

Ethnic/Racial Differences in Peer and Parent Influence on Adolescent Prescription Drug Misuse

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ABSTRACT: *Purpose:* To describe ethnic/racial group differences in prescription drug misuse within a nationally representative sample of US adolescents. Also to identify potential sociocultural influences on this health risk behavior. *Methods:* A secondary data analysis was conducted on the public-use data of the 2010 National Survey of Drug Use and Health using the records of 12- to 17-year-old African American, Hispanic, and white participants (N = 18,614). Logistic and Poisson regression analyses focused on examining the predictive role of perceived parental and peer substance use disapproval on adolescents' prescription drug misuse and how these social influences varied by ethnic group. *Results:* Within this sample, 10.4% of adolescents endorsed misusing 1 or more subtypes of prescription drugs. The results showed significant ethnic group differences in rates of prescription drug misuse such that white adolescents reported the highest rates and African American adolescents reported the lowest rates of prescription drug misuse. Rates of misuse for Hispanic adolescents fell in between. Importantly, perceived parental and peer substance use disapproval decreased the likelihood of prescription drug misuse most significantly among white adolescents compared to Hispanic and African American adolescents. Furthermore, influence of disapproval differed by the type of substance, indicating ethnic group differences in disapproval, such as views of alcohol versus marijuana use. *Conclusions:* These findings provide new ethnic group-specific information about the role that the attitudes of peers and parents on substance use may play in whether adolescents misuse prescription drugs. Future studies should explore possible parent/peer-related socialization mechanisms, which may account for these ethnic group differences.

(*J Dev Behav Pediatr* 35:257–265, 2014) **Index terms:** adolescents, substance abuse, prescription drugs, health risk, ethnic minority health.

Currently, misuse and abuse of prescription drugs is one of the fastest growing drug epidemics in the United States, particularly among adolescents.¹ Misuse is commonly defined as both the use of prescription medications without a doctor's prescription and use simply for the "experience or feeling the drug caused."^{2(p.5)} In 2006, the number of US youth older than 12 years who initiated nonmedical use of prescription opioids within the span of a year was greater than the estimated number of youth who initiated either illicit cannabis or cocaine use during that same period.² Significant increases in the nonmedical use of prescription drugs (NMUPD) have led to labeling today's American adolescents as "Generation

Rx."³ Despite slight decreases in the NMUPD among adults, rates among adolescents seem to remain stable, warranting attention regarding the reasons US adolescents remain active in NMUPD.⁴

In an effort to begin to understand which group of adolescents may be at the greatest risk for prescription drug misuse, significant differences in the rates of NMUPD between white and ethnic minority adolescents have been documented consistently in the recent literature.^{5,6} Specifically, white adolescents reported higher rates of NMUPD than their non-white peers.⁷ In their review, Young et al⁷ also noted several peer (e.g., peer attitudes) and parental factors (e.g., parental bonding/disapproval of drug use) associated with adolescent NMUPD; however, a few studies have attempted to explore how such factors may explain these racial/ethnic disparities. The current study is informed by theoretical perspectives, which move beyond the traditional cross-cultural "risk" models, which document between-group differences without examining relevant mechanisms or processes that may explain these discrepancies. In fact, several seminal articles^{8,9} have highlighted such issues in clinical sciences, in particular, the use of race/ethnicity as an "explanatory construct" in and of itself. Among their proposed guidelines for cultural research, Helms et al⁹ call for researchers to move away from using race as an "explanation" and to shift focus to culture-specific

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factors (e.g., values) to explain the risk behaviors in the development of any health issues rather than perpetuating group-level comparisons.

