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Discrimination and Substance Use: Examining the Moderating Role of Impulsivity Among Racial-Ethnic Minority Adolescents

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Abstract

Research on substance use among racial-ethnic minority populations notes that discrimination experiences predict substance use outcomes. Individual-level factors, such as impulsivity, are also known risk factors for substance use. However, little is known about the direct and interaction effects between discrimination experiences and impulsivity among racial-ethnic minority youth. The current study examines the effects of perceived experiences of discrimination on alcohol and marijuana use among racial-ethnic minority youth, and whether individual differences in impulsivity traits help to further understand potential risk for substance use. Participants were 112 racial-ethnic minority adolescents (M_{age} = 15.27; African American, Hispanic, Multiracial, Native American/Alaskan Native, or Other). Adolescents completed self-report measures of perceived experiences of discrimination, alcohol and marijuana use (past year occurrence and problematic use), and five impulsivity traits (i.e., sensation seeking, lack of planning, lack of perseverance, negative urgency, and positive urgency). A significant main effect of perceived discrimination on problem marijuana use was found, as well as a significant main effect of lack of premeditation on current marijuana use. Several marginally significant main effects emerged for alcohol use and problem alcohol use (i.e., positive urgency and sensation seeking, respectively). While no significant moderation effects emerged, marginal findings suggest a potential interactive effect of discrimination and impulsivity traits on problem alcohol and marijuana use among racial-ethnic minority youth. Further research is needed in this area to replicate findings, which is critical to informing effective intervention and prevention efforts for this population of youth.

Keywords

Adolescence; Substance Use; Discrimination; Impulsivity

Historically, racial-ethnic minority youth have reported lower rates of substance use in comparison to their White peers (Kann et al., 2018; Khan et al., 2014). However more recent data show deviations in this pattern such that racial-ethnic minority youth, and in particular African American youth, have reported rates of marijuana use that surpasses that of White youth (Johnston et al., 2018; Kann et al., 2018). Additionally, rates of binge drinking (i.e., consuming multiple alcoholic drinks in a short period of time) have increased

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among racial-ethnic minority youth, specifically among Latino/a youth (Kann et al., 2018). These changing trends are concerning, as early engagement in substance use is associated with long-term effects on one's physical and mental health, as well as continued substance use problems into adulthood (Moss et al., 2014). Thus, examining factors that might place racial-ethnic minority youth at risk for engagement in substance use warrants more attention.

Experiences of discrimination (i.e., experiences of unfair treatment) (D. R. Williams et al., 1997) among racial-ethnic minority youth has garnered much attention in the substance use literature, as more frequent experiences of discrimination has been associated with both substance use and substance use problems among this population (Gibbons et al., 2014). Researchers have also begun to identify a number of individual factors that may help understand the association between experiences of discrimination and adolescent substance use including; self-control and impulsivity (Gibbons et al., 2012). However, this work is in its infancy. The current study expands on the extant literature by utilizing a multidimensional approach to examine how various dimensions of impulsivity may influence risk for substance use and substance use problems as a consequence of exposure to discrimination among a sample of racial-ethnic minority youth.

Effects of Discrimination on Substance Use

The association between perceived experiences of discrimination and substance use among adults is well-established. For example, everyday discrimination experiences, as well as major discrimination events, were found to increase risk for DSM-IV classified alcohol use disorder and illicit substance use disorder among a sample of African American and Caribbean Black adults (Hunte & Barry, 2012). In addition, T. T. Clark et al. (2015) found differences in alcohol and illicit substance use disorders among profiles of racial discrimination experiences within a sample of African American and Caribbean Black adults. Specifically, African American and Caribbean Black adults who reported more "chronic discrimination" experiences were more likely to meet criteria for DSM-IV substance use disorders (both alcohol and illicit substance use) (T. T. Clark et al., 2015). The research specific to the effects of discrimination and substance use among adolescents is growing. Unger et al., (2014) found that greater perceived discrimination was related to higher rates of alcohol, tobacco, and marijuana use in a cohort of Hispanic adolescents. Additionally, within a sample of African American adolescents, perceived racial discrimination assessed at baseline was associated with increases in alcohol and marijuana use two years later for male adolescents (Brody et al., 2012).

