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Adolescent Nonmedical Users of Prescription Opioids: Brief Screening and Substance Use Disorders

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Abstract

Objectives—To examine the association between a positive score on the CRAFFT (a substance use brief screening test for adolescents) and demographic characteristics, diversion sources, routes of administration, substance use behaviors and motivations associated with the use of prescription opioids without a legal prescription.

Methods—In 2009–2010, a sample of 2,744 middle and high school students from two Midwestern school districts in the United States self-administered a Web-based survey.

Results—Approximately 5.6% (n=148) of respondents reported past-year nonmedical use of prescription opioids (NMUPO). Of those reporting NMUPO, approximately 35.1% (n=52) screened positive for SUDs based on the CRAFFT. Multiple logistic regression analyses indicated that the odds of buying prescription opioids, obtaining opioids from multiple diversion sources, administering opioids intranasally, and using opioids to get high were greater for NMUPO with a positive CRAFFT screen as compared to NMUPO with a negative CRAFFT screen. NMUPO with a positive screen was motivated primarily for recreational purposes, while NMUPO with a negative screen was motivated almost exclusively by pain relief.

Conclusions—The CRAFFT brief screening test for adolescents can be used to identify a subgroup of NMUPO at the highest risk for a substance use disorder as well as a subgroup of NMUPO who would benefit from appropriate pain management.

Keywords

Prescription opioids; Nonmedical use; Brief screening; Substance use disorders; Secondary school students; Substance abuse; Adolescents

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1. Introduction

Prescription opioids are the foundation for the treatment of moderate to severe pain, and there has been an increase in the prescribing of scheduled opioids among adolescents and young adults in the United States over the past 15 years (Fortuna, Robbins, Caiola, Joynt, & Halterman, 2010; Savage, 2003; Thomas, Conrad, Casler, & Goodman, 2006; Zacny et al., 2003). A recent study found that the majority of adolescents who were prescribed opioids had used their medications appropriately (McCabe et al., 2011). Despite the medical efficacy of prescription opioids, several national studies have reported a significant increase in the nonmedical use of prescription opioids (NMUPO) among adolescents and young adults in the United States over the past 15 years (Blanco et al., 2007; Johnston et al., 2010; McCabe, West, & Wechsler, 2007), as well as a myriad of consequences associated with NMUPO (Cone et al., 2004; Jewers et al., 2005; SAMHSA, 2004, 2010; Watson et al., 2004). The estimated number of emergency department visits involving NMUPO more than doubled between 2004 and 2008 for patients younger than 21 years of age (SAMHSA, 2010). Alarming, in the United States in 2006, drug overdose deaths were the second leading cause of “unintentional injury death” with opioid analgesics as the drug class most often involved. Furthermore, rates of drug overdose mortality began to dramatically rise starting in the 15–19 years age group (Centers for Disease Control and Prevention, 2011).

Previous studies have identified a wide range of diversion sources, routes of administration, motives, and other substance use behaviors associated with NMUPO among adolescents (Boyd, McCabe, Cranford, & Young, 2007; Boyd, McCabe, & Teter, 2006; McCabe & Boyd, 2005; McCabe, Boyd, Cranford, & Teter, 2009; McCabe, Cranford, Boyd, & Teter, 2007; Sung, Richter, Vaughan, Johnson, & Thom, 2005). Despite the adverse effects associated with NMUPO, there is a paucity of studies regarding the heterogeneity associated with NMUPO and the prevalence of substance use disorders (SUDs) among adolescent nonmedical users. As a result, there is very little information about differences in demographic characteristics and substance use behaviors (e.g., intranasal substance use) between nonmedical users of prescription opioids who screen positive for SUDs and nonmedical users who screen negative. Such knowledge would be useful for developing substance abuse prevention and intervention programs for adolescents.

The *CRAFFT* test is designed specifically for screening adolescents for substance abuse and dependence (Knight et al., 1999). The *CRAFFT* test offers health professionals a practical means of quickly identifying adolescents who need more comprehensive assessment or referral to substance abuse treatment specialists (Knight, Sherrit, Shrier, Harris, & Chang, 2002). To date, there has been no work examining whether nonmedical users of prescription opioids who screen positive for SUDs have different demographic characteristics, diversion sources, routes of administration, motives, or substance use behaviors than nonmedical users who screen negative. Thus, in order to more fully examine the risks associated with NMUPO, the main objective of this study was to utilize the *CRAFFT* test to determine differences between past-year nonmedical users of prescription opioids with a positive score on the *CRAFFT* and past-year nonmedical users with a negative score on the *CRAFFT*.

