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Nonmedical use of prescription stimulants in college students: Attitudes, intentions, and vested interest

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Abstract

Introduction—Research on vested interest theory (VIT) indicates that the importance and hedonic relevance of attitudes moderates the link between attitudes and attitude-congruent behavior. Though largely untested in prevention research, this relationship may prove crucial in determining the success or failure of prevention efforts. The current study was designed to determine if subjectively perceived vested interest maximized the association between attitudes and intentions regarding the nonmedical use of prescription stimulants (NUPS).

Methods—A cross-sectional survey was conducted with college student respondents ($N = 162$) using Amazon's MTurk. Participant age ranged from 19 to 49 years old. A subsample analysis ($n = 129$) was also conducted with younger respondents, as the typical college student is usually under the age of 30.

Results—Four-step hierarchical regression analysis indicated that both attitudes and perceived vested interest were significantly associated with NUPS behavioral intentions ($p < .001$). Further, vested interest moderated the relationship between stimulant-related attitudes and usage intentions ($p < .001$). Attitudes were significantly associated with intentions of moderately and highly vested respondents ($p < .001$), but not those of participants expressing low levels of perceived vested interest.

Conclusions—Findings support the proposition that vested interest may be a useful target for attenuating NUPS. Rather than attempting to weaken positive attitudes toward NUPS, campaigns may prove more successful if designed to convince receivers that NUPS is not in their best interest.

Keywords

College students; Prescription stimulants; Vested interest; Attitudes; Intentions

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Contributors

Candice D. Donaldson, Jason T. Siegel, and William D. Crano designed the study and conducted literature searches. Donaldson conducted the statistical analysis. All authors shared equally in the writing and contributed to and have approved the final manuscript.

Conflict of interest

The authors declare no conflicts of interest.

1. Introduction

Research highlights the need to recognize and address high prevalence rates of nonmedical use of prescription stimulants (NUPS) (Donaldson, Nakawaki, & Crano, 2015), especially on college campuses (Bavarian, Flay, Ketcham, & Smit, 2013). NUPS is most prevalent among college-age individuals (Arkes & Iguchi, 2008; SAMHSA, 2013), 35.5% of whom report NUPS at least once (Low & Gendaszek, 2002). Nonmedical use of stimulants is associated with many adverse effects, including addiction (Sussman, Pentz, Spruijt-Metz, & Miller, 2006), suicidal ideation (Iversen, 2006), seizures (NIDA, 2012b), irregular heartbeat, myocardial infarction, and sudden death (Gould et al., 2009; Westover & Halm, 2012).

Research designed to predict susceptibility to NUPS has revealed significant relationships between positive attitudes, past use, and future intentions (Looby, Kassman, & Earleywine, 2014; Ponnet, Wouters, Walrave, Heirman, & Van Hal, 2015). However, some researchers (Ponnet et al., 2015) have commented that attitudes might not capture the full motivational picture, prompting investigations of related factors that might predict NUPS. For many years, research in social psychology has been concerned with the link between respondents' attitudes and their subsequent behavior. The relevance of this association for prevention is clear. Prevention involves the dissemination of information and the attempt to persuade receivers of the information to accept it and alter their behavior accordingly (Crano, Siegel, Alvaro, & Patel, 2007). If the prevention model does not succeed in both tasks, it is unlikely to be successful. Merely informing or changing attitudes is not sufficient; the receiver must be induced to view message-congruent behavior as involving important and hedonically self-relevant outcomes (Crano & Prislin, 1995; Lehman & Crano, 2002). Considerable social psychological research indicates that attitudes do not inevitably predict behavior (Ajzen, 2005; Crano & Burgoon, 2002), and numerous moderators of attitude-behavior consistency (e.g., attitude strength and accessibility) have been identified (Crano & Prislin, 2006; Fazio & Petty, 2008). The current investigation is concerned with vested interest or the hedonic relevance of a behavior, a moderator shown to significantly increase attitude-behavior consistency (Crano, 1995, 1997; De Dominicis et al., 2014; Johnson, Siegel, & Crano, 2014; Miller, Adame, & Moore, 2013).

