Effects of Gender and Motivations on Perceptions of Nonmedical Use of Prescription Stimulants

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Accepted author version posted online: 25 Feb 2014. Published online: 08 May 2014.
Major Article

Effects of Gender and Motivations on Perceptions of Nonmedical Use of Prescription Stimulants

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Abstract. Objective: This study examined the impact on college students’ perceptions of nonmedical use of prescription stimulants (NMUPS) of motivation for use and gender. Participants: Participants were college students (N = 695) from 2 universities in different regions of the United States. Methods: Participants read a vignette describing a college student who used a prescription stimulant for a nonmedical purpose and rated their perception of that individual using a semantic differential. A 2 (participant gender) by 2 (gender of the individual described in the vignette) by 3 (motive for use: get high, study, lose weight) design was used. Results: The male who used a stimulant to study was rated significantly less negatively than if he used the stimulant to get high. NMUPS as a study aid was viewed the least negatively overall. Conclusions: Findings suggest that gender does not, whereas motivation for use does, impact students’ perceptions of NMUPS.

Keywords: gender, motivations, perceptions, prescription stimulants

Experimentation with alcohol, illicit drugs, and prescription medications is common in adolescence and early adulthood. Considerable research has examined predictors and consequences of alcohol and illicit drug use on college campuses. However, less is known about nonmedical prescription stimulant use (NMUPS), despite the fact that rates of use are highest in this population. Prior to the recognition of NMUPS as a problem on college campuses, a dramatic increase in the number of children diagnosed with attention-deficit/hyperactivity disorder (ADHD) occurred in the 1990s and the amount of stimulant medication manufactured increased to meet the demand. Between 1993 and 2000, Adderall and Dexedrine production increased over 4,500%, with ADHD diagnoses in children increasing from 7% to 9% between 1998 to 2009. Increased awareness about ADHD has led to greater knowledge and acceptance of stimulant medications and their uses among college students.

Currently, high levels of prescription stimulant abuse are occurring among undergraduates aged 18 to 24. Studies have yielded findings suggesting that there are more students reporting nonmedical use of stimulant medication as compared with those actually prescribed stimulant medications for attentional difficulties. Additionally, NMUPS is more frequent among males than females and among Caucasians than other races. As with other drugs, such as marijuana and cocaine, NMUPS is associated with polydrug and alcohol abuse. In fact, heavier alcohol consumption is associated with a greater likelihood of NMUPS among college students and this association between drinking and NMUPS is stronger than the association between alcohol and misuse of other prescription drugs.

Research has also examined motives for use. The most frequently reported reasons for NMUPS include improving concentration, increasing alertness, staying awake, and recreation (getting high). Not surprisingly, DeSantis et al found that 72% of their college student sample reported NMUPS to help them stay up longer to study, with many qualitative reports of first use during examination periods. Lastly, weight loss has also been reported as a leading motivation for NMUPS.

Although there are a number of different theories that could be used to explain NMUPS, the theoretical foundation for the current research was guided by behavioral and social learning theories of addictive disorders as well as generalized female vulnerability theory. Since the 1960s, social learning theory has been used to explain substance abuse problems in adolescence. Consistent with social learning theory, research has shown that students who endorse a history of NMUPS or have peers who endorse NMUPS are more likely to know about the effects of taking a stimulant nonmedically than students who have had no personal or peer
exposure to NMUPS. Both direct and vicarious experience with NMUPS have contributed to the belief that stimulants make college students “smarter” and able to remember larger amounts of information than they could have had they not used the drug. Moreover, the few negative side effects reported by college students who have used prescription stimulants nonmedically are generally benign (ie, feeling “jittery”), which may contribute to the perception that NMUPS is safe.

In addition to social learning, factors such as gender may play a role in the acceptability of NMUPS. In the past, women who consumed alcohol were perceived more negatively than men. Despite evidence of relaxing of the social norms regarding women and drinking, it is possible that a double standard still exists in regard to substance use, specifically when examining motives for use. The generalized female vulnerability theory, with foundations in biology and sociocultural influences, lends itself to an explanation of this potential double standard. Traditionally, women in Western cultures have been depicted as the nurturing and more virtuous and caring gender, contributing to the gap in gendered social expectations regarding “appropriate” behavior for men and women. As a result of this gendered social norm, women who use substances are perceived more negatively and experience more interpersonal consequences (guilt, remorse) compared with men. Based on these same sociocultural norms, women are more concerned about their body and appearance in general, leading them to develop more disordered eating habits and to attempt riskier practices in an effort to lose weight. Therefore, it seems plausible that women may be perceived more negatively if they use prescription stimulants nonmedically for recreational purposes (get high), but may be perceived more positively if NMUPS aligns with gender-appropriate motivations such as losing weight.