2. Methods

2.1 Study design

This study was conducted during a five-month period between December 2009 and April 2010, drawing on the entire population of middle and high school students attending two public school districts in the Detroit metropolitan area (7th – 12th grades). The study received approval from the University of Michigan Institutional Review Board and a

Certificate of Confidentiality was obtained from the National Institutes of Health. All parents in the school districts were sent letters requesting permission for their children to participate in the Secondary Student Life Survey (SSLS), explaining that participation was voluntary, describing the relevance of the study, and assuring that all responses would be kept confidential. The SSLS Web survey used in this study was maintained on a hosted secure Internet site running under the secure sockets layer protocol to insure safe transmission of data. The final response rate was 62%, which falls within the range of response rates from schools participating in a 2009 national school-based study of secondary school students using comparable data collection procedures (Centers for Disease Control and Prevention, 2010).

2.2 Sample

As illustrated in Table 1, the final sample consisted of 2,744 middle and high school students (50.4% female and 49.6% male). The mean age of respondents in the sample was 14.8 years ($SD = 1.9$). The racial/ethnic distribution was 64.1% White, 30.6% Black, and 5.3% from other racial/ethnic categories. Comparisons between respondents and nonrespondents indicated no statistically significant differences in terms of sex or age. However, nonresponse was associated with race/ethnicity (chi-square = 6.1, $df = 2$, $p < .05$), with Whites having a higher nonresponse rate (39.5%) compared to African Americans (35.5%) and other racial/ethnic categories (38.9%).

2.3 Measures

The Secondary Student Life Survey (SSLS) assesses demographic characteristics and bullying behaviors, and also includes items from several national studies of alcohol and other drug use (Johnston et al., 2010; SAMHSA, 2010). Standard measures of substance use were included, such as cigarette use in the past month, binge drinking in the past two weeks, nonmedical use of prescription medications, and marijuana and other drug use in the past year.

Nonmedical use of prescription opioids was assessed with the following question: “On how many occasions in the past 12 months have you used the following types of medicines, not prescribed to you? Pain medication (e.g., opioids such as Vicodin®, OxyContin®, Tylenol 3® with codeine, Percocet®, Darvocet®, morphine, hydrocodone, oxycodone).” The response scale ranged from (1) No occasions to (7) 40 or more occasions.

Diversion sources were assessed by asking respondents who reported NMUPO the following question: “How did you obtain the pain medication (e.g., opioids such as Vicodin®, OxyContin®, Tylenol 3® with codeine, Percocet®, Darvocet®, morphine, hydrocodone, oxycodone) not prescribed to you?” Respondents were asked to select all that apply from a list of diversion sources based on previous research (Boyd et al., 2007; McCabe & Boyd, 2005; McCabe et al., 2007).

Routes of administration were assessed by asking respondents who reported NMUPO to respond to the following statement: “In what ways have you taken each of the following medications? Pain medication (e.g., opioids such as Vicodin®, OxyContin®, Tylenol 3® with codeine, Percocet®, Darvocet®, morphine, hydrocodone, oxycodone) not prescribed to you.” indicate the route(s) of administration they used for taking prescription opioids not prescribed to them. Respondents were asked to select all that apply from a list of routes based on previous research (McCabe et al., 2007; McCabe et al., 2009).

Motives for nonmedical use of prescription opioids were assessed by asking students who reported NMUPO to respond to the following statement: “Please provide the reason(s) why you used pain medication not prescribed to you?” Respondents were asked to select all that

apply from a list of motives based on previous research (McCabe et al., 2007; Johnston & O'Malley, 1986; McCabe, Teter, & Boyd, 2005).