Inferences from the research evidence note that the association between discrimination and substance use may be due to emotional stress experienced as a result of discrimination, and youths' attempts to cope through the use of alcohol and illegal substances (Hunte & Barry, 2012; Unger, 2015). However, it may also be that individual-level characteristics place some racial-ethnic minority youth at even greater risk for using substances as a result of discrimination experiences. One such individual characteristic is impulsivity (i.e., tendencies toward impulsive action), which research suggests is associated with substance use during adolescence more broadly (VanderVeen et al., 2016). In particular, impulsivity has been found to moderate the relationship between symptoms of depression and substance

use among a racially and ethnically diverse sample of adolescents (Felton et al., 2019)—implicating the role of individual differences in substance use behaviors.

The Role of Impulsivity

While there is consensus that impulsivity leads to increased risk for substance use, the tendency to examine impulsivity as one uniform concept may inhibit our understanding of its association with risk behaviors. Many researchers have more recently regarded impulsivity as a multidimensional construct (Magid & Colder, 2007; Whiteside & Lynam, 2001). In particular, Whiteside and Lyman (2001) propose a factor model of impulsive behavior—later revised by Cyders & Smith (2007) that includes five distinct facets of impulsivity: sensation seeking (a preference for novel or exciting situations), lack of premeditation (the tendency to act without forethought of potential consequences), lack of perseverance (difficulty focusing on a task or tolerating boredom), negative urgency (a tendency to act rashly when distressed), and positive urgency (a tendency to act rashly when experiencing positive emotions) (Lynam et al., 2006; UPPS-P Impulsive Behavior Scale (UPPS-P)).

A recent meta-analysis provides evidence for use of the UPPS-P five-facet model to examine the associations between impulsivity and adolescent marijuana use and associated problems. Specifically, VanderVeen et al., (2016) found significant positive associations between marijuana use and four of the five impulsivity-related traits (i.e., sensation seeking, lack of premeditation, negative urgency, and positive urgency). Additionally, research indicates that both positive and negative urgency are directly related to increased problematic alcohol and marijuana use among adolescents (Stautz & Cooper, 2014). Moreover, the association between perceived greater peer alcohol use and individual problematic use was stronger for youth who reported both greater positive urgency and negative urgency (Stautz & Cooper, 2014). Yet, a limitation of much of this work is that it has been conducted among White adolescent samples, thus limiting our understanding as to whether these relationships are cross-culturally valid among racial-ethnic minority youth.

Research is needed in understanding the interactive effect impulsivity might have with exposure to discrimination on substance use outcomes, as this may help identify individuals who are at even greater risk of engaging in substance use behaviors. To date, only one study has examined whether multiple facets of impulsivity are associated with risk for substance use as a consequence of exposure to discrimination. Among a sample of African American and Asian American young adults, Latzman et al., (2013) found a direct association between two facets of impulsivity (i.e., lack of premeditation and positive urgency) and alcohol use problems. Additionally, lack of premeditation moderated the relationship between discrimination and alcohol problems such that young adults who reported low premeditation were more likely to use alcohol as a result of greater perceived experiences of racial discrimination.

While the Latzman et al., (2013) study contributes greatly to our growing understanding of discrimination experiences, individual differences, and substance use, there remains a gap in the literature relative to developmental context. Adolescence is marked by an increase in impulsivity that is associated with engagement in risk behaviors such as substance

use (Stautz & Cooper, 2013; VanderVeen et al., 2016). Further, biological processes of pubertal development and social-cognitive processes of identity formation "rewire" adolescents' social-affective information processing (Crone & Dahl, 2012; Steinberg, 2007; J. L. Williams et al., 2012). Thus, how individual differences in adolescent impulsivity influence processing of emotions associated with experiences of discrimination, may tell us something about racial-ethnic minority youth's heightened risk for substance use prior to young adulthood.

