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The Association Between Admiration of Antisocial Peers and Past 30-Day Opioid Misuse Among Justice-Involved children

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Abstract

Aim: Prevention of illicit or nonmedical opioid use, called opioid misuse (OM) is a key public health concern that requires research on the factors that influence OM initiation among high-risk populations. Justice-involved children (JIC) have more risk factors and fewer resources. Antisocial peers have been linked to adolescent substance abuse and delinquency. However, the association between the admiration of antisocial peers and OM among JIC has not yet been studied. This study hypothesizes that admiration of antisocial peers will be associated with a higher likelihood of OM among Florida JIC.

Methods: Cross-sectional data on 79,960 JIC from the Florida Department of Juvenile Justice (FLDJJ) were examined. To test the hypothesis, bivariate and multivariate logistic regression analyses were employed. The multivariate models controlled for gender, race, age in 2007, family income, history of mental health, history of depression, and optimism.

Results: Nearly 2.7% of the sample met the criteria for past 30-day OM, and over 75% of those current users admired or somewhat admired their antisocial peers. Compare to JIC who did not admire their antisocial peers, those who had some admiration of antisocial peers were 2.39 times more likely to misuse opioids in the past 30-days and those who admired their antisocial peers were 4.40 times more likely to meet the criteria for past 30-day OM.

Conclusions: Cultivating positive peer interactions and providing positive peer role models may help to reduce illicit opioid use among JIC.

Keywords

Illicit Opioid Use; Juvenile Justice; Antisocial Peers; Peer Pressure; Justice-Involved Children

Introduction

Opioid Misuse (OM), the consumption of illicit opioids and/or prescription opioid pain relievers non-medically, is one of the most pressing public health concerns in the United States with opioid overdoses accounting for more than 33,000 deaths in the United States in 2015 (McCabe et al., 2017). Early OM initiation has been associated with transitioning from

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prescription opioids to injectable opioids, drug dependence and fatal overdose (Lankenau et al., 2012). For this reason, high rates of prescription OM among adolescents and young adults is conerning (Schepis, Teter, & McCabe, 2018). According to a 2018 study, 17.6% of high school seniors reported lifetime medical use of prescription opioids (and around 12.9% reported using other opioids) (McCabe et al., 2017). In order to reduce rates of adolescent OM, identifying and targeting the risk factors for adolescent OM is critical.

Justice involved children (JIC) are one of the most vulnerable groups in the United States. This group often experiences high rates of trauma, post-traumatic stress disorder, suicidal ideation, and substance misuse (Julian D. Ford, Hartman, Hawke, & Chapman, 2008; Micah E Johnson, 2017). In addition to the vulnerability that comes from a single traumatic experience, JIC also face the added vulnerability of high rates of poly-victimization. This phenomena manifests when an individual is exposed to multiple types of trauma (J. D. Ford, Grasso, Hawke, & Chapman, 2013). This extreme vulnerability, coupled with the danger posed by OM in adolescents in general, makes OM by JIC a particularly important subject for researchers and public health workers.

One potential pathway for intervention in JIC is positive peer relationships, prosocial peer role models, and powerful protective factors to redirect vulnerable children (Sullivan, 2006); conversely, maintaining relationships with substance-using peers is one of the strongest predictors of substance use in adolescents (Nakhaee & Jadidi, 2009; Piehler, Veronneau, & Dishion, 2012; Pollard, Tucker, Green, Kennedy, & Go, 2010; Russell, Trudeau, & Leland, 2015; Vervaeke, Van Deursen, & Korf, 2008). Thus, the influence of positive peers on JIC may provide a way to combat substance misuse including OM. Negative peer influence may be a risk factor.

To our knowledge, this is the first study to test the association between admiration of antisocial peers and OM among JIC. Drawing on prior research, we hypothesized that admiration of antisocial peers increases the likelihood that JIC will engage in OM. To test this hypothesis, this study leverages statewide data from the Florida Department of Juvenile Justice (FLDJJ) - the third largest juvenile justice population in America, and includes other known explanations of adolescent OM: gender, race, age, family income, history of depression, and optimism.

