



# Relationship between Sensation Seeking and Club Drug Use among Hispanic College Students: Need for Cognition as a Moderator

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## Abstract

Limited information exists about club drug use among minorities. Club drug use (e.g., MDMA, GHB, Speed, Ketamine, LSD, psilocybin mushrooms) has been found to be increasing among high school and college youth with 17 to 26% having used at least one type of club drug. However, it is uncertain how behavioral and cognitive correlates impact club drug use in college populations. Sensation seeking is characterized by the tendency to seek novel and stimulating experiences and has been found to be related to the use of multiple illicit substances (e.g., prescription drugs, club drugs). Need for cognition (NFC) is “an individual’s tendency to engage in, and enjoy effortful cognitive activities,” but has not been examined in the context of club drug use despite its known relationship to drinking. The underlying theories of cognitive-behavioral therapy stress the importance of understanding the relationship between a person’s cognitions and subsequent behaviors. Therefore the purpose of this study was to evaluate the extent to which the relationship between sensation seeking and club drug use among college students varied as a function of one’s NFC. Hispanic college students ( $N = 321$ , 65% female,  $M = 20.7$  years old) completed the following measures: a demographic questionnaire, a Club Drug/Polysubstance Assessment, the Sensation Seeking Scale Form V (SSS-V), and the Need for Cognition Short Form (NFC-SF). Approximately 19% percent of participants reported club drug use. Participants reported moderate levels of sensation seeking ( $M = 20.08$ ,  $SD = 6.01$ ) and high levels of NFC ( $M = 50.57$ ,  $SD = 7.74$ ). Higher levels of sensation seeking ( $OR = 1.16$ ,  $p < .001$ ) were found to increase the likelihood of club drug use, whereas this relationship was not found for NFC ( $p = .56$ ). However, moderation analysis suggested a significant interaction effect between sensation seeking and NFC ( $OR = 1.01$ ,  $p = .05$ ) such that the entry of the interaction term significantly improved the overall fit of the model,  $\Delta\chi^2(1) = 3.75$ ,  $p = .05$ . Thus higher levels of sensation seeking and higher NFC were found to place a person at greater risk for club drug use. These results suggest that rates of club drug use remain non-trivial and the potential for a different type of sensation seeking drug user who potentially uses club drugs to seek out both cognitively and behaviorally based activating experiences. These results also highlight the importance of including both cognitive and behavioral factors in assessing correlates of drug use to include in future efforts to more effectively tailor prevention and treatment programs.

## Introduction

### Club Drug Use

Club drugs typically consist of 3, 4-methylenedioxyamphetamine (MDMA, more commonly known as ecstasy), gamma-hydroxybutyrate (GHB), methamphetamine (speed), Ketamine, and lysergic acid diethylamide (LSD) (Banta-Green et al., 2005); In addition, psilocybin mushrooms are often used in conjunction with these club drugs (McCaughan, Carlson, Falck, & Siegal, 2005).

Club drugs received their name due to location of drug use (Banta-Green et al., 2005) rather than psychotropic properties (for reviews, see Abraham, Aldridge, & Gogia, 1996; Freese, Miotto, & Reback, 2002).

Research has found that club drug use is increasing among high school and college youth (Johnston, O’Malley, Bachman, & Schulenberg, 2005) with 20% of youth having used at least one type of club drug (Wu, Schlenger, & Galvin, 2006). Previous studies at UTEP found similar prevalence rates of 17 to 26% (Lopez, Hu, Rodriguez Esquivel, Salgado, & Cooper, 2006; Resor, & Cooper, In press).

### Sensation Seeking

Sensation seeking is a temperament dimension characterized by the tendency to seek novel and stimulating experiences (Zuckerman, 1994).

Higher levels of sensation seeking have been found to be related to the use of multiple illicit substances (e.g., prescription drugs, club drugs) (Low & Gendaszek, 2002; Simons, Gaher, Correia, & Bush, 2005) and may be a potential risk factor for club drug use initiation and use frequency (Arducci, Archer, Panoast, & Gordon, 1989; Simons et al., 2005).