In a review of theoretical models on culture and human development, Garcia Coll et al⁸ stated that the study of culture is vital in the confirmation, creation, and expansion of theories of human development. Historically, research in the United States has taken a universal or etic approach to studying the impact of culture on normal and abnormal development, leading to the propagation of “deficiency models,” in other words, using race or ethnicity to explain health disparities between white and ethnic minority youth. However, Garcia Coll et al⁸ make a strong case for examining culture-based environmental influences as processes rather than a backdrop for developmental psychopathology. Thus, studies within one culture or between cultures can provide vital new information regarding the strength of cultural factors on the increased or decreased likelihood of the development of the phenomena of interest. Taking a within-culture, or emic, perspective may more effectively document how particular cultural values, beliefs, or practices specifically impact the cause and course of developmental psychopathology.⁸ Thus, the current study takes a culture-specific approach to understanding NMUPD, extending previous research. More specifically, we aim to examine one aspect of cultural socialization, parent and peer attitudes, on adolescent NMUPD. Methodologically, we use a within-group (or parallel analysis)¹⁰ approach to allow for meaningful cross-cultural differences in socialization patterns to emerge.

In adolescence, the attitudes and behaviors of peers and parents have profound impacts on youths' own attitudes and behaviors related to drug use. In the present literature, there is less information on peer disapproval compared to approval/acceptability. Disapproval as a construct does not represent the opposite end of the spectrum from approval and is, in fact, qualitatively different. However, some studies have used disapproval as a way to capture a potential protective factor for adolescents. For example, among a diverse sample of 8th, 10th, and 12th graders, perceived peer substance use disapproval, particularly at the school level, decreased the likelihood of cigarette, alcohol, and marijuana use.¹¹ In addition, a study of predominantly African American adolescents found that caregiver and peer disapproval was negatively associated with early substance use initiation.¹² Other research with white, black, and Hispanic adolescents highlights the influence of parental disapproval on adolescent substance use.^{13,14} A recent study with an ethnically diverse sample of adolescents found that the attitudes of close friends differentially predicted the risk of cigarette, alcohol, and marijuana use. The authors recommended further studies to better understand cultural processes that may influence adolescent substance use behaviors.¹⁵

To date, ethnic group examinations of these influential social factors have been limited to studies of

tobacco, marijuana, and alcohol use among adolescents. For example, peer substance use has been related to cigarettes, marijuana, and alcohol use among US-born Hispanic and African American adolescents.^{16,17} Ennett et al¹⁸ found that African American and Hispanic adolescents who reported having conversations with their parents about the rules and discipline related to tobacco use were less likely to start or increase the use of cigarettes compared to white adolescents. However, the influence of peer and parent substance use attitudes on adolescents' NMUPD is not currently well understood. Moreover, with the differing influence of these attitudes on nonprescription drugs substances, such as tobacco and alcohol, across adolescent racial/ethnic groups, little research has been done in the way of examining how these social influences translate to prescription drug misuse.

Using data from the 2010 National Survey on Drug Use and Health, we investigated the influence of perceived parental and peer disapproval of various substance use on NMUPD among African American, Hispanic, and white adolescents. Our primary goal was to answer 3 questions: (1) Are there differences in rates of NMUPD among ethnic/racial groups in this sample? (2) Does perceived peer and parental substance use disapproval influence adolescents' NMUPD? (3) If so, what are the observed differences in peer and parental influence patterns across these ethnic groups?

METHODS

Procedures

The National Survey on Drug Use and Health (NSDUH) is a national survey that uses multistage area probability sampling methods to select a representative sample of the US civilian, noninstitutionalized population aged 12 years or older in all 50 states (N = 57,873). For the purposes of improving the precision of drug use estimates for key subgroups, adolescents aged 12 to 17 years were oversampled. The 2010 sample (N = 18,614) included 12- to 17-year-old participants who self-identified as African American (n = 2,486; 14.8%), Hispanic (n = 3,273; 19.4%), or white American (n = 11,093; 65.8%). Approximately half of the study sample was male (50.8%). The data collection method used in NSDUH involves in-person interviews, incorporating procedures that are likely to increase respondents' cooperation and willingness to report honestly about illicit behavior. More specifically, researchers used computer-assisted interviewing to increase the likelihood of valid respondent reports of drug use behaviors.¹⁹ Computer-assisted interviewing methodology combines computer-assisted personal interviewing (CAPI) and audio computer-assisted self-interviewing (ACASI). However, ACASI is designed to provide the respondent with a highly private and confidential means of responding to questions, and it is used for questions of a sensitive nature, such as substance use.²⁰ For more sensitive questions pertaining to drug use, respondents listened to