Methods

Data

Since 2007, FLDJJ has collected data on all youth who are arrested using a comprehensive assessment and case management process. When a minor is arrested in Florida, they complete an enrollment process to enter the FLDJJ system. As a part of the enrollment process, all youth are administered the Positive Achievement Change Tool (PACT) assessment. The PACT instrument has been validated across multiple samples of FLDJJ data published in several peer-reviewed journals (see Baglivio & Jackowski, 2013). Trained personnel conduct semi-structured interviews using the PACT software. The interface guides all aspects of data collection; it includes open-ended questions, an interview guide, the PACT manual and coding techniques. This report includes 80,441 JIC in the FLDJJ PACT

dataset; <1% (n=481) of the total cases were omitted due to missing data on SU, resulting in a final dataset of 79,960 individuals.

The population of 79,960 represents all youth who entered the FLDJJ from 2004 to 2015, completed the Full PACT assessment, reached the age of 18 by year 2015, and had data on the current SU question. Nearly 38.3 % were non-Latinx White (n=30,591), 45.6% of subjects were non-Latinx Black or African American (n=36,443), 15.7% were Latinx (n=12,536), and 0.5% were another race (n=390). Roughly 21.9% of the sample were female (n= 17,497) and the mean age in 2015 was 22. See Figure 1 for a flow diagram of the sample.

Measures

Opioid Misuse—The construct current opioid misuse, abbreviated as OM, refers to using non-prescription and/or illicit opioid within the past 30-days. OM was operationalized via a dichotomous measure that asked youth “have you used any illegal or non-prescription drugs or alcohol in the past six months?” The variable current opioid use was created by coding reports of opioid use as a positive report of opioid use. The response items were (0) “no” or (1) “yes”. Data were self-reported.

Admiration of Antisocial Peers—The construct history of admiration of antisocial peers, refers to the extent to which JIC admire antisocial peers. Admiration of antisocial peers was operationalized via an ordinal variable that asked youth “How much do you admire antisocial peers?” The response items were (1) “Does not admire or emulate antisocial peers”, (2) “Somewhat admires or emulates antisocial peers”, (3) “Admires or emulates antisocial peers”. Data were self-reported.

Control variables—The study adjusts for known predictors of OM, including gender, race, age, family income, history of mental problems, history of depression, and optimism. Gender is a social construct that includes the sex categorizations male and female (West & Zimmerman, 1987). Gender is widely acknowledged by sexual minorities as being less offensive and more inclusive and thus is used in place of sex to refer to males and females. Female gender was operationalized by a self-reported dichotomous measure (0= *male gender*, 1= *female gender*).

Race is a social construct that often includes or is used synonymously with ethnicity and national origin. Therefore, race was used to refer to race and ethnicity. Race was operationalized via a four-item nominal measure (0= *White*, 1= *Black*, 2= *Latinx*, 3= *other*). This variable was used to create three dummy variables, *Blacks*, *Latinx* and *other*, with Whites serving as the reference category, coded 0. The dummy variables were created using Stata “i” commands. Age was operationalized via a continuous variable ranging from 18 to 26 in 2015. Family income was measured via a four-item ordinal variable reporting the combined annual income of the youth and family. Response options were (0) under $15,000, (1) from $15,000 to $34,999, (2) from $35,000 to $49999, and (3) $50,000 and above.

History of mental health diagnosis was measured via a dichotomous variable reporting the youth’s history of being diagnosed with mental health problems at intake. Response items

were (0) no history of mental health diagnosis or (1) diagnosed with mental health problems. In the data depression and anxiety are combined. History of depression/anxiety was measured via an ordinal variable reporting the youth's history of depression and/or anxiety at intake. Response items were (0) no history of depression/anxiety, (1) occasional depression, (2) consistent depression/anxiety but no impairment, (3) impairment from consistent depression.