### Need for Cognition

The Need for Cognition (NFC) is a cognitive motivational construct that has been defined as “an individual’s tendency to engage in, and enjoy effortful cognitive activities” (Cacioppo & Petty, 1982).

Need for cognition has been found to moderate the strength of the relationship between expectancies and drinking behavior (Hittner, 2004).

Need for cognition has not been examined in the context of club drug use, but has been found to be positively associated with sensation seeking (Olson, Camp, & Fuller, 1984).

### Cognitive Behavioral Theories

The underlying theories of cognitive-behavioral theories (CBT) stress the importance of understanding the relationship between a person’s cognitions and subsequent behaviors (Ledley, Marx, & Heimberg, 2005).

Since NFC and sensation seeking relate to facets of CBT (Barrington, 2006; Beck, 1964; Ledley et al., 2005), it seems reasonable to expect that variations in NFC would influence the relationship between sensation seeking and club drug use.

## Aims and Hypotheses

The purpose of this study was to evaluate the extent to which the relationship between sensation seeking and club drug use among college students varied as a function of one’s NFC.

It was predicted that sensation seeking individuals with low levels of need for cognition would most likely use club drugs.

## Methods

### Participants

- A sample of 321 Hispanic college students were recruited from the undergraduate pool of psychology students.
  - 111 male, 210 female
  - 79.1% Mexican American; 8.1% Mexican National; 12.8% Other Hispanic group
  - Mean age was 20.7 years ( $SD = 4.33$ )
  - Participant characteristics are illustrated in Table 1.

- A G\*Power 3.0.3 a priori power analysis (Faul, Erdfelder, Lang, & Buchner, 2007) was conducted based on the means and standard deviations found in a club drug use study conducted by Heffernan, Jarvis, Rodgers, Scholey, and Ling (2001). An independent samples *t*-test between ecstasy users ( $M = 4.35$ ,  $SD = 1.84$ ) and controls ( $M = 3.09$ ,  $SD = 1.18$ ) determined 322 participants would be needed to discover a large effect ( $d = .82$ ) at alpha = .05 and beta = .80.

### Procedure

- Students met with the primary researcher or research assistant and were informed of the risks and benefits of participation.
- After giving consent, participants completed the measures.
- All students were thanked, debriefed, and provided research credit for participating in the study.

### Measures

- Demographics:** gender, age, ethnicity, years of education, and Greek association.
- Club Drug/Polysubstance Assessment** was used to assess club drug use and polysubstance use (Hopfer, Mendelson, Van Leeuwen, Kelly, & Hooks, 2006). This questionnaire measures lifetime and past month use, location of obtainment and use of drugs, information on purchase price and quantity, frequency of peer group use, and polysubstance use.
- Zuckerman’s Sensation Seeking Scale Form V (SSS-V)** (Zuckerman, Eysenck, & Eysenck, 1978) is a forced choice questionnaire (sentence a or b), where one choice is worth 1 point and the other choice is worth 0 points. A total score was obtained by summing the scores for each of the items, with higher scores indicating more of a need for sensation seeking. Cronbach’s alpha for this study was .79.
- Need for Cognition Short Form (NFC-SF)** (Cacioppo, Petty, & Kao, 1984) measures individuals’ tendency to engage in and enjoy effortful thinking. The NFC-SF consists of 18 multiple choice questions on a 4 point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Nine items on this scale are reverse scored. Scores range from 18 to 72 with higher scores indicating more need for cognition, lower scores indicating less engagement or enjoyment in effortful cognitive activities. The present study demonstrated high internal reliability ( $\alpha = .91$ ).

### Moderation Analysis

- Conducted following guidelines of Baron and Kenny (1986):
  - Continuous variables were centered on the mean to reduce multicollinearity between the variables and their product terms (Cohen, Cohen, West, & Aiken, 2003; Jaccard, Wan, & Turrisi, 1990).
  - Interaction terms were created by multiplying the centered predictor (SSS-V) with the moderator (NFC).
  - Variables were entered into the equation in two blocks: 1) predictor (SSS-V) and moderator (NFC) term; 2) interaction term (SSS-V times NFC), to determine if the interaction term significantly improved the overall fit of the model.
  - A significant interaction term would signify the presence of the moderated effects between NFC, SSS-V and club drug use.

