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Perceived Injunctive Norms and Cannabis-Related Problems: The Interactive Influence of Parental Injunctive Norms and Race

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Abstract

Cannabis use among college students is associated with problems, including those that can negatively impact academic functioning. Perceived descriptive and injunctive norms are among the strongest predictors of college cannabis use and related problems and perceived norms differentially relate to cannabis outcomes depending on the reference group (e.g., close friends, family members). However, no known studies have examined the impact of race on these relationships. Yet, given that African American students are more strongly influenced by parental influence than White students and that they endorse more social motives for cannabis use, African American students may be impacted by perceived norms regarding parents and friends differentially from White students. The current study tested the moderational role of race on the relationship between perceived norms and cannabis use and related problems. Cannabis-using undergraduates ($N = 103$; 78.6% female) completed an online survey. Race moderated the relationship between injunctive norms regarding parents and cannabis-related problem severity such that among African American students (but not White students), endorsement of more permissive perceived parental injunctive norms was related to greater severity of cannabis-related problem severity (but not cannabis use frequency). Interactions were not significant between race and descriptive norms or between race and peer injunctive norms. African American students who perceive that their parents are more accepting of cannabis use may be especially at risk for cannabis related problems. Results underscore the importance of considering cultural factors in identification of vulnerability factors related to cannabis problems.

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Keywords

cannabis; marijuana; descriptive norms; injunctive norms; race

Cannabis is the most commonly used illicit drug in the United States, and the drug with the highest rate of disorder (Substance Abuse and Mental Health Services Administration, 2014, 2015). Nearly half of all college students report having used cannabis (Mohler-Kuo, Lee, & Wechsler, 2003). Many students not only report using cannabis, but also experience negative consequences related to their use, including lower grades (Bell, Wechsler, & Johnston, 1997). Two-thirds of college students who use cannabis reported experiencing at least one problem related to their use (e.g., memory loss, missing school, procrastination) (Buckner, Ecker, & Cohen, 2010). Further, over one half of college students report driving a car after using cannabis (McCarthy, Lynch, & Pederson, 2007), which is a behavior associated with fatal crashes (Bédard, Dubois, & Weaver, 2007; Ramaekers, Berghaus, van Laar, & Drummer, 2004). In light of the public health significance of cannabis-related problems among college students, it is striking that clinical interventions aimed towards cannabis use and related problems generally do not perform as well as similar treatment for alcohol use (for review see Terlecki, Ecker, Copeland, & Buckner, 2012). Better understanding of the factors related to the etiology and maintenance cannabis-related problems may better inform treatment and prevention efforts in this vulnerable population.

Perceived social norms of substance use among college students, particularly regarding alcohol, are robustly related to development of substance use and related problems (Borsari & Carey, 2001; Borsari & Carey, 2003). Two distinct types of perceived social norms have been identified: descriptive norms, which refer to perceptions regarding others' quantity and frequency of use, and injunctive norms, which refer to one's perceptions of how acceptable others believe using that substance is (Cialdini, Reno, & Kallgren, 1990). These two norm types are differentially related to cannabis use outcomes. Endorsement of descriptive norms that reflect cannabis use as common, especially when referencing proximal groups (e.g., friends), relates to greater cannabis use (Arbour-Nicitopoulos, Kwan, Lowe, Taman, & Faulkner, 2010; Buckner, 2013; Neighbors, Geisner, & Lee, 2008; Wolfson, 2000) and cannabis-related problems (Buckner, 2013; Kilmer et al., 2006; Neighbors et al., 2008). Further, proximal descriptive norms uniquely predicted cannabis use above and beyond other relevant constructs (e.g., expectancies, motives; Buckner, 2013).