The *CRAFFT* is a brief self-report alcohol and other drug screening test developed specifically for adolescents (Knight et al., 1999). *CRAFFT* is a mnemonic based on the following six yes/no questions: "Have you ever ridden in a *car* driven by someone (including yourself) who was high or had been using alcohol or drugs?" "Do you ever use alcohol or drugs to *relax*, feel better about yourself, or fit in?" "Do you ever use alcohol or drugs while you are by yourself (*alone*)?" "Do you *forget* things you did while using alcohol or drugs?" "Do your family or *friends* ever tell you that you should cut down on your drinking or drug use?" "Have you ever gotten into *trouble* while you were using alcohol or drugs?" The *CRAFFT* has acceptable reliability ($\alpha = .79$) and is highly correlated ($r = 0.84$) with the Personal Involvement with Chemicals Scale (PICS) (Knight et al., 1999). A score of 2 or higher on the *CRAFFT* had sensitivity and specificity of 0.80 and 0.86, respectively, for detecting any substance abuse or dependence; similarly, a score of 2 or higher had sensitivity and specificity of 0.92 and 0.80, respectively, for detecting substance dependence (Knight et al., 2002).

2.4 Data analysis

Chi-square tests were used to compare demographic characteristics, diversion sources, routes of administration, and motives for NMUPO between those who screened positive for SUDs and those who screened negative for SUDs. Multiple logistic regression analyses compared the odds of selected substance use behaviors among four mutually exclusive groups of NMUPO: (1) no past-year NMUPO (non-users) with negative screen for SUDs, (2) non-users with positive screen for SUDs, (3) past-year NMUPO with negative screen for SUDs, and (4) past-year NMUPO with positive screen for SUDs. Given previous research examining socio-demographic correlates of NMUPO among adolescents (Boyd et al., 2006; McCabe, Boyd, & Teter, 2005), these models included sex (male/female), race/ethnicity, school and grade levels as covariates. Estimates of adjusted odds ratios (AOR) and 95% confidence intervals (95% CI) for the AORs were reported to describe adjusted contrasts between these groups. All statistical analyses were performed using the SPSS 18.0 software (SPSS Inc., an IBM Company, Chicago, IL, USA).

3. Results

The lifetime prevalence of NMUPO in this sample was 8.8%, and the past-year prevalence of NMUPO was 5.6%. For the 148 students in the sample indicating past-year NMUPO, the mean age was 15.2 years ($SD = 1.8$), 66.2% were female, and the racial/ethnic distribution was 65.5% White, 27.7% Black, and 6.8% other. Although there were no significant associations between NMUPO and age or race/ethnicity, there was a significant association in terms of gender. Among the 2,478 who did not report past-year NMUPO, 49.8% were females while among those who report past-year NMUPO, 66.2% were females ($\chi^2(1) = 15.1$, $p < 0.05$). There were significant gender differences in the past-year prevalence of NMUPO (3.9% for males vs. 7.4% for females, $\chi^2(1) = 15.14$, $p < 0.001$), but no significant differences between White students and African-American students in the prevalence of past-year NMUPO (5.7% vs. 5.3%). Of the 148 secondary school students who reported past-year NMUPO, 56.8% used on 1 to 2 occasions, 20.9% used on 3 to 5 occasions, 9.5% used on 6 to 9 occasions, and 12.8% used on 10 or more occasions. Among past-year NMUPO ($n = 148$), approximately 35.1% screened positive for SUDs based on the *CRAFFT* test. We examined the associations among demographic characteristics, past-year NMUPO, and a positive screen for SUDs (Table 1). We found older and White nonmedical users had higher prevalence of screening positive for SUDs than younger and non-White students.

We compared diversion, routes of administration and motives between nonmedical users based on CRAFFT results (Table 2). In general, the prevalence of obtaining prescription opioids from friends, the motive to get high, and intranasal administration were greater among those who screened positive on the CRAFFT as compared to those who screened negative. Interestingly, there were no reports of nonmedical users buying prescription opioids on the Internet.

Multiple logistic regression analyses confirmed bivariate results and revealed that the odds of buying prescription opioids and having multiple diversion sources among nonmedical users who screened positive, were statistically significantly greater than for those who screened negative, adjusting for relevant covariates (Table 3). In contrast, the odds of obtaining prescription opioids from a family member for free among those who screened positive were significantly lower than those who screened negative.