Summary and Hypothesis

Recent research has shown increases in NMUPS over the past 30 years. Studies have identified specific demographic characteristics associated with a greater risk for use as well as the main motivations for NMUPS. Social learning theory and generalized female vulnerability theory combine to support the notion of a gender bias against women who use substances, especially when those substances are used for purposes that are inconsistent with widely held gender norms. This gender bias may have accounted for why males have historically been found to have higher rates of substance use than females, although this trend appears to be diminishing in more recent years. As such, it is beneficial to understand the role of gender in the social acceptability of NMUPS, as it will provide a more in-depth understanding of how current gender norms influence use of prescription stimulant abuse. Additionally, it will help inform psychoeducational prevention and intervention programs on the subject matter. The current study will explore the perceptions male and female college students have toward both genders’ NMUPS depending upon the motivation for use. Although these gendered perception models have been applied to substance abuse and alcohol, they have not yet been applied to NMUPS. Consistent with the generalized female vulnerability theory, we tested the following hypotheses:

1. The male college student described as using prescription stimulants nonmedically would be rated more favorably than the female college student described as using prescription stimulants nonmedically, regardless of the motive for use.
2. The male college student described as using prescription stimulants nonmedically to get high would be rated more favorably than the female college student described as using prescription stimulants nonmedically to get high.
3. The female college student described as using prescription stimulants nonmedically to lose weight would be rated more favorably than the male college student described as using prescription stimulants nonmedically to lose weight.

We also conducted exploratory analyses to determine whether there were differences in the acceptability of each of the 3 motives for use. Moreover, the extent to which participants’ gender influenced perceptions of the male and female college students described as using prescription stimulants nonmedically was also examined.

METHODS

Participants

Prior to data collection, Institutional Review Board approval was obtained separately from 2 public institutions, a medium-size mid-Atlantic university and a large southeastern university. Study participants were college-aged students (between 18 and 24 years). Data collection occurred between January 2009 and April 2012. Age served as the only exclusion criteria (ie, participants outside the age range of 18 to 24 years were removed from the sample). Ten participants’ data were excluded for this reason. Although this represents a convenience sample, undergraduate college students report the highest rate of NMUPS and were the target population for this study. The goal of our sampling efforts was to have equal numbers of males and females for each condition so as to permit analyses by participant gender. All participants at both sites received college credit toward psychology courses.

Materials

The use of vignettes has been previously shown to be a valid method of obtaining perceptions of female substance use. The 6 vignettes employed in the present study were created by the authors. All 6 vignettes were identical except with regard to the gender of the individual described as using prescription stimulants nonmedically and the motive for use. Three motives for NMUPS were tested: (1) as a study aid, (2) to get high, or (3) to lose weight. Thus, 3 vignettes (1 for each motive) described NMUPS by a male college student and 3 (1 for each motive) described NMUPS by a female college student. To ensure that the vignette was clear to participants, graduate students in a clinical psychology MA program read
the vignettes and provided feedback on the syntax and the realistic nature of the scenario.

The vignette including a female college student is provided below:

_Amanda_ is a college student living with two roommates in an apartment near campus. She likes going to sports events and hanging out with friends. She also works part-time at a restaurant. _Amanda_ is taking an average class load of 15 credits this semester. Because _Amanda_ has such a full schedule, _she_ sometimes finds it hard to balance time effectively, leaving little time to relax, eat right, or study for exams.

The final sentence of the vignette described the motive for use as follows:

**Study Aid**: In the upcoming week, _Amanda_ has a midterm she does not feel she has studied enough for so _she_ decides to buy some stimulants (Ritalin/Adderall) to help stay up the night before so _she_ has more study time.

**Get High**: In the upcoming week, _Amanda_ has several exams and wants to take some time to relax and have fun before studying. _She_ decides to buy some stimulants (Ritalin/Adderall) so _she_ can get high.

**Lose Weight**: In the upcoming week, _Amanda_ has a formal to go to but _her dress_ is a little tight because _she_ has gained some weight; _she_ decides to buy some stimulants (Ritalin/Adderall) to help _her_ lose the weight quickly before the formal.

The vignettes including a male college student are identical with 2 exceptions: (1) the name and pronouns are changed and (2) in the lose weight vignette, the male college student’s suit is described as being too tight.

**Measures**

**Demographic Questionnaire**

A demographic questionnaire was developed for the current study to collect information regarding participant’s age, gender, year in school, socioeconomic status, weight, height, state of residence, and past 30-day drug use including NMUPS.