Current Study

The current study aims to expand previous research by examining whether individual differences in impulsivity have a direct and moderating effect with discrimination on substance use outcomes among a sample of racial-ethnic minority youth. We examine both past year alcohol and marijuana use, as well as problem levels of use among our adolescent sample as substance use outcomes. Similar to the aforementioned study by Latzman et al., (2013), we examine impulsivity as a multidimensional construct through use of an adapted UPPS-P measure for children and adolescents (Zapolski et al., 2010). The current study seeks to answer the following research questions: (1) Is there an association between perceived discrimination and substance use (alcohol and marijuana) within a sample of racial-ethnic minority youth?, (2) Is there an association between impulsivity and substance use (alcohol and marijuana) within a sample of racial-ethnic minority youth?, and (3) Is the association between perceived discrimination and substance use among racial-ethnic minority youth moderated by individual differences in impulsivity?

Based on the extant literature we hypothesize that greater perceived experiences of discrimination will be associated with greater alcohol and marijuana use outcomes within a sample of racial-ethnic minority youth. We also hypothesize a direct effect of sensation seeking, lack of premeditation, negative urgency, and positive urgency on problem alcohol and marijuana use. Lastly, we hypothesize that dimensions of impulsivity will moderate the association between perceived experiences of discrimination and substance use outcomes. Specifically, based on findings from the Latzman et al., (2013) study, as well as the research that implicates substance use as a means of coping with negative emotions and stress as a result of experiencing discrimination (Gerrard et al., 2012), we hypothesize that the association between perceived discrimination and substance use will be stronger for youth who report greater lack of premeditation and negative urgency. The association between perceived discrimination and substance use may also be stronger for youth who report greater sensation seeking and positive urgency due to higher emotional reactivity and propensity toward risk behaviors, which is characteristic of the adolescence age-stage (Steinberg, 2007). No a priori hypothesis was made for the impulsivity trait of lack of perseverance. This pathway was exploratory and a means to further understand the multidimensionality of impulsivity on the association between perceived discrimination and adolescent substance use.

Methods

Participants and Procedures

Data collection commenced after receiving approval from the University Institutional Review Board. Participants were recruited from six tuition-free after-school programs in a Midwestern metropolitan area. A passive/opt-out consent procedure, which was approved by the IRB, and was used for the current study such that information about the study was distributed to parents of youth within in the after-school programs, who were given an opportunity to opt-out of having their child participate. For youth whose parents/guardians did not opt them out of the study and who expressed interest in participating in the study then completed an informed assent (if under age 18) or consent (if aged 18) document and received the study questionnaire. The study questionnaire included self-report measures pertaining to past year alcohol and marijuana use and related consequences, past year experiences with discrimination, and five traits of impulsivity. A total of 143 youth ages 12-18 completed the questionnaire. For the current study, 29 participants were excluded for not identifying as a racial/ethnic minority and 2 others were excluded for not providing data on the impulsivity measure. Of the remaining 112 participants, majority were male (67%), in high school (i.e., 9th - 12 grade; 72.1%, mean age = 15.3), and identified themselves as African American (69.6%) followed by Hispanic (12.5%), Multiracial (11.6%), Other (3.6%), and Native American/Alaskan Native (2.7%).

Materials

Demographics—Participants were asked to indicate their gender, age, and racial/ethnic background (i.e., African American/Black, Caucasian/White, Asian American/Pacific Islander, American Indian/Native American/Eskimo/Alaskan Native/Aleut, Hispanic/Latino, and Other). For the current study, only participants who identified with at least one racial/ethnic minority group (i.e., any category other than White) were included in the study analysis.

Perceived Discrimination—The Everyday Perceived Discrimination Scale (EPD; D. R. Williams et al., 2007) is a 9-item measure that assesses an individual's thoughts and beliefs about experiencing discrimination (e.g., 'You are treated with less courtesy than other people' or 'People act as if they are afraid of you'). Responses are measured on a 6-point Likert scale of 0 (*never*), 1 (*less than once a year*), 2 (*a few times a year*), 3 (*a few times a month*), 4 (*at least once a week*), and 5 (*almost every day*), with higher scores indicating greater frequency of perceived discrimination experiences. Use of the EPD among adolescents of varying racial-ethnic backgrounds is well validated (Bastos et al., 2010; R. Clark et al., 2004; Priest et al., 2013). The internal consistency of the measure for the current study was good (α = .88).