1.1. Vested interest theory

Vested interest theory (VIT) holds that people act in attitude-consistent ways when the outcome of the attitude-implicated behavior is deemed both important and hedonically relevant (Lehman & Crano, 2002). Considerable research indicates that highly vested attitudes are functionally related to behavior—vested interest moderates the relation between attitudes and actions (Crano, 1995, 1997; Miller et al., 2013; Thornton & Knox, 2002). For example, Sivacek and Crano (1982) experimentally investigated the link between vested interest and students' willingness to work against a university's proposed policy that substantially changed students' graduation requirements. Students had the option to work against the new policy by signing a petition, volunteering to fight the proposal, and pledging time to work against it. Analysis revealed a strong, significant relation between attitudes and behaviors among highly vested participants, which exceeded the attitude-behavior relation of less vested participants.

Earlier research has focused on the role of vested interest in motivating individuals to act on beliefs relevant to help seeking, for example, in battling depression (Johnson et al., 2014), in increasing organ donation intentions (Siegel, Alvaro, Lac, Crano, & Dominick, 2008), and in acting appropriately in high risk situations (De Dominicis et al., 2014). However, the theory has not been applied in prevention contexts or avoiding certain behaviors, specifically involving NUPS. Perceived vested interest is assessed explicitly in the current study by determining if respondents believe it is in their best interest to engage in NUPS to experience a range of positive outcomes. We expect that vested interest will moderate the relationship of attitudes on usage intentions, which have been shown repeatedly to predict behavior (Conner & Sparks, 2005; Orbeil, Hodgkins, & Sheeran, 1997). If vested interest moderates the attitude-behavior association in NUPS, it may be fruitful for future prevention efforts to change respondents' perceptions of subjective self-interest rather than focusing on the harms of NUPS. This could be accomplished by persuading receivers that stimulants do not enhance academic performance and attacking the belief that NUPS is in their self-interest. Before moving to explicit manipulation of perceptions of vested interest, it is necessary to determine if the attitude-behavior-vested interest relation operates as theorized.

1.2. Hypotheses and research questions

A survey was designed to assess the utility of the vested interest construct to NUPS. The research goal was to determine the strength of the attitude-action link under different levels of perceived vested interest. We hypothesized that subjectively perceived vested interest would moderate the relationship between attitudes toward NUPS and usage intentions. Higher levels of vested interest were expected to result in stronger attitude-intention relations: We expected attitudes to be most strongly associated with usage intentions among highly vested participants. Investigating the utility of vested interest in the attitude-intention equation may shed light on features important in the design and development of future prevention efforts.

2. Material and methods

2.1. Respondents

College students were recruited using Amazon's Mechanical Turk (MTurk). Respondents recruited through MTurk are demographically more varied and heterogeneous than traditional data sources (Buhrmester, Kwang, & Gosling, 2011; Goodman, Cryder, & Cheema, 2013), and responses have been shown as reliable and valid as those obtained from via traditional sampling methods (Rand, 2012). Participation criteria were United States citizenship, current enrollment as a student at a US college or university, and the ability to read and write English. Respondents were compensated \$1.

In total, 205 respondents completed the survey; however, some were excluded from the analyses—if they did not indicate the college or university they attended, or did not report a valid college name. Five attention checks were incorporated in the survey, requiring respondents to mark a certain answer on a given item (e.g., “*Mark strongly agree on this question*”). Respondents were excluded if they missed two or more of these attention checks. Thirty-one respondents were excluded for missing two or more attention checks, four were

excluded for failing to report a valid college or university, and seven were excluded for missing both the attention checks and the college question. One age outlier (age = 82) was also excluded from the analysis, as the target population was a typical college sample (i.e., 18–25 years; see Bavarian et al., 2013). The final exclusion rate was 20%, which is common with MTurk studies—the average rate of exclusion ranges from 3% to 40% (Berinsky, Margolis, & Sances, 2014; Chandler, Mueller, & Paolacci, 2014).

2.2. Procedure

After acceding to the MTurk survey offer, respondents were redirected to a link that opened an informed consent statement. Upon voluntary agreement to participate, respondents completed the survey and were debriefed.