Injunctive norms, however, appear to evince a more complicated relationship with use and problems, potentially due to the salience of reference group in this type of perceived norm. A reference group describes to whom the perceived injunctive norms refer, such as how much other students at the individual's university approve of use, or how much one's parents approve or disapprove of use. Proximal reference groups for injunctive norms, including close friends and parents, are stronger predictors of cannabis use than more distal groups (e.g., students in general; LaBrie, Hummer, & Lac, 2011; LaBrie, Hummer, Lac, & Lee, 2010). In fact, perceived parental injunctive norms became even more strongly related to one's own use when parents more closely monitored students' behavior, increasing the proximity of the relationship (Napper, Hummer, Lac, & Labrie, 2014). Further, among

groups in which one's beliefs about others are especially salient such as those with elevated social anxiety, injunctive norms regarding parents are better predictors of cannabis use and related problems than descriptive norms (Ecker & Buckner, 2014). In fact, individuals with elevated social anxiety who endorsed permissive parental injunctive norms endorsed greater experience of cannabis-related problems, which did not occur for descriptive norms or friend injunctive norms (Ecker, Richter, & Buckner, 2014).

In light of differences between norm types and reference groups in the way that perceived norms impact cannabis use, individual factors appear to be important in perceived norm's impact on substance use and related problems. Important individual factors including racial/ethnic background have remained largely understudied in the perceived norms of substance use literature. Yet, college students of underrepresented groups may differ from the larger campus population in their perceived norms related to cannabis use, which may impact their cannabis-related behaviors. In partial support of this notion, one study found that students of historically underrepresented groups endorsed lower peer descriptive norms for alcohol than Caucasian students, and typically consume less alcohol than Caucasian students (Rice, 2006). Further, degree to which perceived norms influence substance use varies between racial/ethnic groups (LaBrie, Atkins, Neighbors, Mirza, & Larimer, 2012).

African American students make up a large proportion of underrepresented students in American universities (National Center for Education Statistics, 2015), yet very little research has identified factors related to cannabis behaviors among these students. African American students may be more susceptible to social influence due to greater endorsement of social motives for cannabis use than White students (Buckner, Shah, Dean, & Zvolensky, 2015). In fact, perceived norms have been shown to differ between racial groups (LaBrie et al., 2012). Given the relative importance of family in the African American community mental health, including substance use and related problems (Brody et al., 2004), it may be that parental influence is stronger than peer influence among members of the African American community relative to other racial/ethnic groups. In fact, perceived peer, personal, and parental disapproval of cannabis use were positively associated with lowered odds of developing a cannabis use disorder among African American adolescent cannabis users (Wu, Swartz, Brady, & Hoyle, 2015). Of note, perceived parental disapproval of cannabis use was associated with lower odds of developing a cannabis use disorder among African American adolescent cannabis users than White adolescent. Yet, it is theorized that interventions geared towards changing only peer-level norms among African American adolescents who use cannabis is insufficient in changing their cannabis use, given that previous findings indicate that peer-level norms and pressure to use cannabis are a better predictor of prospective cannabis use behaviors among White adolescents than African American adolescents (Brown, Miller, & Clayton, 2004). Given previous work, there is a need to further understanding of the impact of other normative beliefs. Taken together, these findings suggest that perceived parent injunctive norms may impact African American individuals' cannabis use and related problems above and beyond the impact of peer norms.

The current study set out to extend the scant literature on perceived norms and race by testing the interactive effects of race and perceived descriptive and injunctive norms of two reference groups, friends and parents, on cannabis use frequency cannabis-related problems.

It was hypothesized that the interaction between race and perceived parental norms (but not friend norms) would significantly predict cannabis use and cannabis-related problem severity such that greater endorsement of parental perceived norms (i.e., descriptive and injunctive) would be related to greater cannabis use frequency and more severe cannabis-related problems among African American students but not White students.

Method

Participants and Procedures

Participants ($N = 103$) were cannabis-using (i.e., lifetime cannabis use) undergraduate students recruited from two northeastern universities, one of which was an all women's university. The sample was 78.6% female. Mean age was 21.2 ($SD = 2.4$). Racial and Ethnic background was as follows: White/Caucasian = 86.4% and Black/African American = 13.6%. Individuals of other racial groups were excluded to avoid confounding effects of potential differences related to other under-represented groups. Participants were recruited through in-class and on-campus advertisements containing information to complete an online survey study of health and risk behaviors. Interested students completed measures online. Participants were compensated with psychology class credit points. Online measures have been shown to produce scores that are highly correlated with paper and pencil versions (Gwaltney, Shields, & Shiffman, 2008).