prerecorded questions through headphones and entered responses directly into the computer without interviewer observation or assistance. In addition, all identifying information was kept separate from survey responses and respondents switched from ACASI to CAPI mode for interviewers when they completed the questions.

Measures

Comparisons of using ACASI within NSDUH have shown that it reduces reporting bias.²¹ Therefore, variables used in this study are considered to be based on valid self-reports. A reliability study was conducted to assess the reliability of responses to the 2010 NSDUH questionnaire, and the results provide support for continued use of the survey items.²² For racial/ethnic grouping, adolescents were asked to select a monoracial category (e.g., non-Hispanic white) or a multiracial category, non-Hispanic more than 1 race. Of note, 4% of adolescents in this sample selected the multiracial category, identifying with more than one ethnic/racial label. Biracial African American adolescents who may have also identified as Hispanic were not included in the multiracial group. In the present study, our sample is composed of adolescents who selected monoracial categories: non-Hispanic black/African American, non-Hispanic white, and Hispanic.

Nonmedical Use of Prescription Drugs

Self-reported lifetime nonmedical use of stimulants, sedatives, tranquilizers, and pain relievers were coded either "0" (i.e., no reported use) or "1" (i.e., yes reported use). Initial analyses revealed significant associations between nonmedical use of prescription drugs (NMUPD) and demographic variables (e.g., age, ethnic/racial group). However, the number of responses per prescription drug subtype was insufficient to run full model logistic regressions for each ethnic/racial group by subtype independently; therefore, responses for all 4 drug subtypes were summed to create a composite score and recoded to a dichotomous variable (i.e., 0 = no NMUPD; 1 = reported lifetime misuse of at least 1 type of prescription drug) for use in the full logistic regression models.

Perceived Parent Disapproval of Substance Use

The following independent items were used to measure perceived parental substance use disapproval: "How do you think your parents would feel about you smoking 1 or more packs of cigarettes per day?" "How do you think your parents would feel about you trying marijuana or hashish once or twice?" "How do you think your parents would feel about you using marijuana or hashish once a month or more?" "How do you think your parents would feel about you having 1 or 2 drinks of an alcoholic beverage nearly every day?" These items were based on a 3-point scale: 1 = neither approve nor disapprove; 2 = somewhat disapprove; 3 = strongly disapprove. For the purposes of analysis, responses were recoded to a dichotomous variable: somewhat disapprove and strongly disapprove = 1; neither approve nor disapprove = 2. Reported perception of parental substance use

disapproval was contingent upon respondents' indicated presence of at least 1 parent but does not assume constant cohabitation.

Perceived Peer Disapproval of Substance Use

The following independent items were used to measure perceived peer substance use disapproval: "How do you think your close friends would feel about you smoking 1 or more packs of cigarettes a day?" "How do you think your close friends would feel about you trying marijuana or hashish once or twice?" "How do you think your close friends would feel about you using marijuana or hashish once a month or more?" "How do you think your close friends would feel about you having 1 or 2 drinks of an alcoholic beverage nearly every day?" These items were based on a 3-point scale: 1 = neither approve nor disapprove; 2 = somewhat disapprove; 3 = strongly disapprove. Similarly, responses were recoded to a dichotomous variable: somewhat disapprove and strongly disapprove = 1; neither approve nor disapprove = 2.