Current optimism was measured via an ordinal variable reporting the youth's level of optimism. In the data, the measure was reverse coded such that higher values represented lower levels of optimism. Response items were (0) High aspirations, sense of purpose, committed to better life, (1) Normal aspirations, some sense of purpose, (2) Low aspirations, little sense of purpose or plans for better, (3) Believes nothing matters, expects to be dead soon (Micah E. Johnson & Cottler, 2018). Residing county was measured via a 68 item categorical variable reporting the county of youth's current residence. Response options include the 67 counties in Florida and an option for out of state. The county data is not reported herein.

Analytical procedures

Data analysis was conducted using STATA, version 13 SE. A complete case analysis was appropriate given that there was minimal missing data (<1%) that was Missing Completely At Random (MCAR) and the sample size was large. Demographic data were summarized using descriptive statistics. A chi-square test of independence was performed to compare whether there was a significant association between categorical variables and OM. An independent t-test was conducted to compare the means of the interval variable (age) between non-OM versus OM. Multivariate logistic regression was used to calculate adjusted odds ratios (aORs) and 95% confidence intervals for OM. The covariates of gender, race, age, family income, history of mental problems, history of depression, and current level of optimism were controlled in the multivariate model. The predicted probability and the predictive marginal log odds were estimated (using the STATA margins procedures) to estimate and graphically display the data. The Hosmer-Lemeshow test was used to confirm adequate model fit.

Results

Univariate

Among the sample of 79,960 JIC in the FLDJJ system, 2.7% (2,137) reported past six-month OM and 45.9% reported somewhat admiring or emulating antisocial peers. Approximately 21.9% were females, 38.3% were White, 45.6% were Black, 15.7% were Latinx, and less than .5% were another race. The mean age of the sample was 14 and the mode age was 16 (determined by DOB in 2007). Most JIC in the FLDJJ sample resided in the counties of Dade (11.3%) and Broward (8.2%). Figure 1 shows the Flow Diagram of past 30- day opioid misusers in the FLDJJ.

Bivariate

JIC in FLDJJ who reported past six-month OM were more likely to somewhat admire their antisocial peers (51%), identify as males (68.2%), identify as White (80.6%), have an annual family income between $15,000 and $34,999 (47.7%), have no history of mental health diagnoses (67.9%), have no history of anxiety (38.4%), have low aspirations or little hope for the future (50.3%), and reside in the counties of Pasco (8.3%), Pinellas (7.7%), and Palm Beach (7.2%). The mean age of current users was 14. See Table 1 for complete descriptive statistics/univariate analysis and bivariate analyses.

Multivariate

Table 2 displays the results of the multivariate logistic regression model estimating the likelihood of past 30-day OM while controlling for gender, race, age, household income, history of mental health diagnoses, history of depression, level of optimism, and residing county. Admiration of antisocial peers was significantly associated with current OM. JIC who somewhat admired or emulated antisocial peers were 2.39 times more likelihood to misuse opioids in the past 30 days (AOR: 1.71; 95% CI 1.53, 1.92) and those who admired or emulated antisocial peers were 4.40 times more likely to report past 30-day OM (AOR: 2.80; 95% CI 2.44, 3.21). Figure 2 illustrates the probabilities of past 30-day OM by each category of admiration of antisocial peers.

All control variables were significantly associated with current OM, except with current OM, except history of mental health diagnoses. Females had a 38% increased likelihood of OM than males. Compared to Whites, Blacks were 89% less likely and Latinx were 55% less likely to currently misuse opioids –which translates into Whites being 8.8 times as likely as Blacks and twice as likely as Latinx to report current OM. One unit increase in age was associated with a 4% decrease in chances of current OM. Income levels above $35,000 were associated with a higher likelihood of OM compared to incomes below $15,000. JIC with history of consistent depression were twice as likely to report current OM as JIC with no history of depression. JIC with low aspirations were 3.7 times more likely to currently misuse opioids and those who believed nothing mattered were 5.6 times more likely than JIC with high aspirations.