Impulsivity Traits—The UPPS-P Impulsive Behavior Scale modified for children (UPPS-PC; Zapolski et al., 2010) includes five subscales (i.e., negative urgency, positive urgency, lack of premeditation, lack of perseverance, and sensation seeking). Each subscale consists of eight items, used to assess an individual's tendency to engage in impulsive behaviors. Example items of each scale include; negative urgency: "When I am upset I often act

without thinking.”, positive urgency: “When I am very happy, I can’t stop myself from going overboard.”, lack of premeditation (reverse coded): “I like to stop and think about something before I do it.”, lack of perseverance (reverse coded): “I like to see things through to the end.”, and sensation seeking: “I like new, thrilling things to happen.” Participants respond to items on each subscale on a 4-point Likert scale (1 (*not at all like me*), 2 (*not like me*), 3 (*somewhat like me*), and 4 (*very much like me*)), with higher scores indicating more impulsive tendencies. There was good internal consistency across subscales in the current study ranging from α = .76 - 89.

Substance Use—The Alcohol Use Disorders Identification Test (AUDIT; Babor et al., 1992) is a 10-item measure developed by the World Health Organization to measure past year problem alcohol use with a maximum total score of forty. Research conducted among adolescent samples found a cut-off score of greater than 3 to be suggestive of alcohol use disorder or problems (Chung et al., 2003). In a sample of Chilean adolescents Santis et al. (2009) found cut-off scores of 3, 5, and 7 to be suggestive of hazardous, harmful, and dependent alcohol use respectively. For the current study, the scale reliability for the measure was good (α = .91). Additionally, a 1-item measure (i.e., “During the past year, have you had more than a few sips of beer, wine, or any drink containing alcohol?”) was used to assess current alcohol use. Participants responded to this item on a dichotomous scale of 0 (*no*) and 1 (*yes*).

The Cannabis Use Disorders Identification Test (CUDIT; Adamson & Sellman, 2003) is a 10-item measure used to assess consumption, dependence, cannabis-related problems, and psychological features of cannabis use within the past year. The maximum possible total score is forty, with a cut-off of eight demonstrating a positive predictive value of 81.8% and sensitivity of 73.3 (Adamson & Sellman, 2003). For the current study, the scale reliability was good (α = .89). Additionally, a 1-item measure (i.e., “During the past year, have you used marijuana or hashish (weed, pot, hash, hash oil)?”) was used to assess current marijuana use. Participants responded to this item on a dichotomous scale of 0 (*no*) and 1 (*yes*).

Data Analysis

Descriptive statistics (means and standard deviations) and bi-variate associations between study variables were examined first using SPSS 25.0. Means comparison testing were also conducted to examine potential differences between male and female adolescents in the sample. Hierarchical regression analyses were performed using SPSS 25.0 to examine the relation between perceived discrimination, impulsivity, and substance use, and the moderating effect of impulsivity, with self-reported age and sex as covariates in the following steps: 1) age and sex (0 = male, 1 = female), 2) perceived discrimination, 3) negative urgency, positive urgency, lack of premeditation, lack of perseverance, and sensation seeking, 4) the interaction terms between mean centered perceived discrimination and each impulsivity trait. The PROCESS macro (Hayes, 2013) was then used to probe any significant interactions between perceived discrimination and the impulsivity traits (simple moderation: the conditional effect model specified as Model 1 by Preacher et al., (2007)), with all previously used covariates (age and sex) included in the analysis. Missing data was

handled by pairwise deletion. In order to determine if the current study sample size was sufficient to determine a medium effect size ($f^2 = .15$), a post hoc analysis was conducted using G*Power (Faul et al., 2009) based on hierarchical linear regression modeling and standard power level of .80. The power analysis indicated that our sample size of 112 adolescents was sufficient enough to detect a medium effect size of $f^2 = .18$.