Covariates

Variables identified in previous research on ethnic disparities in health behaviors and that exhibited significant racial/ethnic differences in the current sample were treated as covariates.²³ These included socio-demographic characteristics, such as gender (e.g., 1 = male), age (e.g., 1 = 12-13 years old; 2 = 14-15 years old), and total family income (e.g., 1 = <\$10,000; 2 = \$10,000-\$19,999; 3 = \$20,000-\$29,999). There was a significantly higher proportion of white adolescents whose reported family level income above \$75,000 ($\chi^2(4, N = 16,852) = 2642.56; p < .01$) and whose reported poverty status was $\geq 200\%$ above the federal poverty threshold ($\chi^2(6, N = 16,852) = 2610; p < .01$) as compared to Hispanic and African American adolescents. In the NSDUH interview, adolescents were asked if they would like a parent (or other adult household member) to answer questions about income and insurance. Approximately 87% of adolescents in NSDUH 2010 opted to have an adult answer these items rather than answer themselves²⁴; thus, this variable is generally considered to be an accurate assessment of household income.

Analyses

We observed demographic distributions and prevalence rates of NMUPD for Hispanic, African American, and white adolescents. Next, bivariate associations were examined with χ^2 tests for categorical variables (e.g., gender). Finally, we conducted a series of Poisson and logistic regressions for each ethnic group to predict the likelihood of NMUPD based on perceived parental and peer substance use disapproval. Each item (described above) was entered hierarchically into the regression model with socioeconomic and gender variables entered in the first step and perceived substance use disapproval items entered in the second step. Parent and peer models were analyzed separately. As we ran analyses separately by ethnic/racial group, unweighted data were

used. Results are presented using odds ratios as the measure of effect size.

RESULTS

Descriptive Statistics

Among the total adolescents in the 2010 National Survey on Drug Use and Health (NSDUH) sample, 10.4% endorsed nonmedical use of 1 or more prescription drug subtypes (i.e., pain relievers, stimulants, sedatives, and tranquilizers). Across these subtypes, adolescents generally reported greater nonmedical stimulant use than non-medical sedative, tranquilizer, and pain killer use combined. Chi-square analyses of nonmedical use of prescription drugs (NMUPD) revealed significant differences across ethnic groups specifically for stimulant ($\chi^2(2, N = 360) = 12.01; p < .01$) and tranquilizer prescription drug misuse ($\chi^2(2, N = 495) = 44.89; p < .01$). White adolescents reported significantly higher rates of misuse for stimulants (2.4%) and tranquilizers (3.4%) compared to either African American or Hispanic adolescents. Conversely, African American adolescents reported the lowest rates of stimulant (1.3%) and tranquilizer (0.9%) misuse of all 3 groups. Reported misuse of stimulants (2.1%) and tranquilizers (2.9%) among Hispanic adolescents fell between the rates of misuse for white and African American adolescents. Table 1 shows correlations between NMUPD by subtype and demographic characteristics in the NSDUH adolescent sample.

Regression Analyses

Contrary to previous findings, as income increased, the total likelihood of NMUPD decreased. Adolescents who reported higher family income were significantly less likely to endorse misuse of pain relievers, tranquilizers, and sedatives. Stimulant misuse was not related to adolescents' reported family income. In terms of income level, adolescents did not significantly differ by

ethnic/racial group for the majority of income levels. The percentage of white adolescents increased with each income bracket and was significantly greater than African American and Hispanic adolescents for households earning \$75,000 or greater ($p < .01$). Older adolescents were significantly more likely to report prescription drug misuse compared to younger adolescents. For example, older white adolescents were more than twice as likely to report tranquilizer misuse compared to their younger counterparts. Finally, girls were more likely to report prescription drug misuse than boys, regardless of age. Table 2 provides odds ratios (ORs) of adolescents' NMUPD based on perceived close friends' and parents' substance use disapproval by substance type according to adolescents' gender and age.