## Results

- NFC was found to moderate the relationship between sensation seeking and club drug use (see Table 2).
- The entry of the interaction term significantly improved the overall fit of the model,  $\Delta\chi^2(1) = 3.75$ ,  $p = .05$  (see Figure 1).
- Consistent with the behavioral model, the predictor for this moderation (i.e., SSS-V) significantly predicted club drug use,  $p < .001$ . However, the moderator term (i.e., NFC) was not a significant predictor of club drug use,  $p = .56$ .
- Sensation seekers who have a high need for cognition were 1.01 times more likely to use club drugs.
- Therefore, although sensation seekers were more likely to use club drugs,  $OR = 1.16$ , a higher probability of club drug use existed among those who also have high levels of need for cognition.

Table 1: Participant Characteristics

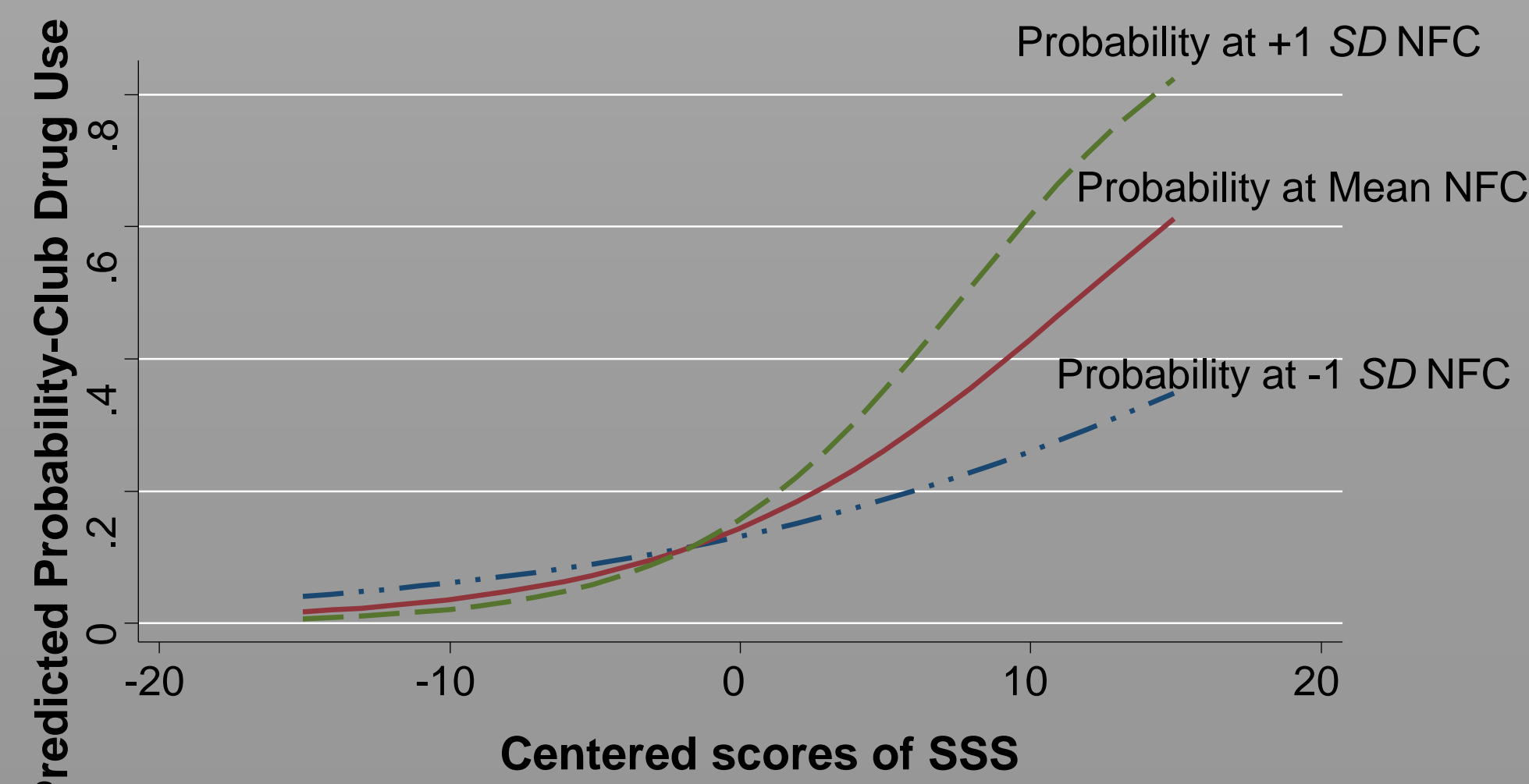
Variable	%	Mean	SD
<b>Gender</b>			
Males	34.6		
Females	65.4		
<b>Age</b>		20.7	4.33
<b>Ethnicity</b>			
Mexican American	79.1		
Mexican National	8.1		
Other Hispanic group	12.8		
<b>Lifetime Use</b>			
Club Drug	18.8		
Cigarettes	63.2		
Alcohol	93.1		
Marijuana	48.9		
Polysubstance	69.5		
<b>Scale Scores</b>			
SSS-V		20.08	6.01
NFC-SF		50.57	7.74

