



## Exploring weight control as motivation for illicit stimulant use

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### ABSTRACT

**Objective:** Research has highlighted a growing trend among young, adult women to initiate drug use for weight loss. With known suppressive effects on appetite, illicit stimulants (i.e., cocaine, amphetamine, methamphetamine, and ecstasy) may be particularly attractive to college women, who are at elevated risk for increased body dissatisfaction and experimenting with extreme weight loss techniques. The current study examines the association between risk factors and symptomatology of eating disorders and illicit stimulant use (ISU).

**Methods:** A preliminary study was conducted on a nonclinical sample of 131 drug-using, college women (16- to 24-years old). Participants reported internalization of the thin ideal, body dissatisfaction, disordered eating behavior, and current drug use as well as corresponding weight-related motivation.

**Results:** There were 15.3% of women who reported drug use for weight-control purposes. Results showed women who reported drug use for weight control predominantly used illicit stimulants (70%), such as cocaine, amphetamine, methamphetamine, and ecstasy. Moreover, the odds of ISU were increased among women who engaged in laxative misuse.

**Conclusions:** These results suggest that a desire for weight control may be associated with ISU among college women. Women engaging in more extreme weight loss behaviors are at high risk for initiating and maintaining ISU for weight-related reasons.

### 1. Introduction

Common side effects of illicit stimulant use (ISU) include appetite suppression and increased metabolic breakdown of fat and carbohydrates, resulting in weight loss (Ersche, Stochl, Woodward, & Fletcher, 2013; Puhl, Cason, Wojnicki, Corwin, & Grigson, 2011; Wellman, Nation, & Davis, 2007). However, limited quantitative research exists on the extent to which a desire for weight control motivates ISU among young women (Boys, Marsden, & Strang, 2001; Kilwein, Goodman, Looby, & De Young, 2016; Smith, Martel, & DeSantis, 2016). Recent qualitative studies suggest that young adult women were more likely to endorse initiating and maintaining ISU (e.g., cocaine, amphetamine, methamphetamine, and ecstasy) due to subsequent weight loss (e.g., Mendieta-Tan, Hulbert-Williams, & Nicholls, 2013; Sirls, 2002). This trend has emerged in quantitative studies using clinical (Brecht, O'Brien, von Mayrhauser, & Anglin, 2004; Cohen, Greenberg, Uri, Halpin, & Zweben, 2007; Warren, Lindsay, White, Claudat, & Velasquez, 2013) and community samples (Boys, Marsden, & Strang, 2001; Cance, Ashley, & Penne, 2005; Curran & Robjant, 2006). For example, roughly 60% of women in treatment for substance abuse indicated that they *often*, *usually*, or *always* wanted to lose weight, of which 34% endorsed using illicit drugs to lose weight (Warren et al.,

2013).

Illicit stimulants may be particularly attractive to college women, who are at elevated risk for experimenting with extreme weight-loss techniques (Kilwein et al., 2016; Schaumberg, Anderson, Reilly, & Anderson, 2014; White, Reynolds-Malear, & Cordero, 2011). As proposed by the sociocultural model of eating disorders (Stice, 1994), internalization of the thin ideal and resultant body dissatisfaction may lead women to engage in dieting, which has been shown to be ineffective for weight loss and often results in binge eating episodes. Overtime, women with elevated thin-ideal internalization and body dissatisfaction and who engage in binge eating may begin to utilize more extreme dieting techniques, such as excessive exercise, induced vomiting, and laxative misuse (Stice, 1994). In a recent study, college women who used nonprescribed stimulants (e.g., Ritalin or Adderall) for instrumental, suppressive effects on appetite were 15 times more likely than those using for other reasons and nearly 6 times more likely than nonusers to engage in purging behaviors (Kilwein et al., 2016). More frequent binge eating and purging behaviors as well as worse eating pathology and clinical impairment relating to eating disorder symptoms have been found to be associated with increased odds of prescribed stimulant misuse among college women (Gibbs et al., 2016). Such findings suggest that the sociocultural model may predict ISU

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motivated for weight-control. College women who engage in extreme weight-loss behaviors, such as excessive exercise, self-induced vomiting, and laxative use, may be at the highest risk for ISU due to known suppressive effects on appetite and increased availability on college campuses (Benson, Flory, Humphreys, & Lee, 2015).

Though previous research has consistently documented co-prevalence of eating pathology and substance use (e.g., Kilwein et al., 2016; Piran & Robinson, 2006; Smith, Martel, & Desantis, 2016), no study to date has examined the extent to which use of specific substances is driven by a desire for weight control, which may have important intervention implications. A preliminary study was conducted to examine the extent to which substance use among college women is motivated by weight-related motivation and to assess the specific association of ISU with weight-control behaviors. It was hypothesized that ISU may act similar to other compensatory behaviors due to known suppressive effects on appetite and, therefore, may be predicted by the sociocultural model of eating disorders among college women.

## 2. Method

### 2.1. Participants and procedure

Undergraduate women living in residential halls at a Southwestern university were recruited via email to participate in a study examining social networks and health behaviors. A total of 468 women were recruited, of which 131 reported using drugs in the last three months. Since the purpose of this study was to assess weight-control motives for drug use among college women, only those who reported drug use in the last three months were included in this study. Average age was 18.76 ( $SD = 1.09$ ) years. Participants could identify with more than one race/ethnicity. The composition was as follows: 75.6% Caucasian, 26.7% Hispanic, 10.7% Asian, 9.9% African American, 3.8% Pacific Islander/Hawaiian Native, 3.8% Native American/Alaskan Native, and 3.1% other mixed races. After giving consent, participants completed self-report questionnaires online with the order of presentation randomized to reduce systematic fatigue effects. Women were compensated for their time. This study was approved by the institution's review board.