Our analyses revealed distinct ethnic differences in the nonmedical use of specific types of prescription drugs. Consistent with previous research, white adolescents were significantly more likely to report NMUPD, specifically of both pain relievers (OR = 1.1; confidence interval [CI], 1.01–1.27) and tranquilizers (OR = 2.2; CI, 1.78–2.76). In other words, white adolescents were more than twice as likely to report nonmedical tranquilizer use compared to non-white adolescents. Conversely, African American adolescents were almost 500% less likely to report nonmedical use of tranquilizers than their white and Hispanic peers. Additionally, although white adolescents were 70% more likely to misuse pain relievers than non-white adolescents, African American adolescents were 18% less likely to misuse pain relievers than their non-African American counterparts.

Perceived Parental Disapproval of Substance Use

Table 3 shows the odds of NMUPD based on perceived parental disapproval by substance subtype across the ethnic/racial groups. White adolescents who endorsed stronger perceived parental disapproval of

Table 1. Spearman's Rho Correlation Coefficients of Nonmedical Prescription Drug Use (and by Type), Poverty Level, and Income Indicators, and Demographic Characteristics (i.e., Age, Gender, Ethnicity)

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1 Nonmedical pain reliever use	—											
2 Nonmedical tranquilizer use	.433*	—										
3 Nonmedical stimulant use	.310*	.311*	—									
4 Nonmedical sedative use	.179*	.189*	.191*	—								
5 Total family income	-.048*	-.039*	-.012	-.036*	—							
6 Poverty level	-.038*	-.032*	-.007	-.031*	.846*	—						
7 Age	.138*	.120*	.086*	.017**	.002	.014	—					
8 Gender	.030*	.029*	.024*	.012	-.017**	-.016**	-.009	—				
9 Any nonmedical prescription drug misuse	.924*	.514*	.437*	.246*	-.049*	-.044*	.146*	.036*	—			
10 Hispanic ethnicity	.010	-.001	-.003	.010	-.237*	-.266*	-.010	.008	.013	—		
11 White ethnicity	-.002	.038*	.022*	-.006	.386*	.394*	.000	-.012	-.005	-.681*	—	
12 Black ethnicity	-.008	-.050*	-.025*	-.004	-.251*	-.230*	.011	.007	-.008	-.204*	-.577*	—

* $p < .01$, 2 tailed. ** $p < .05$, 2 tailed.

Table 2. Age and Gender Differences in Logistic Regression Analyses Predicting Prescription Drug Misuse Based on Perception of Parents' and Close Friends' Substance Use Disapproval Among White, Hispanic, and African American Adolescents

	β	SE	Wald	Odds Ratio (95% Confidence Interval)
White				
Parental disapproval				
Age	.66	.04	226.49**	1.94 (1.78–2.12)
Gender	–.28	.07	17.96**	0.76 (0.67–0.86)
Close friends' disapproval				
Age	.47	.05	98.21**	1.60 (1.46–1.75)
Gender	–.44	.07	42.50**	0.64 (0.56–0.73)
Hispanic				
Parental disapproval				
Age	.56	.07	56.70**	1.75 (1.51–2.02)
Gender	–.13	.12	1.32	0.88 (0.70–1.10)
Close friends' disapproval				
Age	.47	.08	37.14**	1.60 (1.37–1.85)
Gender	–.22	.12	3.65	0.80 (0.64–1.01)
African American				
Parental disapproval				
Age	.41	.09	21.65**	1.51 (1.27–1.79)
Gender	–.40	.14	7.95**	0.67 (0.51–0.89)
Close friends' disapproval				
Age	.34	.09	14.32**	1.40 (1.18–1.67)
Gender	–.45	.14	9.84**	0.64 (0.49–0.85)