**Semantic Differential**

The semantic differential consisted of 14 bipolar adjectives (eg, motivated and lazy). Participants were instructed to rate the target of the vignette on these different characteristics using a 5-point Likert scale. The order of the positive and negative bipolar adjectives was counterbalanced. The measure was created using a list of adjectives selected specifically for this study by the authors. The list was then put in semantic differential format and edited by approximately 20 graduate students in a clinical psychology MA program who were asked to read and comment on the list. The comments were taken into consideration and the revised list became the semantic differential measure. Reverse scoring was done on the pairs that required it, and a summary score (ie, average of all ratings) for each participant was created. Higher scores reflected more negative perceptions. Internal consistency reliability of the measure was found to be adequate in this study (Cronbach’s _α_ = .89).

**Manipulation Check**

The authors developed a manipulation check to ensure that the manipulation was salient to participants. Specifically, participants were asked, “What gender was the subject of the story?” and “Why did the subject use a stimulant?” Participants who did not discern the critical information (ie, gender of the college student described, motive for use) were excluded from analysis as they harmed construct validity. In addition, the authors believed that it would be important to determine whether undergraduate students perceived the scenarios to be realistic. If study participants did not think the scenarios were realistic, construct validity of the study would be harmed. As such, participants were asked to use a 5-point Likert scale to rate how realistic they found the vignette to be. Of the 804 participants who had full data, 89 misidentified either the gender of the college student or the motivation for use and 20 did not fully complete the semantic differential leaving a sample for analysis of 695.

**Procedure**

At both sites, participants were recruited through the psychology department research pool. The survey was administered via surveymonkey.com. Prior to participation, the students read the consent form and responded “yes” to continue or “no” to terminate the study. Following consent, participants completed the demographics form and were randomly assigned to read 1 of the 6 vignettes and complete the semantic differential. After completing the semantic differential, participants completed the manipulation check. The manipulation check was administered after participants had completed all other measures to avoid any bias resulting from their discerning the purpose of the study. Upon completing all study procedures, participants were awarded credit toward the fulfillment of a course requirement as compensation for their participation.

**Random Assignment**

A block randomization procedure was used to ensure roughly equal numbers of participants in each treatment condition. Male and female participants were separately randomly assigned to read 1 of the 6 vignettes. This was accomplished by using a random numbers table to assign 2 birth months to 1 of the 6 vignettes. Thus, after agreeing to participate, participants indicated their gender and then their birth month, to determine which vignette they would read (eg, male and female participants born in January and September read the vignette involving a female subject whose NMUPS motive was to lose weight).

**Data Analysis**

Univariate analyses of variance were conducted to examine any differences in semantic differential ratings based on the location of data collection. Pearson correlation
coefficients between demographic characteristics, manipulation check items, and semantic differential ratings were also calculated. Any baseline characteristic or manipulation check item that was found in preliminary analyses to be significantly associated with the semantic differential rating was included as a covariate in the analysis. This was done to ensure that we examined the unique effect of our independent variables on our dependent measure while statistically controlling for potential confounds. Thus, our primary hypotheses were tested using a 2 (participant gender) by 2 (gender of the college student described as using NMUPS) by 3 (motivation for use) univariate analysis of covariance (ANCOVA) with the semantic differential rating serving as the dependent measure.

## RESULTS

### Participant Demographics

The sample (N = 695) of undergraduate college students had a mean age of 19.1 (SD = 1.8) with 54.4% of the sample from the medium-size, mid-Atlantic university and the other 45.6% from the large southeastern university. Despite the block randomization procedure, cell sizes were not equal (see Table 1). Overall, 55.7% of the sample was female, 80.8% were Caucasian, and 10% were African American. These demographics were similar to the large southeastern institution with 49.5% of undergraduates identifying as female, 81.4% Caucasian, and 7.3% African American. The sample demographics diverged from the characteristics of students at the mid-Atlantic university who were 39% male, 67.2% Caucasian, and 7.3% African American. A minority (10.9%) of participants reported having used a prescription stimulant nonmedically. An independent-samples t test showed no significant difference in semantic differential ratings by location (t(693) = −1.8, p = .06).