### 2.2. Measures

#### 2.2.1. Thin-ideal internalization

The Ideal-Body Stereotype Scale-Revised (IBSS-R; Stice, Ziemba, Margolis, & Flick, 1996) captures the extent to which women ascribe to the thin feminine standard of beauty with higher scores indicating greater internalization. Items are averaged to create a global measure of thin-ideal internalization. Alpha for the current study was 0.90.

#### 2.2.2. Body dissatisfaction

The Body Parts Satisfaction Scale-Revised (BPSS-R; Petrie, Tripp, & Harvey, 2002) assesses satisfaction with body and face that captures individual attitudes towards one's appearance. The scale was recoded such that higher global scores, calculated by averaging items, indicated greater body dissatisfaction. Alpha for the current study was 0.91.

#### 2.2.3. Eating disorder behaviors

Frequencies of objective binge eating and compensatory behaviors (i.e., excessive exercise, vomiting, and laxative use) within the last 28 days were assessed by items from the Eating Disorder Examination - Questionnaire (EDE-Q; Cooper, Taylor, Cooper, & Fairburn, 1987). Objective binge eating was defined as having eaten what other people would regard as an unusually large amount of food given the circumstances and experiencing a loss of control over eating. Due to skew and kurtosis, this item underwent a square root transformation. Excessive exercise underwent a log transformation to address concerns relating to skewness. Due to low frequencies, self-induced vomiting and laxative

**Table 1**

Descriptive statistics of eating pathology among stimulant-using and other drug-using college women.

	Illicit stimulant users <sup>a</sup>		Other drug users <sup>b</sup>	
	N	Mean (SD)	N	Mean (SD)
Thin-ideal internalization	44	3.86 (0.77)	84	3.98 (0.65)
Body dissatisfaction	45	3.79 (1.19)	82	4.16 (1.06)
Obj. binge episode	44	1.34 (2.43)	83	4.54 (10.22)
Excessive exercise	45	4.13 (7.01)	83	4.20 (6.38)
	N	%	N	%
Self-induced vomiting	10	21.3%	11	13.1%
Laxative use	6	12.8%	2	2.4%

*Note.* This table divided the total sample of drug-using college women into two groups based on use of illicit stimulants in the last three months. For each measure, higher scores indicate higher levels of pathology. In the formal analyses, objective binge eating underwent a square-root transformation, and excessive exercise was log-transformed. Self-induced vomiting and laxative use were dichotomized. Raw means are presented here for ease of interpretation.

<sup>a</sup>  $n = 47$ .

<sup>b</sup>  $n = 84$ .

use were dichotomized.

#### 2.2.4. Drug use and motivation

Participants were asked whether they had used drugs or cigarettes within the last three months. If participants endorsed this item, they were presented a table of the following substances: cigarettes, over-the-counter medications, marijuana, heroin, lysergic acid diethylamide (LSD), opium, Roofinol, phencyclidine (PCP), amphetamine, methamphetamine, cocaine, and ecstasy. Within this table, participants indicated what substances they used and whether use was for weight-control purposes or not for weight-control purposes. Participants could select only one motive for use per substance. Illicit stimulant users were classified as those endorsing use of cocaine, amphetamine, methamphetamine, and ecstasy.

## 3. Results

Descriptive statistics for illicit stimulant users and other drug users are reported separately in Table 1. Forty-seven (35.8%) drug-using college women were identified as illicit stimulant users, and 84 (64.1%) reported other drug use. Of those that reported using drugs for weight control purposes ( $n = 19$ ), the majority (70%) were illicit stimulant users, and the rest unanimously endorsed use of over-the-counter medications (30%). A chi-square test indicated that there was a significantly higher prevalence of use motivated for weight control among illicit stimulant users than among other drug users,  $\chi^2(1) = 11.95$ ,  $p = .001$ . Yet, illicit stimulant users did not differ significantly from other drug users on thin-ideal internalization ( $t(126) = 1.00$ ,  $p = .32$ ) or body dissatisfaction ( $t(125) = 1.79$ ,  $p = .08$ ).

Separate logistic regressions were run to examine whether individual symptoms of eating pathology could predict engagement in ISU compared to other drug use. Neither thin-ideal internalization, body dissatisfaction, nor objective binge episodes individually predicted ISU. In a separate model, the three compensatory behaviors were entered together in a block. The overall effect of compensatory behaviors on ISU was insignificant. Only the effect of laxative misuse on ISU was marginally significant ( $\beta = 1.76$ ,  $SE = 0.91$ ,  $OR = 5.79$ ,  $p = .05$ ).

Predictors then were analyzed in a hierarchical order to assess the increased likelihood of ISU with increased severity in eating pathology (Table 2). Thin ideal internalization, body dissatisfaction, and objective binge episodes were entered into the model sequentially. There were no significant main effects. In the final block, engagement in compensatory behaviors was entered into the model and significantly predicted ISU. Only laxative misuse had a significant effect on ISU.

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