Discussion

In a large sample of Florida JIC, the study examined the association between the admiration of antisocial peers and OM. This study had limitations that must be considered. The cross-sectional design limits the ability to establish either causal conclusions or the exact temporal sequence. Further, this research can be advanced with the development of measures and models that are more comprehensive. The literature on admiration of antisocial peers and OM among JIC can be significantly advanced by including information on peer pressure: amount of peer pressure, number of positive alternatives, the effect of positive versus negative influences, etc. Despite these limitations, this study was an unprecedented investigation of admiration of antisocial peers and OM using a diverse statewide sample of the third largest juvenile justice population in the U.S.

In certain contexts, antisocial youth or youth who engage in unhealthy coping mechanisms are gifted with popularity, desirability and status. These incentives fuel the admiration of antisocial peers, particularly in the context of insecurity and disadvantage. In the current study, admiring and emulating delinquent peers had a larger association with current OM than gender, age, income, past mental health diagnoses, and past depression. Compared to JIC who do not admire antisocial peers, JIC who "somewhat" admires or emulates antisocial peers were 1.71 times more likely to misuse opioids, and JIC who admires or emulates antisocial peers were 2.8 times more likely to misuse opioids. The findings align with prior studies linking antisocial peers to substance abuse (Degenhardt et al., 2010; McNamee Rebecca et al.; Oxford, Harachi, Catalano, & Abbott, 2001; Russell et al., 2015; Steinberg, Fletcher, & Darling, 1994). Adolescents involved in OM primarily obtain opioids from friends and family (Frese & Eiden, 2011; McCabe, West, & Boyd, 2013; Russell et al., 2015). One method to reducing OM in JIC may be interventions that create platforms where JIC can develop and maintain relationships with positive and prosocial peers who adapt health coping mechanisms. Effective Adolescence OM interventions should also develop skills to resist the influence of antisocial peers as well as the incentives of antisocial lifestyles. For many youth, their antisocial peers are relatives or community members. The conceptualization of delinquency must evolve from an individual-level perspective that characterizes children as either prosocial or antisocial to a community-building perspective that views children as part of a community in need of more resources, more prosocial role models, and less stigma and social isolation. Children must be empowered to be a positive influence on their peers and transform those who adapt unhealthy lifestyles and coping mechanism into prosocial members of their community.

The most important factors related to OM in this study were admiration of antisocial peers, depression and low aspirations/hopelessness. Stakeholders must be cognizant of the fact OM is often a mechanism to cope with psychological as well as physical pain. It is crucial that JIC who use substances are provided with the necessary trauma-informed mental health services. It is also important to prevent adolescents in physical pain from transitioning from medical use of opioids into nonmedical or heroin use. Many individuals who reported using heroin indicated their prescription opioid misuse preceded their heroin use. Physicians face the challenge of calculating the varying risks of patients transitioning into OM while addressing the pain of patients. Zero-tolerance approaches to adolescent opioid prescribing may result in increased use of heroin and other illicit opioids. These nuances and consequences must be considered as stakeholders implement opioid use reduction initiatives.

Conclusions

The study showed that admiration of antisocial peers was linked to current OM. These results support the development of youth-centered programs that foster healthy relationships and positive role models, while also developing skills to resist the influence and appeal of an antisocial lifestyle.

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Minor L. Cushion is a pre-doctoral fellow in the College of Public Health and Health Professions at the University of Florida. He is also currently working as a graduate researcher in the Study of Teen Opioid Misuse and Prevention (STOMP) Laboratory led by Dr. Micah E. Johnson. His research involves substance abuse epidemiology and health disparities.