Finally, the odds of snorting prescription opioids and using prescription opioids to get high or experiment, among those who screened positive, were significantly greater than for those who screened negative, adjusting for relevant covariates (Table 4). In contrast, while the odds of using prescription opioids to relieve pain did not differ significantly between the two groups, the odds of using prescription opioids to relieve pain as the only motive to use were significantly lower for nonmedical users who screened positive than for those who screened negative (AOR = 0.14, 95% CI = 0.05, 0.38, $p < 0.001$).

Nonmedical users who screened positive on the CRAFFT used alcohol and other drugs more frequently than prescription opioids, while this was not true for nonmedical users who screened negative. Notably, frequent NMUPO (10 or more occasions in the past year) did not differ significantly between those who screened positive as compared to those who screened negative (21.1% vs. 8.0%, $\chi^2(1) = 7.36$, $p = 0.06$). Approximately 40% of nonmedical users who screened positive reported frequent alcohol use (10 or more occasions in the past year), as compared to 2% of nonmedical users who screened negative ($p < 0.001$). In addition, the prevalence of frequent marijuana use (10 or more occasions in the past year) was approximately 49% among nonmedical users who screened positive and 1% among nonmedical users who screened negative ($p < 0.001$).

4. Discussion

Based on a sample from two Southeastern Michigan school districts, we found that more than one in every three past-year nonmedical users of prescription opioids screened positive for SUDs based on the CRAFFT screening test. This study provides new evidence that NMUPO with a positive screen for SUDs differs significantly from NMUPO with a negative screen in terms of demographic characteristics, diversion sources, routes of administration, and motivations. It should be noted that we defined NMUPO as “use without a legal prescription” while some studies in the literature include multiple concepts within the definition of NMUPO, such as medical misuse (e.g., in greater amounts or using more often than prescribed), or use only for the experience or feeling it caused (Hubbard, Pantula, & Lessler, 1992) which makes comparisons across studies challenging. Although females were more likely than males to report past-year NMUPO, there were no sex differences between those nonmedical users who screened positive for SUDs. While there were no significant differences in past-year NMUPO with respect to age and race, older and White nonmedical users were more likely to screen positive for SUDs, suggesting prevention and intervention efforts need to reach students in middle and high school.

The CRAFFT screening instrument was used to identify two important subgroups of NMUPO: 1) individuals who are at high risk for substance use disorders, and 2) individuals

who would benefit from appropriate pain management. Nonmedical users who screened positive for SUDs were more likely to report NMUPO to get high, and significantly less likely to report pain relief as the sole motivation for NMUPO as compared to nonmedical users who screened negative. In fact, approximately eight in every ten nonmedical users who screened negative reported pain relief as their only motivation for NMUPO, while nonmedical users who screened positive were over 18 times more likely to report intranasal administration of prescription opioids. Thus, nonmedical users who screen negative for SUDs would clearly benefit from appropriate pain management, while nonmedical users who screen positive would benefit from a more comprehensive assessment for SUDs. One practical implication of these findings is that brief screening instruments can be administered to nonmedical users to help determine the most appropriate form of treatment.

We found heterogeneity associated with NMUPO, and characteristics such as diversion sources varied as a function of whether nonmedical users of prescription opioids screened positive for SUDs. Consistent with previous research, nonmedical users with a positive screen for SUDs obtained prescription opioids from different diversion sources than other nonmedical users (Schepis & Krishnan-Sarin, 2009). In particular, nonmedical users who screened positive were more likely than other nonmedical users to buy prescription opioids, obtain prescription opioids from peers, and utilize multiple diversion sources for obtaining prescription opioids. Schepis and Krishnan-Sarin (2009) also found that adolescents who obtained prescription medications nonmedically by purchasing them had the worst risk profile in terms of concurrent substance use and severity of prescription misuse. Although peers played a more prominent role in diversion among those who screened positive, family members were more likely to be the sole diversion source for those who screened negative. These results suggest diversion sources may provide insights regarding the risk for SUDs and studies that assess diversion should separate family from peer diversion sources. Finally, the finding that there were no reports of nonmedical users buying prescription opioids on the Internet, regardless of the SUD screening result, adds to a growing literature indicating adolescents and young adults are not currently purchasing prescription opioids via the Internet (Johnston et al., 2010; McCabe & Boyd, 2005; McCabe et al., 2007; Schepis & Krishnan, 2009). However, future research should continue to monitor the role of the Internet as a potential diversion source based on the feasibility of purchasing controlled medications online without a prescription (Califano, 2004; Forman, 2003).

