 %)	42 (30.2 %)	46 (29.5 %)	146 (33.0 %)
Grandparents	6 (4.1 %)	10 (7.2 %)	2 (1.3 %)	18 (4.1 %)
One Parent	37 (25.0 %)	38 (27.3 %)	40 (25.6 %)	115 (26.0 %)
Grandparent and One Parent	22 (14.9 %)	15 (10.8 %)	20 (12.8 %)	57 (12.9 %)
Both Parents	12 (8.1 %)	12 (8.6 %)	27 (17.3 %)	51 (11.5 %)
Both Parents and Grandparents	13 (8.8 %)	22 (15.8 %)	21 (13.5 %)	56 (12.6 %)
Intergenerational Trauma				
None	131 (88.5 %)	119 (85.6 %)	136 (87.2 %)	386 (87.1 %)
Grandparents	4 (2.7 %)	2 (1.4 %)	3 (1.9 %)	9 (2.0 %)
One Parent	8 (5.4 %)	14 (10.1 %)	13 (8.3 %)	35 (7.9 %)
Grandparent and One Parent	2 (1.4 %)	4 (2.9 %)	2 (1.3 %)	8 (1.8 %)
Both Parents	3 (2.0 %)	0 (0.0 %)	1 (0.6 %)	4 (0.9 %)
Both Parents and Grandparents	0 (0.0 %)	0 (0.0 %)	1 (0.6 %)	1 (0.2 %)

<sup>a</sup> Statistics are presented as mean (standard deviation) for continuous variables and no. (%) for categorical variables.

<sup>b</sup> Two women refused to answer this question.

Open CPS cases were assessed among women with children (n = 355); of these women, 41 % had an open CPS case in their lifetime.

### 3.2. Sample characteristics by justice involvement

Community-recruited women reported an additional year of education, an increased likelihood of being raised by both parents, and a reduced prevalence of past-year homelessness compared to women involved in the criminal justice system. Women recruited from prison reported an increased likelihood of feeling shame versus women on probation or those not involved in the criminal justice system. Regardless of criminal justice involvement, women reported a similar prevalence of witnessing physical violence in their childhood homes. Intergenerational substance use and a history of a CPS case were more prevalent among women involved with the criminal justice system than in community-recruited women.

### 3.3. Multivariable logistic regression assessing correlates of substance use

Correlates of continual substance use among the participants are displayed in Table 2. In a minimally adjusted regression model, each increase in the number of parents/grandparents with drug/alcohol problems was associated with a 30 % increase in odds of women's continual substance use (aOR 1.30, 95 % CI: 1.08,1.57), controlling for criminal justice status and intergenerational trauma. In this same model, intergenerational trauma was marginally associated with participant substance use (aOR 1.64, 95 % CI: 0.94, 2.95), and women recruited from prison, compared to community-recruited women, were nearly four times more likely to use substances (aOR 3.94, 95 % CI: 2.43, 6.40). In the fully adjusted model, intergenerational substance use (aOR 1.28, 95 % CI: 1.05, 1.55) and being recruited from prison vs. the community