### Analysis of Baseline Characteristics

Pearson correlation coefficients examined the association between age, frequency of use of various substances, and semantic differential ratings because of prior research showing that NMUPS is associated with these variables and, therefore, the concern that these variables might also be associated with more favorable attitudes toward NMUPS. Results revealed significant associations between semantic differential (ie, acceptability) ratings and age (r = −.10, p = .008, n = 688), marijuana use (r = −.24, p < .001, n = 669), alcohol use (r = −.20, p < .001, n = 684), and smoking (r = −.10, p = .01, n = 651). Prior use of prescribed stimulants neared statistical significance (r = −.08, p = .054, n = 635). Specifically, older age and greater use of alcohol, marijuana, and cigarettes were associated with less negative views of NMUPS. As expected, realism ratings were also significantly associated with acceptability ratings, with higher realism ratings associated with less negative perceptions of NMUPS (r = −.15, p < .001, n = 694). In order to examine the unique effects of our independent variables on perceived acceptability of NMUPS, realism ratings, age, location of data collection, as well as history of NMUPS, tobacco use, alcohol use, and marijuana use were included as covariates in the analysis.

### Analysis of Study Hypotheses

Results of the ANCOVA failed to support our hypothesis that the male college student described as using prescription stimulants nonmedically would be rated more favorably than the female college student described as using prescription stimulants nonmedically regardless of motive. Moreover, results failed to support our hypothesis that the female college student who used prescription stimulants nonmedically to lose weight would be rated more favorably than the male college student who used prescription stimulants nonmedically to lose weight.

Results did reveal a significant interaction between gender of the college student described as using prescription stimulants nonmedically and motive, F(2, 608) = 3.2, p = .042, partial η² = .01. Contrary to study hypotheses, follow-up analyses showed a significant main effect of motive for the male college student, F(2, 298) = 7.8, p = .001, but not the female college student, F(2, 304) = 0.1, p = .94. Post hoc comparisons using simple contrasts (with “use as a study aid” as the reference category) revealed that the male college student was rated significantly more positively if the prescription stimulant was used as a study aid (95% confidence interval [CI] [3.0, 3.2]) than if it were used to get high (95% CI [3.2, 3.4]) if it were used to lose weight (95% CI [3.2, 3.4]) (see Figure 1).

### Exploratory Analyses

Consistent with our interest in examining whether participant gender influenced ratings of the male and female college student described as using prescription stimulants nonmedically for different reasons, we examined the 3-way interaction, which was not statistically significant F(2, 608) = 0.48, p = .62, partial η² = .002. Thus, there was no difference in the way that male and female participants perceived the male and female college student described as using prescription stimulants nonmedically.

Moreover, consistent with our interest in determining whether any of the motives studied were seen as more favorable, we examined the main effect of motive, which was statistically significant, F(2, 608) = 4.5, p = .01. Post hoc comparisons using simple contrasts (with “use as a study aid” as the reference category) showed that use as a study aid was rated more favorably than use as a study aid to lose weight.
Gender, Motivations, and Nonmedical Use of Prescription Stimulants

FIGURE 1. Semantic differential rating by motive for the male college student and overall (regardless of gender).

Further research addressing perceptions of college men and women described as using alcohol and other illicit drugs as well as NMUPS is needed to increase confidence in the conclusion that gendered perceptions of substance use have diminished.

Our results also failed to support our hypothesis that females would be rated more favorably as compared with males if the NMUPS motive was to lose weight. Social norms regarding beauty and thinness may contribute to women's concern for their physical appearance and body. Such concern has been associated with women's willingness to engage in risky weight loss endeavors in an effort to maintain an ideal body weight.22 Thus, it is not entirely surprising that NMUPS for weight loss was perceived to be as acceptable as NMUPS as a study aid. What is striking, however, is the fact that women's use of prescription stimulants to get high was not viewed more negatively than use for other reasons. One possible explanation for this finding is the fact that the cell size for “use to get high” for the female college student was smaller than the cell sizes for the other 2 motives, although said group consisted of 99 participants (as compared with 144 in the female college student/study aid group and 108 in the female college student/weight loss group). These cell sizes were sufficiently large to detect any meaningful differences that might exist. Given the large sample size, results suggest that motive for use may be irrelevant when it comes to perceptions of women's NMUPS.

Alternatively, motive was found to be an important factor for the male college student, with male NMUPS to study rated less negatively than male NMUPS to get high. Moreover, regardless of gender, NMUPS as a study aid was viewed...
considerably less negatively than NMUPS to lose weight or get high. One potential reason for the greater acceptability of NMUPS as a study aid overall may be because of its similarity to one of stimulant medication’s intended prescriptive uses. It is widely known that stimulant medications are prescribed to those with ADHD to help improve attention and concentration, thereby improving academic performance. Thus, use for the same reasons by individuals without ADHD (ie, to help reduce fatigue and increase concentration during an “all-nighter”) may be seen as permissible. On the contrary, less media attention is paid to stimulant medications (in particular Ritalin and Adderall, which were the stimulant medications used as examples in the vignettes) to facilitate weight loss. It is also possible that although college students may willingly share their experiences with NMUPS to improve concentration and academic performance, they may be reluctant to discuss their experiences with NMUPS as a weight loss aid. Finally, NMUPS for weight loss may simply be less frequent than NMUPS for studying. As such, weight loss may be a less familiar side effect of NMUPS than improved concentration, which may account for its lower acceptability as a motive for use. It would be helpful, in explaining these findings, to conduct further research examining the frequency of college student’s NMUPS for these various motives (as well as their knowledge of the prescriptive uses of stimulant medications).