We found that frequent past-year NMUPO did not differ between those who screened positive for SUDs as compared to those who screened negative. The majority of nonmedical users of prescription opioids used alcohol and marijuana more frequently than prescription opioids. It should be noted that the CRAFFT screening instrument items are not opioid-specific, and the substance-related problems based on the CRAFFT in nonmedical users of prescription opioids appear to be primarily attributed to the use of other drugs. Indeed, more than 90% of past-year nonmedical users of prescription opioids also reported using alcohol and other drugs in the past year. However, the fact remains that the frequency of NMUPO did not seem to be a primary contributing factor in whether adolescents screened positive or negative on the CRAFFT, especially when compared to alcohol and marijuana. This is a notable finding considering other data that demonstrates frequency of drug use among adolescents is associated with later psychiatric and SUDs (Brook et al 2002). Furthermore, both frequency and intensity of drug use have been described by leading experts as major factors in the development of addiction (Koob & Volkow 2010). Therefore, the lack of differences in NMUPO frequency between CRAFFT- and CRAFFT+ respondents deserves further exploration using longitudinal research.

This study has several important strengths, including the use of the CRAFFT, a valid substance use disorder screening test specifically designed for adolescents (Knight et al.,

1999, 2002). Furthermore, the study assessed three major aspects of NMUPO in more detail than national studies (motives, routes of administration, and diversion). Despite these strengths, there are some limitations that should be taken into account when considering implications of the findings. First, the results cannot be generalized to other adolescent populations, because our sample was selected from two school districts in southeastern Michigan and did not include individuals who had dropped out of school. Second, the estimates reported in the study are subject to potential bias introduced when assessing sensitive behaviors via self-report surveys and differential nonresponse across racial/ethnic groups may have introduced bias in the estimates reported in the present study if the prevalence of substance use behaviors also varied across racial/ethnic groups. Unfortunately, we could only compare substance use behaviors among ethnic groups for the *respondents*, and the true associations of ethnicity and substance use behaviors for the full sample could not be determined without having data for the nonrespondents. Among respondents, substance abuse and other adverse outcomes were not found to differ significantly as a function of race/ethnicity, suggesting that any nonresponse bias would be minimal. More generally, the present study minimized potential biases by using computer-based self-administration, informing potential respondents that participation was voluntary, and assuring potential respondents that data would remain confidential (Harrison & Hughes, 1997; Johnston & O'Malley, 1985; Turner et al., 1998). Third, this study did not examine associations among subgroups of NMUPO, and mood, anxiety and personality disorders. Although previous studies have found strong associations between mood, anxiety and personality disorders and nonmedical prescription opioid use disorders among adults (Huang et al., 2006), more research needs to be conducted to examine whether such associations exist among adolescents and across different subgroups of NMUPO. Finally, the cross-sectional design of the study presented limitations; longitudinal studies are needed to examine the subgroups identified based on NMUPO and the CRAFFT screening instrument over time.

Despite these limitations, findings of the present study indicate important differences between nonmedical users of prescription opioids who screen positive for SUDs and nonmedical users who screen negative. Substance-related problems based on the CRAFFT in nonmedical users of prescription opioids appear to be primarily attributed to the use of other drugs. These results suggest that the same strategies may not be appropriate for treating all NMUPO, and brief screening instruments that cover a wide range of substances should be utilized to help determine the most appropriate form of treatment for adolescents. According to a recent study, as few as one or two questions may be appropriate to screen for alcohol and other drug use (Newton et al., 2011). Therefore, even the busiest clinician should be able to incorporate brief screening for SUDs into their overall therapeutic plan when treating adolescent patients.

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- We examine two subgroups of adolescent nonmedical users of prescription opioids as a function of past-year substance use disorders.
- A third of nonmedical opioid users had a positive substance abuse screen.
- A positive screen was associated with recreational motives.
- A negative screen was associated with pain relief motives.
- The CRAFFT screening test can be used to identify at-risk nonmedical users of prescription opioids.