**Table 2**  
Association of parent/grandparent alcohol and drug use with participant substance use.

Minimally adjusted model				
Variable	Not adjusted for familial trauma		Adjusted for familial trauma	
	Odds ratio [95 % CI]	p-value	Odds ratio [95 % CI]	p-value
Intergenerational Substance Use <sup>a</sup>	1.33 [1.11, 1.60]	0.0023	1.30 [1.08, 1.57]	0.0065
Intergenerational Trauma <sup>b</sup>	–	–	1.64 [0.91, 2.95]	0.1007
Criminal Justice Involvement				
Probation vs. Community	0.95 [0.61, 1.47]	0.8074	0.94 [0.60, 1.46]	0.7766
Prison vs. Community	3.91 [2.41, 6.35]	< 0.0001	3.94 [2.43, 6.40]	<0.0001
Multivariable adjusted model				
Variable	Not adjusted for familial trauma		Adjusted for familial trauma	
	Odds ratio [95 % CI]	p-value	Odds ratio [95 % CI]	p-value
Intergenerational Substance Use <sup>a</sup>	1.30 [1.07, 1.57]	0.0071	1.28 [1.05, 1.55]	0.0138
Intergenerational Trauma <sup>b</sup>	–	–	1.55 [0.85, 2.81]	0.1545
Criminal Justice Involvement				
Probation vs. Community	0.88 [0.56, 1.38]	0.5746	0.88 [0.56, 1.39]	0.5881
Prison vs. Community	3.75 [2.25, 6.24]	<0.0001	3.84 [2.31, 6.38]	<0.0001
Age, per 5 years	0.94 [0.86, 1.03]	0.1693	0.95 [0.87, 1.04]	0.2481
Marital Status				
Married/Living as Married vs. Single	0.77 [0.60, 1.00]	0.0512	0.77 [0.60, 1.00]	0.0501
Previously Married vs. Single	0.92 [0.73, 1.16]	0.4830	0.92 [0.73, 1.16]	0.4898
Education, per additional year	0.97 [0.89, 1.05]	0.4038	0.97 [0.89, 1.05]	0.4684
Raised By				
Single Parent vs. Both Parents	1.13 [0.74, 1.74]	0.5689	1.15 [0.75, 1.77]	0.5274
Non-Parents vs. Both Parents	0.90 [0.51, 1.59]	0.7122	0.88 [0.50, 1.56]	0.6680
Kids, per additional child	1.01 [0.91, 1.12]	0.8579	1.00 [0.90, 1.11]	0.9753
Homeless in prior year	1.13 [0.82, 1.56]	0.4397	1.13 [0.82, 1.56]	0.4490

<sup>a</sup> An ordinal variable defined as the sum of the number of parents and grandparents participants reported to have drug or alcohol use disorders.

<sup>b</sup> Present (at least one parent or grandparent with a history of PTSD) or absent (no parents or grandparents with a history of PTSD).

(aOR 3.84, 95 % CI: 2.31, 6.38) were associated with women’s substance use.

**3.4. Multivariate logistic regression assessing correlates of having a history of a CPS case**

Correlates of having a lifetime history of an open CPS case prior to the end of the study period are displayed in Table 3. In the minimally adjusted model, each increase in the number of parents/grandparents with drug/alcohol problems was associated with a 41 % increase in the odds of a woman having a history of an open CPS case (aOR 1.41, 95 % CI: 1.11, 1.79). In this same model, intergenerational trauma was associated with over twice the odds of a history of an open CPS case

**Table 3**  
Association of parent/grandparent alcohol and drug use with history of a CPS case.

Minimally adjusted model				
Variable	Not adjusted for familial trauma		Adjusted for familial trauma	
	Odds ratio [95 % CI]	p-value	Odds ratio [95 % CI]	p-value
Intergenerational substance use <sup>a</sup>	1.50 [1.20, 1.89]	0.0005	1.41 [1.11, 1.79]	0.0046
Intergenerational trauma <sup>b</sup>	–	–	2.28 [1.13, 4.59]	0.0208
Group				
Probation vs. Community	2.58 [1.47, 4.53]	0.0009	2.63 [1.50, 4.61]	0.0008
Prison vs. Community	1.90 [1.09, 3.31]	0.0232	1.94 [1.11, 3.39]	0.0192
Multivariable adjusted model				
Variable	Not adjusted for familial trauma		Adjusted for familial trauma	
	Odds ratio [95 % CI]	p-value	Odds ratio [95 % CI]	p-value
Intergenerational Substance Use <sup>a</sup>	1.40 [1.11, 1.78]	0.0050	1.35 [1.06, 1.72]	0.0139
Intergenerational Trauma <sup>b</sup>	–	–	1.83 [0.89, 3.76]	0.1004
Criminal Justice Involvement				
Probation vs. Community	2.13 [1.19, 3.81]	0.0109	2.19 [1.22, 3.91]	0.0082
Prison vs. Community	1.52 [0.87, 2.65]	0.1406	1.54 [0.88, 2.69]	0.1266
Age, per 5 years	0.87 [0.78, 0.98]	0.0222	0.88 [0.79, 0.99]	0.0349
Marital Status				
Married/Living as Married vs. Single	0.99 [0.98, 1.00]	0.0603	0.98 [0.97, 1.00]	0.0555
Previously Married vs. Single	1.00 [0.98, 1.01]	0.4089	0.99 [0.98, 1.01]	0.4145
Education, per additional year	0.83 [0.75, 0.93]	0.0010	0.84 [0.75, 0.94]	0.0016
Raised By				
Single Parent vs. Both Parents	0.99 [0.59, 1.67]	0.9714	1.00 [0.59, 1.70]	0.9878
Non-Parents vs. Both Parents	0.96 [0.51, 1.81]	0.8931	0.92 [0.48, 1.76]	0.7986
Kids, per additional child	1.08 [1.04, 1.13]	0.0003	1.11 [1.05, 1.17]	0.0003
Homeless in prior year	1.01 [1.00, 1.02]	0.0011	1.01 [1.01, 1.02]	0.0014