2.2 Measures

The Marijuana Use Form (MUF; Buckner, Bonn-Miller, Zvolensky, & Schmidt, 2007). was used to measure typical cannabis use in the past three months, on which participants rate their use on a 0 (*once per month or less*) to 10 (*at least 21 times per week*) scale. Participants were also asked to report the frequency of cannabis use in their lifetime to assess eligibility. The MUF has demonstrated convergent validity with daily ratings of cannabis use (Buckner, Crosby, Silgado, Wonderlich, & Schmidt, 2012) and has been successfully used to assess cannabis use among African American undergraduates (Buckner, Shah, Dean, & Zvolensky, 2016).

The Marijuana Problems Scale (MPS; Stephens, Roffman, & Curtin, 2000) is a 19-item scale that was used to assess cannabis-related problem severity. Participants rated the degree to which they experienced a given cannabis-related problem in the past three-months (e.g., miss days at work or class) on a 0 (*not a problem*) to 2 (*severe problem*) scale. The MPS has achieved good internal consistency in prior work among African American and White samples (Buckner et al., 2016; Lozano, Stephens, & Roffman, 2006). The MPS evidenced good internal consistency ($\alpha = 0.80$) in the current study.

Items from the Core Institute's Campus Assessment of Alcohol and Other Drug Norms assessed descriptive norms for friends' cannabis use frequency. Participants were asked to rate how often they believe their friends use cannabis on scale from 0 (*never*) to 7 (*every day*). Similar items have been used successfully in work with undergraduate cannabis users (Buckner, 2013; Ecker & Buckner, 2014). Descriptive norms for each parent's cannabis use was assessed using two items created for the purpose of this study (i.e., one for mother and

one for father) asking if the student believed that parent has ever used cannabis. Responses included 0 (*never*), 1 (*maybe*), and 2 (*yes*). Responses for each parent were averaged to form one parent score.

Perception of friends' and parents' approval of risky cannabis use behaviors was assessed with three questions asking how participants believed their friends, mother, and father would respond if they knew the participant used cannabis every weekend, used cannabis daily, and drove after using cannabis based on items that assessed alcohol perceived injunctive norms in prior work (Baer, 1994). Participants rated each item on a 7-point Likert-type scale ranging from 1 (*strong disapproval*) to 7 (*strong approval*). Items were summed such that higher scores reflect greater approval. The mean of the totals of each student's mother and father ratings was used as the measure of parental injunctive norms. The friend scale demonstrated adequate internal consistency in prior work (Ecker & Buckner, 2014) and both friend and parent scales were excellent in the current study ($\alpha = 0.89$ and $\alpha = 0.90$, respectively).

Results

Moderation

First, a series of analyses of variance (ANOVA) was conducted to determine if perceived norms and/or cannabis use and related problems differed by race (Table 1). African American students reported more frequent cannabis use than White students. Further, African American students also reported greater perceived friends' use frequency. No other differences were observed between groups. Second, correlations were conducted between cannabis use and norms variables to determine relationships among study variables. Interestingly, all perceived norm types/reference groups were significantly, positively related to both cannabis use frequency and cannabis-related problems except for parental descriptive norms (Table 2).

The PROCESS macro for SPSS (Hayes, 2013) was used to test moderation models, probe significant interactions, and graph significant interaction effects. Predictors were centered to address multicollinearity. Race was dummy coded such that 1 = African American and 0 = White. Table 3 presents regression of covariates, main effects, and interaction between race and norms on cannabis use frequency. Interactions between race and friend descriptive norms, $R^2 = 0.01$, $F(1,98) = 2.12$, $p = .148$, parent descriptive norms $R^2 = 0.01$, $F(1,98) = 1.37$, $p = .245$, friend injunctive norms, $R^2 = 0.01$, $F(1,99) = 1.54$, $p = .217$, and parent injunctive norms, $R^2 = 0.03$, $F(1,99) = 3.44$, $p = .067$, did not account for significant variance above and beyond the main effects. Table 4 presents regression of covariates, main effects, and interaction of race and perceived norms on cannabis related problems. The interaction between the race variable and parental injunctive norms was the only interaction to account for significant variance above and beyond the main effects $R^2 = 0.06$, $F(1,98) = 7.55$, $p = .007$. Probing the significant interaction showed that among African American students, perceived parental injunctive norms were significantly related to cannabis-related problems ($b = 0.53$, $t = 3.77$, $p < .001$), which was not the case among White students ($b = 0.11$, $t = 1.64$, $p = .105$). These effects are plotted in Figure 1.