Table 1
Demographic characteristics associated with nonmedical use of prescription opioids and screening for substance use disorders based on *CRAFFT*^a

	Overall sample of secondary school students (n=2,744) %	No past-year nonmedical use of prescription opioids (n=2,478) %	Past-year nonmedical use of prescription opioids (n=148) %	Past-year nonmedical use of prescription opioids (+ <i>CRAFFT</i>) (n=52) ^b %	Past-year nonmedical use of prescription opioids (- <i>CRAFFT</i>) (n=88) ^b %	Differences between past-year nonmedical users (+ <i>CRAFFT</i> vs. - <i>CRAFFT</i>) (n=88) ^b <i>CRAFFT</i> χ^2 (df), p-value
Gender						
Male	49.6	50.2	33.8	32.7	36.4	0.194 (1), p = 0.660
Female	50.4	49.8	66.2	67.3	63.6	
Race						
White	64.1	64.9	65.5	80.8	58.0	7.633 (2), p = 0.022
Black	30.6	29.7	27.7	15.4	34.1	
Other	5.3	5.3	6.8	3.8	8.0	
Grade level						
7 th	17.1	17.7	9.5	0.0	13.6	27.753 (5), p < 0.001
8 th	17.9	17.9	16.2	5.8	20.5	
9 th	17.6	17.2	19.6	15.4	23.9	
10 th	15.1	15.5	12.2	15.4	9.1	
11 th	16.0	15.7	20.3	21.2	21.6	
12 th	16.4	16.0	22.3	42.3	11.4	

^a Positive (+) and negative (-) screen for substance abuse and dependence based on *CRAFFT* (car, relax, alone, forget, friends, trouble).

^b Eight respondents had missing data or selected "rather not say" on at least one *CRAFFT* item leading to 140 cases for the analysis of those who screened positive and negative.

Table 2

Diversion sources, routes of administration, and motives for nonmedical use of prescription opioids: Positive versus negative screen for substance use disorders based on *CRAFT*^a

	Past-year nonmedical users of prescription opioids ^b % <i>c</i>	Past-year nonmedical users of prescription opioids (+CRAFT) ^b % <i>c</i>	Past-year nonmedical users of prescription opioids (-CRAFT) ^b % <i>c</i>	Differences between past-year nonmedical users (+CRAFT vs. -CRAFT) p-value ^d
Diversion sources				
Obtained prescriptions for the medicine(s) from one doctor	19.9	15.4	23.3	p = 0.286
Obtained prescriptions for the medicine(s) from more than one doctor	2.1	0.0	3.5	p = 0.290
Wrote fake prescriptions for the medicine(s)	0.0	0.0	0.0	N/A
Stole the medicine(s) from a pharmacy or hospital	0.0	0.0	0.0	N/A
Given (for free) the medicine(s) from a friend (same sex friend)	17.1	34.6	7.0	p < 0.001
Given (for free) the medicine(s) from a friend (opposite sex friend)	6.8	11.5	4.7	p = 0.177
Given (for free) the medicine(s) from a family member	28.8	19.2	34.9	p = 0.055
Bought the medicine(s) from a friend (same sex friend)	6.8	19.2	0.0	p < 0.001
Bought the medicine(s) from a friend (opposite sex friend)	6.2	17.3	0.0	p < 0.001
Bought the medicine(s) from a family member	1.4	0.0	2.3	p = 0.527
Took the medicine(s) from a friend	2.7	3.8	2.3	p = 0.632
Took the medicine(s) from a family member	17.1	21.2	16.3	p = 0.500
Bought the medicine(s) from a dealer or other stranger	2.1	5.8	0.0	p = 0.052
Bought the medicine(s) on the Internet	0.0	0.0	0.0	N/A
Obtained medicine(s) in some other way	5.5	5.8	4.7	p = 1.000
Routes of administration				
Mouth (oral)	95.9	96.2	96.6	p = 1.000
Smoking	1.4	1.9	0.0	p = 0.374
Snorting	10.9	26.9	1.1	p < 0.001
Injecting	0.7	0.0	0.0	N/A
Motives				
Because it relieves pain	62.8	48.1	72.9	p < 0.010
Because it helps me sleep	6.2	5.8	7.1	p = 1.000