<sup>a</sup> An ordinal variable defined as the sum of the number of parents and grandparents participants reported to have drug or alcohol use disorders.

<sup>b</sup> Present (at least one parent or grandparent with a history of PTSD) or absent (no parents or grandparents with a history of PTSD).

(aOR 2.28, 95 % CI: 1.13, 4.59) and both prison-recruited women (aOR 1.94, 95 % CI: 1.11, 3.39) and women on probation (aOR 2.63, 95 % CI: 1.50, 4.61) were more likely to have a history of an open CPS case compared to community-recruited women. In the fully adjusted multivariable model, intergenerational substance use (aOR 1.35, 95 % CI: 1.06, 1.72) and women on probation (aOR 2.19, 95 % CI: 1.22, 3.91) remained significantly more likely to have a history of an open CPS case; the effects of intergenerational trauma and recruitment group (prison versus community) were attenuated to non-significance. Additionally, older age (aOR per 5 years 0.88, 95 % CI: 0.79, 0.99) and increasing education (aOR per additional year 0.84, 95 % CI: 0.75, 0.94) decreased the odds of having a history of an open CPS case, while each additional child a woman had (aOR 1.11, 95 % CI: 1.05, 1.17), and prior-year homelessness (aOR 1.01, 95 % CI: 1.01, 1.02) increased the odds of

having a history of an open CPS case.

#### 4. Discussion

##### 4.1. Contextualizing study results

This study examined the impacts of intergenerational substance use and trauma issues on life outcomes (continual substance use, child maltreatment charges) among Black women with varying levels of involvement in the criminal justice system. Our study revealed high levels of intergenerational substance use, with 60–70 % of women, regardless of recruitment setting, reporting at least one parent or grandparent having an issue with alcohol or drugs. Furthermore, 38 % reported two or more biological parents/grandparents with alcohol/drug problems. Regarding intergenerational trauma, we found that approximately 13 % of the women reported familial PTSD, most of which reported that they had one parent having issues with PTSD. Regarding childhood trauma, about 20 % of the sample reported being physically abused, and 52 % witnessed violence in their childhood homes.

The pervasiveness of intergenerational substance use and trauma and experienced childhood trauma in our study samples underscore the importance of understanding the prevalence and impacts of these issues among Black women and other minoritized and indigenous populations. Findings also call for multiple community-level interventions specific to carceral settings and the need to expand understanding of life course to account for intergenerational impacts. These interventions may include strengthening self-esteem in romantic and non-romantic interpersonal relationships. Women have identified that strength of interpersonal relationships, self-efficacy, and self-esteem as essential factors in recovery from SUDs (Latuskie et al., 2019). Black women are more likely to use informal resources like family and friends, which may buffer against racial discrimination and costs (Kelly et al., 2022).