2.3. Measures

Attitudes ($\alpha = .91$) were assessed with six 7-point semantic differential items (Osgood, 1952). This measure has been used by health researchers (Crano et al., 2007; Crano & Burgoon, 2002) and has been shown to have satisfactory levels of internal consistency. The endpoints of the scales were anchored with the following adjectives: *bad–good*, *dangerous–safe*, *ineffective–effective*, *useless–useful*, *problematic–okay*, and *scary–comforting*. A mean composite captured the final measure of attitudes, ranging from 1 (*unfavorable*) to 7 (*favorable*).

A 4-item measure assessed NUPS intentions ($\alpha = .84$), using 7-point Likert-type scales (*strongly disagree/strongly agree*). This measure was adapted from a prior marijuana intentions scale of high predictive validity for later use (Crano, Siegel, Alvaro, Lac, & Hemovich, 2008). Respondents were asked to indicate whether they disagreed or agreed with the following items: (1) If I had the opportunity now, I would use prescription stimulants nonmedically; (2) I will use prescription stimulants nonmedically, at least once or twice... (a) in the next 6 months; (b) in the next 12 months; (c) sometime in the future. A mean composite was computed for the final measure of intentions—lower scores represented fewer intentions to engage in NUPS.

A measure of subjective vested interest ($\alpha = .99$) was adapted using the stimulant medication outcome expectancy questionnaire's 8-item academic subscale (Labbe & Maisto, 2010), and the prescription stimulant expectancy questionnaire-II's 20-item cognitive enhancement sub-scale (Looby & Earleywine, 2010). The final 22-item scale was assessed on 7-point Likert-type scales (*strongly disagree/strongly agree*). Respondents were asked to take a moment to think of all the good and bad things they believed could happen when using prescription stimulants nonmedically. Then, holding these possibilities in mind, they were asked whether they considered it to be in their best interest to use prescription stimulants nonmedically for a number of reasons (see Table 2). A mean composite was computed to capture the final measure of vested interest—higher scores represented higher vested perceptions.

The NUPS was assessed by asking participants the following question: “Have you EVER, even once, taken any prescription stimulant that *was not prescribed for you, in a way other*

than prescribed, or only for the experience or feeling it caused?" This item was adapted from the National Survey on Drug Use and Health (NIDA, 2012a).

2.4. Analytic plan

An exploratory factor analysis (EFA), using principal axis factoring, with the direct oblimin (oblique) rotation, was conducted with 162 respondents to assess the underlying factor structure of the vested interest construct (Table 2).

Four-step hierarchical regression models (Table 4) assessed the study hypotheses. Models were tested for the full sample ($N = 162$) and a younger subsample, which more closely approximated the age of a typical college student (ages 19–29; $n = 129$). Descriptive analyses revealed that all statistical assumptions for regression were met. All predictor variables were mean centered prior to model entry to minimize problems of multicollinearity (Aiken, West, & Reno, 1991; Fig. 1).

Demographic covariates (past NUPS, age, gender, race) were entered into the model in Step 1. These demographic characteristics have been used as covariates in other studies on substance use (Skenderian, Siegel, Crano, Alvaro, & Lac, 2008) and in the domain of NUPS (Bavarian et al., 2013). Stimulant attitudes were included at Step 2, vested interest was added in Step 3, and the interaction of attitudes and vested interest was entered in Step 4. Interaction terms were computed by multiplying attitude by vested interest.

The graphing and interpretation of the interaction terms followed recommended procedures (Aiken, West, & Reno, 1991). Simple slopes were estimated and graphed, while controlling for all other variables in the model using the PROCESS macro for SPSS (Hayes, 2012). Predictors were standardized (Z-scored), and interaction terms were computed using standardized predictors. The attitude construct was graphed on the vested interest moderator at one standard deviation below the mean, at the mean, and one standard deviation above the mean. Simple slopes were evaluated for respondents at each level of vested interest (Dawson, 2014), estimating whether the predictive strength from attitudes to intentions significantly differed from a no relationship slope.