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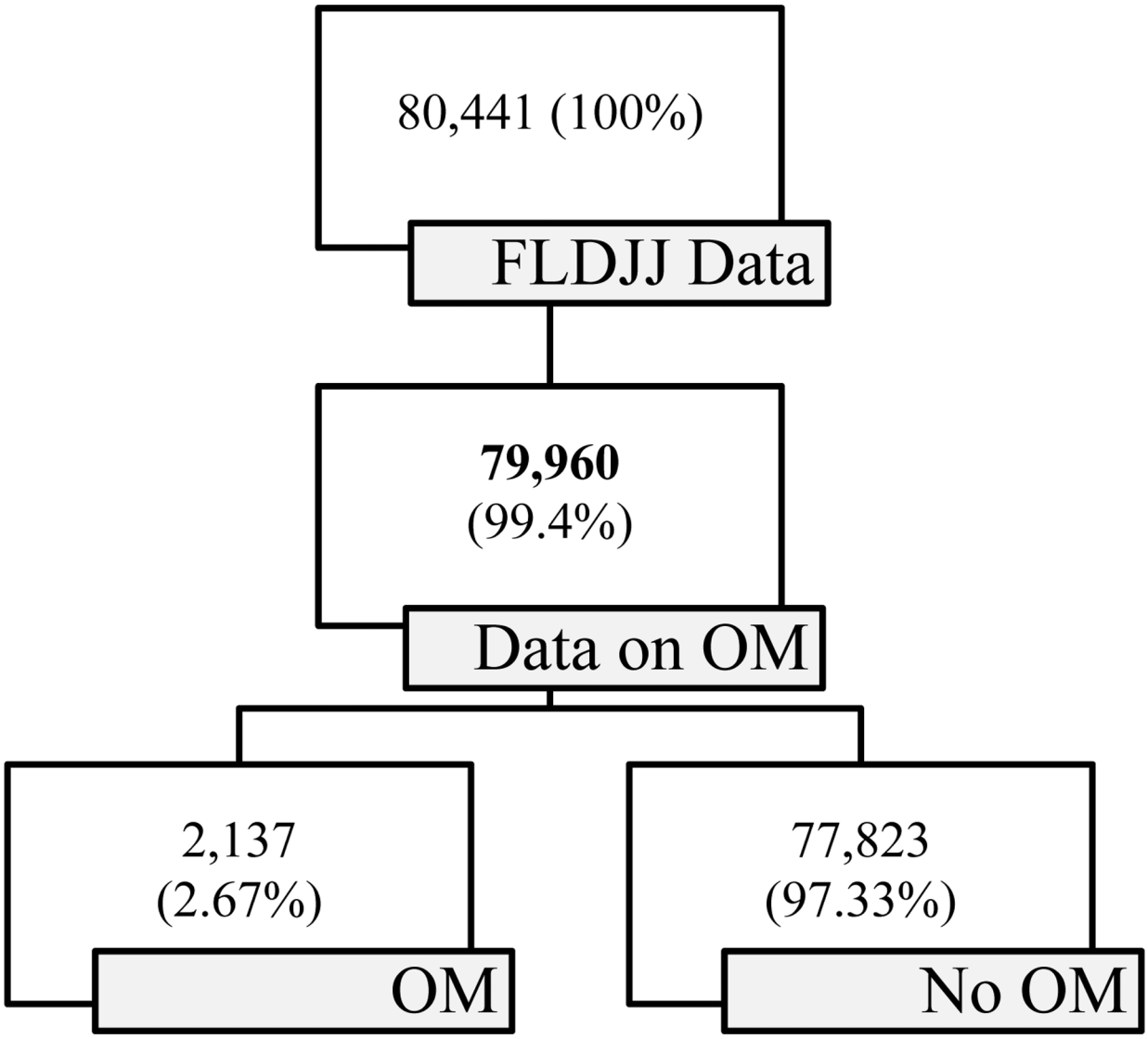

Figure 1. Flow Diagram of FLDJJ Data on OM.