	Past-year nonmedical users of prescription opioids ^b % ^c	Past-year nonmedical users of prescription opioids (+CRAFT) % ^c	Past-year nonmedical users of prescription opioids (-CRAFT) % ^c	Differences between past-year nonmedical users (+CRAFT vs. -CRAFT) p-value ^d
Because it helps decrease anxiety	4.1	7.7	2.4	p = 0.200
Because it gives me a high	15.9	42.3	0.0	p < 0.001
Because it counteracts the effects of other drugs	0.7	1.9	0.0	p = 0.380
Because it is safer than street drugs	1.4	0.0	2.4	p = 0.526
Because of experimentation	10.8	26.9	2.4	p < 0.001
Because I am addicted	0.7	1.9	0.0	p < 0.380

Positive (+) and negative (-) screen for substance abuse and dependence based on *CRAFT* (car, relax, alone, forget, friends, trouble).

^b Due to missing values and "rather not say" responses, sample sizes ranged from 145 to 147 for past-year nonmedical users of prescription opioids, were equal to 52 for those nonmedical users who screened positive for substance use disorders, and ranged from 85 to 87 for those nonmedical users who screened negative for substance use disorders.

^c Totals exceed 100% because response categories were "select all that apply."

^d Fisher's Exact Test (two-sided) was used given some of the small cell sizes and a Bonferroni adjustment would require a p-value to be less than 0.05/27 = 0.001852.

Table 3

Diversion sources as a function of nonmedical use of prescription opioids and screening for substance use disorders based on *CRAFFT*^a

Nonmedical use and substance abuse status	Bought prescription opioids from any source		Multiple sources of diversion		Family member gave for free only	
	%	AOR ^b (95% CI)	%	AOR ^b (95% CI)	%	AOR ^b (95% CI)
Past-year nonmedical use (-CRAFFT)	2.3	Reference	10.2	Reference	27.9	Reference
Past-year nonmedical use (+CRAFFT)	28.8	14.6 (2.7 – 80.5) ^{***}	34.6	5.2 (1.8 – 15.2) ^{**}	7.7	0.2 (0.1, 0.7) ^{**}
Chi-square (DF), p-value	21.01(1), p < 0.001		12.5(1), p < 0.001		8.2(1), p < 0.01	

* p < 0.05,

** p < 0.01,

*** p < 0.001 based on logistic regression.

^a Positive (+) and negative (-) screen for substance abuse and dependence based on *CRAFFT* (car, relax, alone, forget, friends, trouble).

^b Odds ratios are adjusted for gender, race/ethnicity, school, and grade level (odds ratios for these variables are not shown).

Due to missing values and “rather not say” responses, sample sizes were 138 for the bought prescription opioids from any source model, 140 for the multiple sources of diversion model and 138 for the family members for free only model.

Table 4

Routes and motives as a function of nonmedical use of prescription opioids and screening for substance use disorders based on *CRAFFT*^a

Nonmedical use and substance abuse status	Snorted prescription opioids		Used nonmedically to relieve pain		Used nonmedically to get high or experiment	
	%	AOR ^b (95% CI)	%	AOR ^b (95% CI)	%	AOR ^b (95% CI)
Past-year nonmedical use (-CRAFFT)	1.1	Reference	72.9	Ref	2.4	Reference
Past-year nonmedical use (+CRAFFT)	26.9	18.2 (2.2 – 154.4) ^{***}	48.1	0.5 (0.2 – 1.0)	51.9	47.8 (8.6 – 264.9) ^{***}
Chi-square (DF), p-value	22.5(1), p < 0.001		8.6(1), p < 0.01		47.5(1), p < 0.001	

* p < 0.05,

** p < 0.01,

*** p < 0.001 based on logistic regression.

^a Positive (+) and negative (-) screen for substance abuse and dependence based on *CRAFFT* (car, relax, alone, forget, friends, trouble).

^b Odds ratios are adjusted for gender, race/ethnicity, school, and grade level (odds ratios for these variables are not shown).

Due to missing values and “rather not say” responses, sample sizes were 139 for the snorted prescription opioids model, 137 for the used nonmedically to relieve pain model, and 137 for the used nonmedically to get high or experiment model.