3. Results

The underlying factor structure of the vested interest construct was assessed (Table 2). A criterion of greater than .50 was used to define variables within the factor (Meyers, Gamst, & Guarino, 2006). No single item failed to load significantly onto the factor. Descriptive information on key measures is presented in Table 1. Associations between variables also were assessed correlationally (Table 3).

3.1. Multiple linear regression

The block of demographic covariates (Table 4) were statistically significant for the full sample (FS), $F(7, 154) = 7.75, p < .001$, and the younger subsample (YSS) as well, $F(7, 121) = 9.11, p < .001$, explaining respectively 26% and 35% of the variance in stimulant intentions. Past NUPS and age were significant in the model—respondents who reported

engaging in NUPS at least once in the past, and younger respondents, had higher intentions to engage in NUPS.

In Step 2, the overall model remained statistically significant, for both samples—FS, $F(8, 153) = 21.80, p < .001$; YSS, $F(8, 120) = 20.19, p < .001$. The main effect of attitudes (FS: $\beta = .72$; YSS: $\beta = .70$; both $p < .001$) also was statistically significant, accounting for an additional 27% and 23% of the variance in stimulant intentions. Participants holding more favorable attitudes toward the NUPS had greater intentions to engage in NUPS.

The overall model also remained statistically significant in Step 3, for the FS, $F(9, 152) = 24.19, p < .001$, and YSS, $F(9, 119) = 21.71, p < .001$. After adjusting for all variables in the model, vested interest was (FS: $\beta = .22$; YSS: $\beta = .21$; both $p < .001$) significantly associated with intentions—more vested participants reporting greater stimulant intentions. Vested interest explained an additional 6% and 5% of the remaining intentions variance.

The final model was statistically significant for the FS, $F(10, 151) = 31.51, p < .001$, and the YSS, $F(10, 118) = 23.59, p < .001$. After controlling for all model variables, the interaction of attitudes and vested interest explained an additional 9% and 5% of the variance, and the interaction term remained statistically significant in the final model (Table 4). The interaction indicated that vested interest moderated the relationship of attitudes on intentions. Results supported our hypotheses (Table 5)—they showed that attitudes were related with intentions for moderately and strongly vested respondents (both $p < .001$), but not for respondents with weak perceptions of vested interest (FS: $p = .90$; YSS: $p = .30$).¹

4. Discussion

NUPS is an escalating problem on college campuses (Bavarian et al., 2013). Attempts to understand and prevent NUPS traditionally have focused on changing attitudes associated with perceived harms and the incorrectly assumed cognitive enhancement benefits of use (Looby, De Young, & Earleywine, 2013). However, the predictive efficacy of attitudes has been questioned in the past, a common theme in social psychology. Vested interest has been shown to moderate the attitude-behavior relationship in numerous domains, but has not been applied in studies of NUPS. The goal of this study was to investigate vested interest in the NUPS context by assessing its moderating effect on the attitude-intention relation.

Results indicated that vested interest indeed moderated the attitude-intention relationship, suggesting that this construct may be useful in redirecting future preventive efforts involving NUPS. Attitudes were significantly linked with intentions, replicating past research on NUPS (Bavarian et al., 2013; Looby et al., 2014; Ponnet et al., 2015), and bolstering the apparent validity of our findings. Vested interest also was associated significantly with future intentions, supporting previous research in other areas of study (e.g., depression and organ donation; see Johnson et al., 2014; Siegel et al., 2008).

¹The same pattern of results and significance levels were achieved when including even those respondents who failed the manipulation checks. Subsample analyses for users and nonusers also were conducted, replicating the reported results.