Note: <1% (n=481) of 80,441 individuals were omitted from the study due to missing data on substance use.

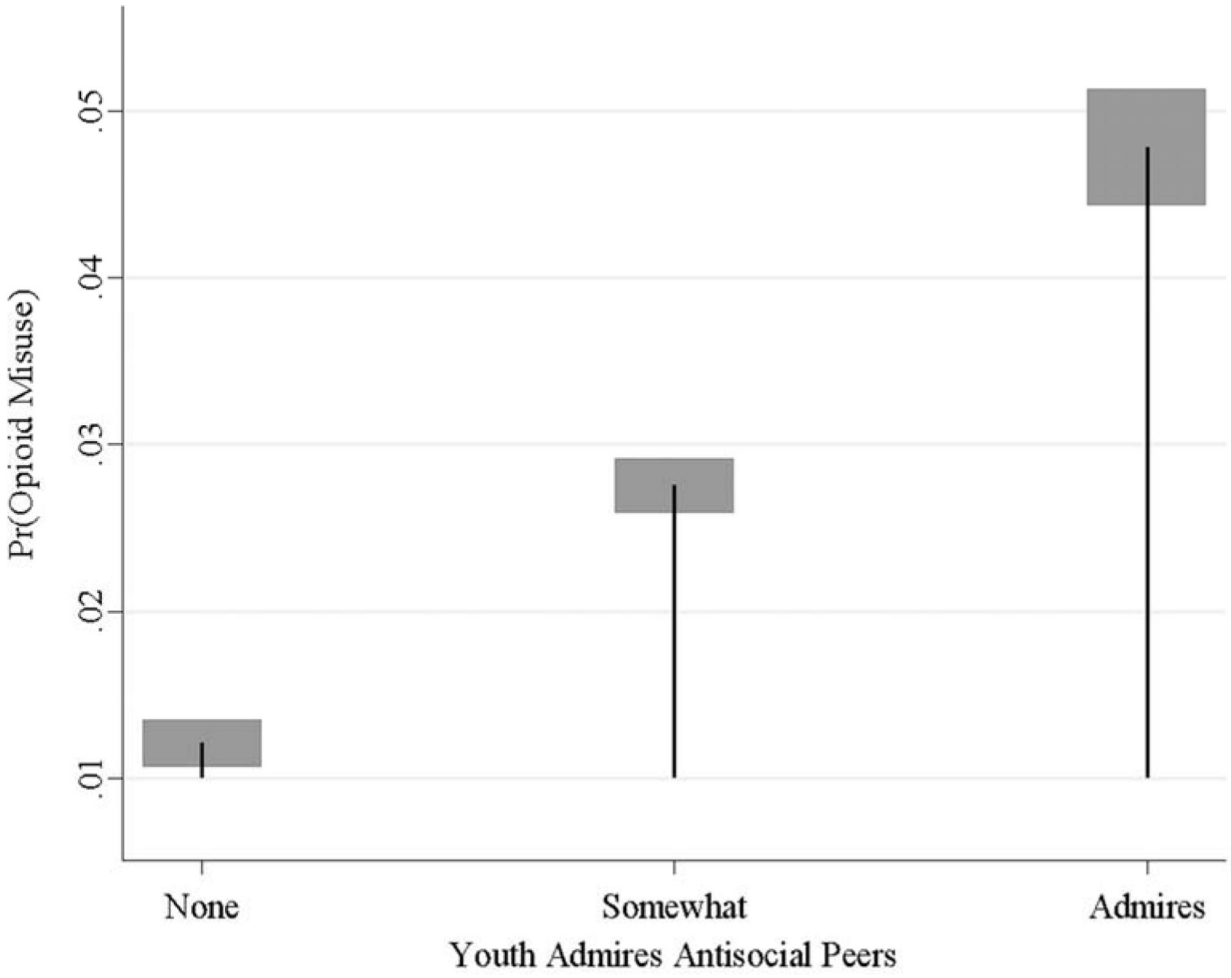

Figure 2. Probability (Pr) of Past 30-Day Opioid Misuse.
n= 79, 060

Table 1.