Results

Preliminary Analysis

Means and standard deviations for study variables are shown in Table 1. Independent sample t-tests revealed no significant differences between male and female adolescent participants on any of the study variables. Initial bivariate correlations between age and study variables, indicated that older age was associated with greater past year substance use (alcohol: $r = .26$, $p = .005$; marijuana: $r = .29$, $p = .002$), as well as perceived experiences of discrimination ($r = .23$, $p = .015$). Regarding the bivariate correlations between variables of interest, perceived discrimination was positively associated with marijuana use and problem use, but neither alcohol use outcomes. Perceived discrimination was also positively associated with negative urgency and sensation seeking, yet negatively associated with lack of perseverance. Regarding the impulsivity traits, negative urgency was positively associated with alcohol use and both marijuana outcomes (use and problem use). Sensation seeking was also positively associated with marijuana use. Lastly the impulsivity traits were interrelated, with the highest correlations observed between lack of premeditation and lack of perseverance ($r = .68$, $p < .001$) and negative urgency and positive urgency ($r = .60$, $p < .001$; see Table 2).

Hypotheses Testing

Substance Use Occurrence—Hierarchical logistic regression analyses indicated no significant main effect of discrimination or impulsivity traits in predicting *alcohol use* above and beyond the control variables (i.e., age and sex). Additionally, there was insufficient evidence to conclude significant interactive effects when examining impulsivity traits as a moderator. Results also indicated no significant main effect of discrimination in predicting current *marijuana use* above and beyond the control variables. However, when the impulsivity traits were added into the model, a main effect was observed for lack of premeditation (B = 1.19, $p = .043$) in predicting current marijuana use. Lastly, interactive effects between perceived discrimination and impulsivity traits were examined for current marijuana use, with insufficient evidence to conclude significant moderating effects (see Table 3).

Problem Substance Use—Hierarchical regression analyses were conducted to examine the direct effect of discrimination and impulsivity on problem alcohol and marijuana use, as well as the moderating effect of impulsivity on the association between perceived discrimination and problem alcohol and marijuana use. Results indicated no significant main effect of discrimination in predicting *problem alcohol use* above and beyond the control variables (i.e., age and sex). When the impulsivity traits were added to the model no significant main effects were observed. Additionally, there was insufficient evidence to conclude significant interactive effects when examining impulsivity traits as

a moderator. Regarding *problem marijuana use*, results indicated a significant main effect of discrimination above and beyond the control variables (B = .13, p = .01). When impulsivity traits were added into the model, there was insufficient evidence to conclude statistically significant main effects, as well as interactive effects when examining impulsivity traits as a moderator

Discussion

The current study examines the association between perceived discrimination and substance use, and whether impulsivity provides any unique or interactive effects on substance use. To our knowledge, this is the first study to examine these associations among sample of racial-ethnic minority adolescents. The closest available study was conducted among racial-ethnic minority young adults by Latzman et al. (2013). Similar to Latzman et al., (2013) we found a direct effect for impulsivity (i.e., lack of premeditation or planning) on substances use. However, our findings observed this association for marijuana use only, such that higher scores on lack of premeditation were associated with greater report of current marijuana use. This finding for both the current study and the Latzman study suggests that lack of premeditation may be a driving factor in understanding risk for substance use, particularly for racial-ethnic minority youth and young adults. However, given the dearth of research in this area, more studies are needed to examine this potential risk.

While we noted a similar direct effect for lack of premeditation on substance use between the current study and the Latzman study, in general, all other findings between the two studies varied. Specifically, regarding discrimination, we did not find sufficient evidence for direct associations between perceived discrimination and alcohol use (occurrence or problem use) in our adolescent sample, which was found to be significant among young adults in the Latzman study. However, the current study did find a significant main effect for problem marijuana use. This effect is important given recent evidence on the rise of marijuana use among racial-ethnic minority youth (Johnston et al., 2018), as well as a more accelarated progression from first-time marijuana use to cannabis use disorder symptomatology among racial-ethnic minority youth in comparison to their White peers (Sartor et al., 2013). A significant direct effect was not found for current marijuna use in the current study. There is evidence that for racial-ethnic minorities, marijuana use is used more for social purposes rather than coping (e.g., Buckner et al., 2016), thus it is plausible that use does not vary as much for this group based on stress exposure like what has been observed for alcohol, which has been shown to be more consistently associated with coping motives among minorities (e.g., Cooper et al., 2008). Taken together with our findings, it is plausible, that at least for racial-ethnic minority youth, discrimination and impulsivity, specifically lack of premeditation, may be the most critical factors in understanding risk for marijuana use, and that these effects may not hold for alcohol use outcomes.