** $p < .01$.

smoking 1 or more packs of cigarettes a day were more than 250% less likely to report NMUPD than their white peers who perceived less disapproval or neither approval nor disapproval. Moreover, white adolescents who perceived strong parental disapproval of trying marijuana (OR = 2.02; CI, 1.36–2.97) and using marijuana monthly (OR = 1.73; CI, 1.12–2.70) were also less likely to report NMUPD compared to their peers. Hispanic adolescents who reported stronger perceived parent disapproval of monthly marijuana use were 400% less likely to endorse NMUPD compared to Hispanic adolescents who perceived lesser parental disapproval or that parents neither approved nor disapproved. In addition, Hispanic adolescents who perceived stronger parental disapproval of drinking alcohol daily were 200% less likely to endorse NMUPD than those who did not. Finally, African American adolescents who perceived stronger parental disapproval of drinking alcohol daily were 285% less likely to report NMUPD than those who perceived lesser parental disapproval or that parents neither approved nor disapproved.

Close Friends' Disapproval of Substance Use

As presented in Table 3, white adolescents who perceived close friends' strong disapproval of monthly marijuana use were more than 230% less likely to report NMUPD compared to their peers who did not perceive

such strong disapproval. Additionally, white adolescents who perceived that close friends strongly disapproved of trying marijuana (OR = 1.86; CI, 1.40–2.47), smoking 1 or more packs of cigarettes a day (OR = 1.33; CI, 1.08–1.63), or drinking alcohol daily (OR = 1.25; CI, 1.02–1.53) were less likely to endorse NMUPD than those who did not. For Hispanic and African American adolescents, most of these perceived peer disapproval items did not significantly predict NMUPD. However, Hispanic adolescents who perceived disapproval (either some disapproval or strong disapproval) of smoking marijuana monthly from their close friends were less likely to report NMUPD (OR = 1.81; CI, 1.08–3.03) than those who reported neither approval nor disapproval. For both ethnic groups, age and gender appeared to account for the majority of variance compared to perceived peer substance use disapproval in reported NMUPD.

DISCUSSION

Until recently, research on nonmedical use of prescription drugs (NMUPD) misuse among adolescents was limited to cross-cultural descriptions of prevalence. The present study confirmed the presence of these ethnic group differences and novel findings that suggest that perceived peer and parental substance use disapproval uniquely influence adolescent NMUPD. In sum, results were consistent with previous research⁷ such that white

Table 3. Logistic Regression Analyses Predicting Prescription Drug Misuse Based on Perception of Parents' and Close Friends' Substance Use Disapproval Among White, Hispanic, and African American Adolescents

	β	SE	Wald	Odds Ratio (95% Confidence Interval)
White				
Parental disapproval				
Smoking 1+ packs of cigarettes/day	.93	.15	38.99*	2.52 (1.89–3.37)
Trying marijuana	.70	.20	12.00*	2.02 (1.36–3.00)
Smoking marijuana monthly	.55	.28	5.84*	1.73 (1.11–2.70)
Drinking alcohol daily	.31	.18	2.91	1.36 (0.96–1.94)
Close friends' disapproval				
Smoking 1+ packs of cigarettes/day	.28	.12	7.33*	1.33 (1.08–1.63)
Trying marijuana	.62	.15	18.14*	1.86 (1.40–2.50)
Smoking marijuana monthly	.83	.15	31.24*	2.30 (1.71–3.07)
Drinking alcohol daily	.22	.10	4.55**	1.25 (1.02–1.53)
Hispanic				
Parental disapproval				
Smoking 1+ packs of cigarettes/day	-.23	.34	0.45	0.80 (0.41–1.55)
Trying marijuana	-.52	.54	1.01	0.59 (0.21–1.67)
Smoking marijuana monthly	1.40	.51	7.53*	4.05 (1.49–10.99)
Drinking alcohol daily	.73	.32	5.31**	2.01 (1.12–3.89)
Close friends' disapproval				
Smoking 1+ packs of cigarettes/day	.02	.19	0.01	1.02 (0.71–1.48)
Trying marijuana	.43	.26	2.64	1.54 (0.92–2.58)
Smoking marijuana monthly	.59	.26	5.04**	1.81 (1.08–3.03)
Drinking alcohol daily	.15	.18	0.67	1.17 (0.81–1.66)
African American				
Parental disapproval				
Smoking 1+ packs of cigarettes/day	.04	.40	0.10	1.04 (0.48–2.27)
Trying marijuana	.26	.55	0.23	1.30 (0.44–3.84)
Smoking marijuana monthly	-.50	.58	0.74	0.61 (0.20–1.89)
Drinking alcohol daily	1.05	.47	4.91**	2.85 (1.13–7.19)
Close friends' disapproval				
Smoking 1+ packs of cigarettes/day	.38	.23	2.69	1.47 (0.93–2.32)
Trying marijuana	-.00	.32	0.00	0.98 (0.54–1.86)
Smoking marijuana monthly	.48	.32	2.19	1.61 (0.86–3.05)
Drinking alcohol daily	.07	.25	0.07	1.07 (0.66–1.73)