Limitations and Relevance

Despite the use of a manipulation check following the vignette and semantic differential questionnaire, the semantic differential remained a threat to construct validity, as it was not a validated measure. However, it did have excellent internal reliability. Moreover, the decision to use a semantic differential measure to assess perceptions of NMUPS was based on the fact that a similar measure was used in previous research on perceptions of the drinking woman. Another limitation was the fact that the vignettes were written specifically for this study. However, clinical psychology graduate students reviewed the vignettes and the semantic differential for language appropriateness and to ensure the relevant information (ie, gender of the target, motivation for use) was discernible to the participant. Additionally, differences in the 2 institutions could have masked findings in the data analyses; therefore, this factor was controlled for in the analysis. Although our study did involve convenience samples, it is important to note that college students are the population of interest. However, these samples may not be representative of college students nationally and were lacking in racial diversity. Thus, the findings could differ if the study was replicated in other samples. Finally, the degree to which the vignettes described realistic scenarios was assessed among study participants and statistically controlled, reducing the likelihood that differences in semantic differential ratings based on motives were due to one motive being perceived as more realistic than another.

Conclusions

Further studies need to be conducted on the effects of both episodic and chronic use of prescribed stimulant medications among those without a documented need for them. The perceived positive consequences of NMUPS (ie, stay up and study) are reliable and immediate, whereas any negative consequences are either delayed or seen as unlikely (eg, getting arrested) or insignificant (eg, feeling jittery) and may therefore be insufficient to deter use. Further research could elucidate the extent to which such beliefs are contributing to an increased likelihood of use.

Our failure to support our hypotheses regarding gender differences in the perception of NMUPS overall and in relation to getting high, specifically, has implications for future research and practice. Traditionally, women have reported lower rates of substance use than men and male gender has been considered one of several risk factors for substance use. If the gender differences in substance use were due, in part, to these gendered social expectations, then the relaxing of these gender norms may explain the increase in rates of substance use among women that approximates or exceeds the rates of use among men. Additional research will need to explore whether the gender difference in substance use is, in fact, diminishing. If this finding is supported, then prevention programs and psychoeducational campaigns need to target both men and women equally and address the favorable attitudes that all college students, not just men, have toward NMUPS.

Our findings also failed to support our third hypothesis that, among women, NMUPS to lose weight would be more acceptable than NMUPS to study or to get high. Our failure to support this hypothesis may further reflect a relaxing of the social norms. Moreover, the fact that there was no difference in the acceptability of NMUPS for weight loss among males and females may be due to 1 of 2 factors. On the one hand, it may reflect the fact that both male and females are equally affected by media portrayals of the “ideal” body and therefore are equally willing to use risky means to achieve that ideal. As such, NMUPS for weight loss would be considered equally acceptable to both men and women. On the other hand, it may be that weight loss is not a terribly frequent motive for use among college students and therefore is seen as equally unacceptable for both genders. These 2 competing hypotheses would need to be examined in future research.

Despite the failure to support our main hypotheses, this study did find that NMUPS to study was rated as more acceptable than other motives for use. Experimental research examining the causal association between NMUPS and academic performance would be beneficial to support findings of correlational studies showing minimal or negative associations between NMUPS and grades. Such findings could be used to develop effective preventive interventions. Specifically, the finding that NMUPS as a study aid was perceived to be more acceptable suggests the need to
counteract these favorable perceptions with information about the ethical, legal, and potential physical health risks associated with stimulant misuse. Moreover, prevention programs might also focus on correcting college students’ misperception that NMUPS actually improves grades. Providing students with factual information about NMUPS could help to decrease student acceptability of NMUPS and therefore rates of use.27

FUNDING
No funding was used to support this research and/or the preparation of the manuscript.

CONFLICT OF INTEREST DISCLOSURE
The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States and received approval from the Institutional Review Boards of Towson University and the University of Tennessee.

NOTE
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Received: 21 April 2013
Revised: 22 January 2014
Accepted: 2 February 2014