The third aim of study was to examine the potential interactive effects between discrimination and impulsivity traits on substance use outcomes among our sample of racial-ethnic minority youth. Although there were several trending significant effects (see Tables 3 and 4), findings for interactions did not reach statistically significant levels. Additional research is needed in this area to confirm whether or not impulsivity traits interact with

discrimination exposure to either magnify or reduce risk for substance use outcomes among racial-ethnic minority youth.

The current study is not without limitations. The majority of the findings did not reach the level of statistical significance, with several marginal or trending effects observed. The lack of significance may be due in part to power restraints, which is postulated to be observed with a larger sample size. Moreover, the number of youth within our sample who reported current substance use was small (27.7% for alcohol use and 33.9% for marijuana use). There is also the limitation of the current study participants being a part of after-school programming and the potential for selection bias. A larger sample with more variability in substance use behaviors, may yield more pronounced effects.

Additionally, our measures examined past year substance use and past year discrimination experiences, which does not address potential problems that might occur from long-term substance use behaviors or the impact of cumulative exposure to discrimination experiences. Examining substance use behaviors and discrimination experiences over time may tell us more about the long-term effects of discrimination experiences on adolescent substance use.

Further, the current study examines the effects of discrimination on impulsivity and substance use among a general sample of racial-ethnic minority youth. Given historical differences in discrimination experiences between racial groups, an assessment of how discrimination experiences contribute to substance use behaviors in similar or different ways between youth should be considered. Lastly, we assessed whether racial-ethnic minority youth experienced general discrimination and not specifically racial discrimination. Future research may benefit from distinguishing experiences that are perceived to be the result of youth's race and ethnicity from discrimination experiences that are perceived to be more general. Multiple and intersected identities, such as gender, should also be considered in future research.

Conclusions

In summary, a limited number of studies have examined contextual and individual level factors, such as impulsivity and discrimination, on substance use risk among racial-ethnic minority youth, with none to date examining the interactive effect of these factors within adolescent substance use risk models. The current study provides preliminary evidence of the effects of discrimination and impulsivity on substance use behaviors among racial-ethnic minority youth – such that both appear to be most impactful on marijuana use. Moreover, of the impulsivity traits, lack of premeditation was found to predict marijuana use above the effect of demographic factors and discrimination. This suggests that this type of impulsivity may be a key risk factor for racial-ethnic minority youth. However, when examining the interactive effect between discrimination and impulsivity, no significant effects were observed. Given the dearth of research in this area, more studies are warranted on the topic. The rising rates of marijuana and alcohol use among racial-ethnic minority youth coupled with their frequently reported experiences of discrimination, highlight the importance for understanding why and what contexts are certain youth at greater risk for substance use problems. For example, future research should consider interpersonal relationships (i.e.,

caregivers, siblings, and peers) and access to substances as important contextual factors that might influence the relationships of discrimination experiences, impulsivity, and substance use. Findings from the current study may be beneficial for informing intervention efforts for this population of youth.

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Table 1

Demographics and Descriptive Statistics for the Sample

Variable	N or Mean	% or SD
Age	15.27	1.80
Sex		
Male	76	68
Female	36	32
Race/Ethnicity		
African-American/Black	78	69.6
Hispanic	14	12.5
Multiracial	13	11.6
Native American/Alaskan Native	3	2.7
Other	4	3.6
Past Year Alcohol Use (current users)	31	27.7%
Past Year Marijuana Use (current users)	38	33.9%
Problem Alcohol Use	1.21	3.78
Problem Marijuana Use	3.12	6.36
Perceived Discrimination	15.97	11.79
Negative Urgency	2.32	0.68
Positive Urgency	2.24	.73
Lack of Premeditation	2.08	.60
Lack of Perseverance	2.05	.56
Sensation Seeking	2.61	.65