* $p < .01$, ** $p < .05$.

adolescents demonstrated the highest rates of NMUPD compared to African American and Hispanic adolescents. As previous studies of adolescent alcohol, tobacco, and illicit drug use have similarly demonstrated,^{2,25,26} in the present study, African American adolescents demonstrated the lowest rates of NMUPD, whereas rates of NMUPD among Hispanic adolescents fell between those of the other groups. We observed that higher income was related to lower adolescent NMUPD misuse and that African American adolescents were significantly less likely than both white and Hispanic adolescents to misuse prescription drugs. Thus, these results seem to suggest that while income is an important factor in the

increased risk for NMUPD, it does not fully account for the observed differences among African American, Hispanic, and white adolescents. Previous studies posit that lower rates of NMUPD among Hispanic and African American adolescents may be related to their decreased likelihood of being prescribed medications in the first place.²⁶ Other research suggests that messages from the immediate environment (e.g., home), such as acceptability of drug use, may significantly influence adolescent substance use behaviors.²⁷

The present study provides preliminary support for the notion that substance use disapproval by important socialization agents, such as family and peers, may

significantly influence NMUPD. Interestingly, despite having the highest rates of NMUPD, white adolescents who reported the highest levels of parental substance use disapproval across all substances demonstrated significantly less risk of NMUPD compared to both African American and Hispanic adolescents. However, ethnic minority parental substance use attitudes differentially predicted adolescent NMUPD according to substance type. For example, stronger perceived parental disapproval of daily alcohol use predicted decreased likelihood of NMUPD among African American adolescents, whereas among Hispanic adolescents, strong perceived parental disapproval of monthly marijuana predicted decreased likelihood of NMUPD. Thus, it may be that ethnic minority parents promote unique messages about these licit and illicit substances, which may then influence how their adolescents view and subsequently misuse prescription drugs.²⁷

Conversely, perceived peer substance use disapproval was generally not as significant a predictor of NMUPD among ethnic minority adolescents, although perceived peer disapproval of substance use significantly decreased the likelihood of NMUPD among white adolescents. While perceived peer substance use has been found to significantly influence certain behaviors (e.g., cigarette smoking and polydrug use) among urban, low-income, ethnically diverse adolescents,²⁸ to our knowledge, this is the first study to examine differences in peer and parental influences on NMUPD among ethnic/racial minority adolescents. Our findings add support to growing evidence that parents continue to remain a vital part of adolescents' decision making, particularly regarding potentially risky behaviors,²⁹ and that these influences may be significant and unique in non-white adolescents. Some researchers posit that this lasting influence is an artifact of the core beliefs, values, and practices instilled in children by their parents.³⁰⁻³² Moreover, our results raise questions regarding the mechanisms or processes through which these ethnic group differences may arise. As white adolescents were most significantly influenced by parental and peer attitudes, future studies should aim to understand factors that place this group at a higher risk for NMUPD compared to ethnic minority adolescents. Conversely, researchers should examine the sociocultural factors that would explain lower rates of NMUPD among Hispanic and African American adolescents compared to white adolescents. It is just as imperative to begin to understand culture-specific factors (e.g., parental health behavior socialization) that may act to protect ethnic minority adolescents from engaging in NMUPD. Such research may greatly inform theoretical perspectives leading to data-driven, culturally informed NMUPD prevention and treatment initiatives.