Discussion

This is the first known study of the influence of race on the relationship between perceived norms and cannabis use and problems. Findings are consistent with previous work highlighting the importance of parental injunctive norms among African American cannabis users (Wu et al., 2015). The current study extends this work by finding that perceived parental injunctive norms may have a greater impact on cannabis-related problem severity among African American students than among White students. Further, the findings of the current study highlight the importance of examining predictors of cannabis use and related problems among historically underrepresented samples.

The finding that African American students may be especially vulnerable to experiencing cannabis-related impairment if they endorse permissive perceived parental injunctive norms has important clinical implications. Brief motivational interventions for college substance use (e.g., White et al., 2006) tend to target descriptive norms regarding students in general and decreases in descriptive normative beliefs lead to better outcomes during brief motivational interventions with college students (e.g., Carey, Henson, Carey, & Maisto, 2010; Terlecki, Buckner, Larimer, & Copeland, 2012). Findings from the current study suggest that these interventions may evince better outcomes among African American students if normative beliefs regarding parent approval of cannabis use are also targeted.

Building upon prior work finding that African American cannabis users do not differ from White users on conformity motives (Buckner et al., 2016), African American users were not more influenced by injunctive norms regarding peers than were White users. It is also noteworthy that descriptive norms did not interact with race to predict cannabis use and related problem severity. Taken together, these findings extend work finding that family is of particular importance in community mental health among African American individuals (Brody et al., 2004). It may be injunctive norms regarding family, but not friends or descriptive norms for family or friends, are of particular salience to African American college students in part due to the increased influence of family in the African American community.

In contract to prior work finding that historically underrepresented groups endorse lower friend descriptive norms than White students (Rice, 2006), the current study found that African American students endorsed greater friend descriptive norms than White students. This may be because in the current study, African American students reported more frequent cannabis use than White students. Further, Rice's (2006) study concerned alcohol use, as opposed to cannabis. It may be that ethnic/racial differences regarding perceived norms differ between alcohol and cannabis. (Buckner et al., 2016; Finlay, White, Mun, Cronley, & Lee, 2012; Lee, Mun, White, & Simon, 2010)

The results of the current study should also be interpreted in light of limitations that can guide future work in this area. First, the methods of the current study were cross-sectional in nature, limiting our ability to test causation and future prospective work is necessary to delineate causal relations. Second, data were retrospective self-report and future work could benefit from multimethod (e.g., ecological assessment of use situations, biological

verification of use) and multi-informant (e.g., collateral reports of frequency of cannabis use) approaches. Third, future work may consider assessing quantity of cannabis use or perceived intoxication and examining the relative impact of culture specific variables as predictors of, or protective factors against, cannabis use and related problems (e.g., ethnic identity, acculturation). Fourth, a non-clinical sample was employed given that the majority of cannabis users (Stinson, Ruan, Pickering, & Grant, 2006) do not seek treatment. However, an important next step will be to test whether results generalize to clinical samples. Fifth, historically under-represented groups other than African American students were excluded, therefore results cannot be generalized to other traditionally under-represented groups. Future work would benefit from examination of familial influence in other racial groups. Sixth, reference groups for peer norms were not specific to race. Future work should employ more race-specific reference groups to further delineate potential differences in perception of norms based on race.

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Figure 1.

Interaction of race and perceived parental injunctive norms in the prediction of cannabis-related problem severity. * $p < 0.05$

Table 1
Analysis of Variance Comparing Perceived Norms and Cannabis Variables between Groups.