Characteristics of Past 30-Day (P30D) Opioid Misuse (OM).

	Total		No P30D OM		P30D OM	
	n	%	n	%	n	%
Admiration of Antisocial Peers						
None	28,585	35.7	28,287	36.3	298	13.9
Somewhat	38,531	48.2	37,461	48.1	1,070	50.1
Admiration and/or Emulation	12,844	16.1	12,075	15.5	769	36
Gender						
Male	62,463	78.1	61,006	78.4	1,457	68.2
Female	17,497	21.9	16,817	21.6	680	31.8
Race/Ethnicity						
White	30,591	38.3	28,868	37.1	1,723	80.6
Black	36,443	45.6	36,266	46.6	177	8.3
Latinx	12,536	15.7	12,318	15.8	218	10.2
other	390	0.5	371	0.5	19	0.9
Mean Age (Standard Deviation)	14.13	(2.22)	14.14	(2.22)	13.90	(2.10)
Annual Household Income						
Under $15,000	20,715	25.9	20,248	26	467	21.9
From $15,000 to $34,999	41,883	52.4	40,864	52.5	1,019	47.7
From $35,000 to $49,999	11,842	14.8	11,445	14.7	397	18.6
$50,000 & over	5,520	6.9	5,266	6.8	254	11.9
History of Mental Health Diagnoses						
None	66,469	83.1	65,019	83.5	1,450	67.9
Prior Mental Health Diagnoses	13,491	16.9	12,804	16.5	687	32.1
History of Depression-Anxiety						
None	50,633	63.3	49,812	64	821	38.4
Occasional	21,986	27.5	21,176	27.2	810	37.9
Consistent	6,247	7.8	5,837	7.5	410	19.2
Impairment	1,094	1.4	998	1.3	96	4.5
Optimism Level						
High	10,858	13.6	10,763	13.8	95	4.4
Normal	44,347	55.5	43,443	55.8	904	42.3
Low	23,856	29.8	22,781	29.3	1,075	50.3
Very Low	899	1.1	836	1.1	63	2.9

Table 2.

Logistic Regression Estimating Past 30-Day Opioid Misuse

	AOR	CI
Admiration/Emulation of Antisocial Peers	-	-
None (Reference)	-	-
Somewhat	2.39***	[2.09,2.73]
Admires or emulates	4.40***	[3.79,5.11]
Gender	-	-
Male (Reference)	1.00	[1.00,1.00]
Female	1.39***	[1.26,1.54]
Race	-	-
White (Reference)	1.00	[1.00,1.00]
Black	0.11***	[0.09,0.13]
Latinx	0.44***	[0.38,0.52]
other	0.96	[0.59,1.55]
Age	0.97**	[0.95,0.99]
Annual Household Income	-	-
Under $15,000 (Reference)	-	-
From $15,000 to $34,999	1.04	[0.92,1.17]
From $35,000 to $49,999	1.17*	[1.01,1.35]
$50,000 and over	1.43***	[1.21,1.69]
History of Mental Health Diagnoses	-	-
None (Reference)	-	-
Past Mental Health Diagnoses	1.09	[0.98,1.21]
History of Depression/Anxiety	-	-
None (Reference)	-	-
Occasional	1.56***	[1.41,1.74]
Consistent	2.12***	[1.85,2.44]
Impairment	2.45***	[1.92,3.13]
Optimism	-	-
High (Reference)	-	-
Normal	1.74***	[1.40,2.17]
Low	2.85***	[2.27,3.57]
Very Low	3.95***	[2.77,5.63]
Constant	0.01***	[0.01,0.02]
Observations	79,806	

AOR= adjusted odds ratios. 95% confidence intervals in brackets;

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$