Finally, our results provide further support of gender and age trends in adolescent NMUPD.⁷ Specifically, girls were more likely to report NMUPD than boys. Several reasons are posited for this gender difference. For instance, girls may report higher rates of NMUPD due to

higher rates of receiving prescriptions for certain types of medications from doctors.³³ These trends may also be due to lower rates of specific drug treatments among girls compared to boys (e.g., for attention-deficit hyperactivity disorder),³⁴ leading girls to self-medicate with diverted medications from family or peers.³⁵ These findings are highlighted for future research as understanding-mediating factors that contribute to gender differences in NMUPD may provide useful in tailoring intervention and prevention efforts. Finally, older age was also a consistent factor increasing the likelihood of NMUPD among all adolescents regardless of ethnic/racial background.

Several limitations in this study should be considered. First, because the current study used an existing national database, analyses were limited in the variables that could be examined and by participants' response choices. For example, the perceived substance use disapproval item responses were restricted to "strongly" or "somewhat" disapprove or "neither approve nor disapprove." Using close-ended responses limits our ability to assess nuances of such messages about substance use. More specifically, importantly, the 2010 National Survey on Drug Use and Health (NSDUH) did not assess perceived parental and peer disapproval of NMUPD. In addition, the items did not assess for perceived peer or parental *approval* of substance use; thus, it is recommended that future studies endeavor to measure the full spectrum of attitudes regarding substance use. *Second*, while the use of a national data set increases generalizability, the results cannot be generalized to all adolescents, particularly those in other ethnic or racial groups not included in this study. In addition, the present study did not include adolescents who self-identified as multiracial, a segment of the population that is rapidly increasing in the United States. As the fastest growing youth group, it will be vital to understand how multiple cultural identities and influences may shape the development of health-related behaviors for multiracial, multicultural youth in our nation.^{36,37} *Third*, there are well-documented limitations in the use of self-report surveys versus empirical or observed data.³⁸ Therefore, even though the NSDUH was designed to eliminate such bias through the use of a computer-assisted interview,^{19,20} we cannot say with certainty that no bias was introduced during data collection. *Fourth*, the current study was also limited by the use of cross-sectional data. In future research, longitudinal data are needed to further examine the direction of these observed relationships between parental and peer substance use attitudes and adolescent NMUPD.

Although our sample contained sufficient participants in each ethnic group to conduct analyses, the number of white adolescents far exceeded that of African American and Hispanic adolescents combined. Moreover, the small number of ethnic minority participants barred us from being able to examine these predictive relationships between different classes of prescription drug (e.g., stimulant vs opioid). Thus, greater representation of ethnic minorities within national samples of adolescents

would be beneficial for future studies. Finally, although NSDUH may provide potential best estimates of NMUPD in the community, in future studies, it may also be helpful to examine this phenomenon among acute adolescent populations, which may allow for closer examination of possible developmental pathways toward or away from NMUPD.

Despite these limitations, our study provides meaningful new information about ethnic group differences in adolescent NMUPD. The results also highlight an important distinction in understanding the influence of parents versus peers during the formative period of adolescence. If parents hold a greater amount of influence among adolescents, particularly regarding NMUPD, an important next step would include qualitative inquiry to further explore the aspects of parental socialization that shape substance use behavior. Furthermore, it will be important to elucidate possible mediators, such as particular cultural beliefs or practices, which may influence prescription drug use/misuse among ethnic minority adolescents in protective ways. In sum, our results provide support for the prevention and treatment initiatives aimed at educating parents to a greater extent about the use of prescription drugs and how their messages about various substances may influence adolescents' drug-related behaviors. Taking such measures may significantly contribute to efforts to address this growing health concern among our nation's youth.

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