Our findings on the association between intergenerational substance use and trauma and trajectories of substance use are consistent with current literature (Haggerty & Carlini, 2020; Kerr et al., 2020; Bears Augustyn et al., 2020; Epstein et al., 2020; Neppi et al., 2020). Yet, in this study, we quantified this association and measured the additional effect of each biological parent and grandparents, with that quantification being 30 % increased odds per each parent/grandparent combination. In addition, intergenerational substance use was associated with a significant likelihood of a lifetime CPS case among women with at least one child. Neppi et al. (2020) found that grandparents' problematic behaviors impacted their children's early initiation of substance use, and their children's resulting problematic behaviors and parenting adversely impacted their future grandchildren; these findings may offer insight into our results.

Specific to women, the interplay of SUDs and sex/gender leave women and their subsequent children at higher odds of deleterious effects. The outcomes related to substance use are more pronounced among women due to biological factors (e.g., progressing to addiction quicker than men, hormones, increased drug cravings) and social factors (criminalization of substance use while pregnant) (Faherty et al., 2019; NIDA, 2020). In addition, gendered punitive measures, such as laws regarding substance use and pregnancies, are associated with worse substance use outcomes among pregnant women (Faherty et al., 2019; Louw, 2018). Our study found that women released from prison were nearly four times more likely to continue substance use over time than community-recruited women. This finding suggests that women in prison may have more severe SUDs and/or may experience destabilization of incarceration once released. This increased stressor may trigger drug cravings and subsequent drug use.

Furthermore, we found that intergenerational trauma was statistically significant with having a CPS case in our minimally adjusted regression model; however, after accounting for other sociodemographic and contextual factors (e.g., number of kids, homelessness,

intergenerational substance use), this association was no longer significant. Intergenerational trauma is likely significantly underreported in this study, which may influence its non-significant association with substance use outcomes over time among this sample of women. Moreover, given that trauma was prevalent in this sample and that having caretakers with drug and alcohol problems may also be a uniquely traumatic experience, there may have been a lack of variability to detect a significant difference. Women on probation were more likely to have had an open CPS case; however, it may be the CPS case that has led to the sentence of probation. On the other hand, intergenerational substance use was associated with the likelihood of having an open CPS case. Research by Rothenberg and colleagues (2020) found that intergenerational transmission of substance use was disrupted in adolescents with high involvement in positive activities, higher grades, and active coping skills. It may be that culturally appropriate interventions to boost involvement in positive activities and promote coping skills and academic achievement could benefit minoritized children affected by intergenerational substance use and trauma. These interventions may increase positive outcomes and reduce the removal of children from their mothers, which has been shown to increase substance use and other adverse effects on Black mothers (Harp & Oser, 2018).

##### 4.2. Limitations and strengths

Our study findings should be contextualized within a few limitations, including the secondary analyses of the B-WISE data. First, we relied on self-reports on substance use, criminal justice status, and participants' knowledge of issues related to substance use and PTSD among their parents and grandparents. These data may be subject to recall bias, social desirability, or participants' ignorance of these matters within the families. In addition, the influence of exposure to substance use and trauma from non-biologically related parental figures are not captured in the data, presenting another limitation. We ask participants to recall any known PTSD among parents and grandparents; we acknowledge that the meaning of PTSD may vary significantly among participants and that trauma and PTSD are not synonymous, as not all those who experience trauma develop PTSD. In addition, this study used a non-random sampling technique and focused specifically on Black women in Kentucky; thus, our findings may not be generalizable to other populations of women. Yet, our study features a large, longitudinal design on an under-resourced and under-researched population of women.

#### 5. Conclusion

Among Black women with varying levels of involvement in the criminal justice system, we observed an association between intergenerational substance use, continual substance use, and further traumatizing participants' children *via* CPS cases. Our findings highlight the pervasive generational effects of substance use and trauma and the dire need for early intervention and substance use treatment to mitigate these effects on minoritized women in the criminal justice system. Due to the limited research on intergenerational trauma and substance use, and the limitations within the existing literature, further research is needed in this area.

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##### CRedit authorship contribution statement

Jones AA, Duncan M, and Oser C conceptualized the study. Jones AA

drafted the manuscript; Duncan M conducted the analyses. All authors were involved in the interpretation of the data, revision, and finalization of the manuscript. All authors approve of this manuscript.

### Declaration of competing interest

None.

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### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.josat.2023.208952>.

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