Table 2

Bi-variate Associations of Study Variables

	AGE	ALC	MRJ	ALCProb	MRJProb	PD	NU	PU	LPM	LPV	SS
AGE		.26**	.29**	.16	.12	.23*	.10	−.05	−.04	−.01	.01
ALC			.61***	.50***	.46***	.17	.21*	.09	.14	.10	.08
MRJ				.39***	.68***	.21*	.19*	.11	.10	−.10	.19*
ALCProb					.65***	.16	.17	.12	.09	.02	−.08
MRJProb						.26**	.23*	.13	.07	−.07	.08
PD							.26**	.10	−.04	−.27**	.37***
NU								.60***	.16	−.07	.38***
PU									.22*	−.11	.26**
LPM										.68***	−.20*
LPV											−.50***
SS											

Note(s). ALC = past year alcohol consumption; MRJ = past year marijuana consumption; ALCProb = past year alcohol problem use; MRJProb = past year marijuana problem use; PD = perceived discrimination; NU = negative urgency; PU = positive urgency; LPM = lack of premeditation; LPV = lack of perseverance; SS = sensation seeking.

* $p < .05$

** $p < .01$

*** $p < .001$ (2-tailed)

Table 3

Hierarchical Logistic Regression Analyses Examining the Effects of Perceived Discrimination and Impulsivity Traits on Past Year Alcohol Use and Marijuana Use Occurrence

	Alcohol Use				Marijuana Use			
Predictors	**B**	**SE B**	***p***	**ΔR^2**	**B**	**SE B**	***p***	**ΔR^2**
Step 1				.15				.12
Age	.40	.14	**		.36	.13	**	
Sex	1.00	.47	*		.15	.45		
Step 2				.02				.03
PD	.02	.02			.03	.02		
Step 3				.06				.09
NU	.49	.49			.33	.45		
PU	−.06	.43			−.18	.41		
LPM	25	.60			1.19	.59	*	
LPV	.62	.69			−1.02	.68		
SS	.39	.46			.44	.44		
Step 4				.09				.07
PD x NU	.06	.05			.07	.05		
PD x PU	−.10	.05	†		−.05	.04		
PD x LPM	−.01	.06			.00	06		
PD x LPV	.05	.07			.09	.07		
PD x SS	−.03	.05			.01	.05		
Overall R^2				.32				.30

Note(s). Unstandardized coefficients are presented. PD = perceived discrimination; NU = negative urgency; PU = positive urgency; LPM = lack of premeditation; LPV = lack of perseverance; SS = sensation seeking.

* $p < .05$

** $p < .01$

*** $p < .001$ (2-tailed).

† indicates marginal significance.

Table 4

Hierarchical Regression Analyses Examining the Effects of Perceived Discrimination and Impulsivity Traits on Alcohol and Marijuana Problem Use

	Alcohol Problem Use				Marijuana Problem Use			
Predictors	**B**	**SE B**	***p***	**ΔR^2**	**B**	**SE B**	***p***	**ΔR^2**
Step 1				.05				.02
Age	.35	.20			.24	.34		
Sex	1.35	.75			−.46	1.29		
Step 2				.02				.05
PD	.04	.03			.13	.05	*	
Step 3				.05				.05
NU	.78	.72			1.93	1.22	†	
PU	.28	.65			−.24	1.09		
LPM	.43	.90			1.67	1.52		
LPV	−.62	1.07			−2.01	1.81		
SS	−1.35	.70	†		−1.17	1.18		
Step 4				.04				.05
PD x NU	.08	.07			.20	.11	†	
PD x PU	−.04	.06			−.10	.11		
PD x LPM	.01	.08			.02	.14		
PD x LPV	−.04	.09			.05	.16		
PD x SS	−.13	.07	†		−.15	.12		
Overall R^2				.16				.17

Note(s). Unstandardized coefficients are presented. PD = perceived discrimination; NU = negative urgency; PU = positive urgency; LPM = lack of premeditation; LPV = lack of perseverance; SS = sensation seeking.

* $p < .05$

** $p < .01$

*** $p < .001$ (2-tailed).

† indicates marginal significance