Table 2: Summary of the Hierarchical Logistic Regression Examining the Interaction Effects of NFC on SSS

Variables	B	Odds Ratio	95% Confidence Intervals		p
			Lower	Upper	
<b>Step 1</b>					
SSS-V	.16	1.17	1.10	1.24	<.001
NFC-SF	.03	1.03	.99	1.08	.12
<b>Step 2</b>					
SSS-V	.15	1.16	1.09	1.24	<.001
NFC-SF	.01	1.01	.97	1.06	.56
SSS-V by NFC-SF	.01	1.01	1.00	1.02	.05
Constant	-1.78	.17			<.001

Note.  $n = 281$  (52 club drug users, 229 non-club drug users). ns were reduced because of missing values on some independent variables.  $\chi^2(2) = 32.72$ ,  $p < .001$  for Step 1;  $\Delta\chi^2(1) = 3.75$ ,  $p = .05$  for Step 2.

Figure 1: Moderated Need for Cognition (centered NDC-SF) effect of Sensation Seeking (centered SSS) on probabilities of club drug use.



## Discussion

### Implications of Findings

- A nontrivial amount (18.8%) of club drug use was reported. The 18% club drug lifetime use rate for the current sample is similar to previous studies at UTEP (Lopez et al., 2005, Resor & Cooper, In press) and to the national average of 20% (Wu et al., 2005).
- Higher levels of sensation seeking were associated with club drug use (Arducci et al., 1989; Martins, Storr, Alexandre, & Chilcoat, 2008), suggesting that the use of club drugs possibly fulfills a need to seek out novel experiences.
- Higher sensation seeking and higher need for cognition place a person at greater risk for club drug use, suggesting a different type of sensation seeking drug user who potentially uses club drugs to seek out activating experiences from both behavioral and cognitive perspectives.
- Taken together, these results reflect the importance of applying cognitive behavioral theories to understanding club drug use in this sample. A better understanding of club drug use can be obtained through continued assessment of a club drug user’s behaviors and cognitions.

### Future Directions

- Prevention and intervention programs for club drug use should include components that target high sensation seeking students, such as through mass media campaigns that actively target sensation-seeking individuals (e.g., SENTAR; Stephenson, 2003).
- Continued research assessing the relationship between attitudes, sensation seeking, and need for cognition on club drug use across populations (e.g., youth, young adults) and other ethnocultural groups is suggested.
- A prospective study of Hispanic college students’ club drug use and its predictors and consequences is warranted to assess the temporal relationships between the constructs of interest.
- Further investigation of the cognitive and behavioral factors associated with club drug use so that future efforts can more effectively tailor prevention and treatment programs.

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