	<i>M (SD)</i>		<i>DF</i>	<i>F</i>	<i>p</i>	<i>d</i>
	White	African American				
Cannabis Use Frequency	3.01 (2.37)	4.71 (3.50)	1,101	5.40	.022	0.68
Cannabis-related Problem Severity	1.86 (3.32)	3.65 (5.43)	1,101	2.87	.093	0.37
Perceived Descriptive Norms-Friend	7.52 (3.32)	9.71 (3.05)	1,100	5.39	.022	0.67
Perceived Descriptive Norms-Parent	1.19 (0.77)	0.58 (0.15)	1,100	3.58	.062	0.54
Perceived Injunctive Norms-Friend	9.71 (4.36)	9.93 (5.53)	1,101	0.03	.866	0.06
Perceived Injunctive Norms-Parent	5.20 (2.63)	5.43 (3.37)	1,101	0.09	.769	0.08

Table 2

Means, Standard Deviations, and Correlations among Study Variables.

	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Cannabis Use Frequency	3.24	2.60	-				
2. Cannabis-Related Problem Severity	2.11	3.70	.33**	-			
3. Perceived Descriptive Norms-Friend	4.75	2.29	.52**	.13	-		
4. Perceived Descriptive Norms-Parent	1.13	0.76	.07	.06	.09	-	
5. Perceived Injunctive Norms-Friend	9.74	4.50	.61**	.21*	.59**	.30**	-
6. Perceived Injunctive Norms-Parent	5.23	2.73	.29**	.34**	.27**	.50**	.41**

*
 $p < 0.05$ **
 $p < 0.01$

Table 3

Regression models predicting cannabis use frequency.

	<i>R</i> ²	<i>F</i> (<i>DF</i>)	<i>b</i>	<i>t</i>	<i>p</i>
Friend Descriptive Norms					
	0.31	14.74 (3,98)			<.001
Friend Descriptive Norms			0.51	4.92	<.001
Race			0.88	1.33	.186
Race X Peer Descriptive Norms			0.41	1.46	.148
Parental Descriptive Norms					
	0.07	2.64 (3,98)			.054
Parental Descriptive Norms			0.27	0.76	.449
Race			2.17	2.72	.008
Race X Parental Descriptive Norms			1.48	1.17	.245
Friend Injunctive Norms					
	0.42	24.06 (3,99)			<.001
Friend Injunctive Norms			0.32	6.53	<.001
Race			1.60	2.76	.007
Race X Peer Injunctive Norms			0.14	1.24	.217
Parental Injunctive Norms					
	0.40	6.34 (3,99)			<.001
Parental Descriptive Norms			0.19	1.96	.053
Race			1.49	2.12	.036
Race X Parental Descriptive Norms			0.41	1.85	.067

Table 4

Regression models predicting cannabis-related problem severity.

	<i>R</i> ²	<i>F</i> (<i>DF</i>)	<i>b</i>	<i>t</i>	<i>p</i>
Friend Descriptive Norms					
	0.13	3.33 (4,97)			.013
Cannabis Use Frequency			0.45	2.75	.007
Peer Descriptive Norms			−0.13	−0.69	.493
Race			0.86	0.78	.435
Race X Peer Descriptive Norms			0.36	0.77	.444
Parental Descriptive Norms					
	0.19	5.70 (4,97)			.004
Cannabis Use Frequency			0.47	3.89	<.001
Parental Descriptive Norms			0.17	0.40	.690
Race			1.55	1.56	.122
Race X Parental Descriptive Norms			1.90	0.71	.477
Friend Injunctive Norms					
	0.11	3.22(4,98)			.016
Cannabis Use Frequency			0.34	2.25	.027
Peer Injunctive Norms			0.02	0.24	.812
Race			1.10	1.03	.304
Race X Peer Injunctive Norms			0.02	2.25	.027
Parental Injunctive Norms					
	0.24	7.78 (4,98)			<.001
Cannabis Use Frequency			0.25	1.81	.073
Parental Injunctive Norms			0.11	1.64	.105
Race			1.19	1.23	.222
Race X Parental Injunctive Norms			0.42	2.75	.007