Vested interest significantly moderated the relationship between attitudes and intentions, and thus, the association between attitudes and intentions was significantly amplified when vested interest was entered as a moderator of the relation. Attitudes were significantly linked with intentions for participants who indicated the issue was important and hedonically relevant. For participants who were not vested, attitudes were unrelated to intentions, suggesting when perceptions of vested interest are low, those with unfavorable attitudes are just as likely to engage in NUPS as those holding favorable ones. In contrast, moderately and highly vested participants holding favorable NUPS attitudes were significantly more likely to intend to engage in NUPS, and those with negative attitudes toward NUPS were significantly more likely to intend *not* to engage in NUPS. The moderating effect of vested interest on attitude-behavior consistency is similar to that found in earlier investigations of VIT (Johnson et al., 2014; Lehman & Crano, 2002; Sivacek & Crano, 1982), demonstrating the utility of vested interest and adding to the literature by indicating additional psychological factors that might enhance prediction of college students' NUPS intentions and, if past research holds, ultimate behavior.

This investigation may have useful implications for prevention efforts designed to curtail college students' NUPS. In the past, NUPS prevention campaigns (e.g., Looby et al., 2013) have focused on enhancing students' knowledge of harms, changing cognitive enhancement misconceptions, or decreasing normative usage perceptions. However, few of these campaigns have been empirically assessed, and those that have undergone empirical evaluation have failed to demonstrate strong and lasting effects. The intervention created by Looby and associates was designed to change expectancies related to the perceived harms and cognitive benefits of use. This effort was based on research that showed many students believed stimulants were harmless (Arria, Caldeira, Vincent, O'Grady, & Wish, 2008), and that they enhanced cognitive performance and increased concentration (Garnier-Dykstra, Caldeira, Vincent, O'Grady, & Arria, 2012). Although expectancies about cognitive enhancement were modified immediately following the intervention, effects did not persist over time and initiation of NUPS did not differ between experimental and control groups.

The current findings may offer insights for those involved in research on NUPS. Investigators might find it useful to go beyond expectations by focusing on whether NUPS is viewed by participants as being in their best interest. College students might believe that NUPS can increase academic achievement, and past research has been mounted to persuade them that this is not factually correct. This is a reasonable approach, but an alternative might involve first attacking the belief that NUPS is in their best interest, and then attempting to change any positive attitudes fostering the NUPS. The current results indicate that changing perceived vested interest from positive to negative might be sufficient to lower usage. Potential users (who hold positive attitudes toward NUPS) might be dissuaded from initiating use, and users might find it dissonant to continue usage given a change in perceived self-interest. Confirmed nonusers would be reinforced in their decision not to engage in NUPS—such an approach might have beneficial effects for users, at-risk nonusers, and resolute nonusers alike (Crano et al., 2008). Future research should be designed to assess the utility of manipulating vested interest to lower usage in the context of NUPS, and to other substances as well. As such, this research may open a range of applications for using vested interest theory to mitigate substance use.

Another positive feature of the investigation is the insight it provides into the measurement of vested interest. In many past studies, vested interest was based on socio-demographic features (e.g., age, sex, domicile). These measures served as proxies of the individual's subjective perceptions of vested interest. In the current study, a subjective rather than objective measure of vested interest was developed. The analyses suggest explicit measurement of respondents' perceptions of self-interest, rather than the researcher's inferences about their perceptions, provides more dependable information. Using a measure of objective respondent features, a proxy measure, has the potential to introduce bias that systematically lowers the predictive potential of the construct (Crano, 1997).

Current results should be considered in light of several limitations. Data were cross-sectional and correlational, so directional causal inferences cannot be concluded. Future studies should use RCTs or longitudinal designs for the purpose of making more certain directional inferences (Crano & Lac, 2012). The self-report measures of behavioral intentions and past usage also may represent a limitation, as substance misuse is illegal and can lead to arrests or stigmatization. However, researchers have argued that the validity concerns of underreporting substance use are minor and unlikely to influence study results (Cornelius, Leech, & Goldschmidt, 2004).

The Cronbach's alpha of the vested interest measure ($\alpha = .99$) may raise another concern, as it may indicate that these items were highly redundant (Ferketich, 1991). However, use of two previously validated scales strengthens the decision to include all 22-items in the final measure of vested interest. Also, behavioral intentions are not perfect indicators of future behavior. However, they do provide a strong proxy of future behavior, and have been shown to have strong predictive validity (Conner & Sparks, 2005; Orbeil et al., 1997). Future longitudinal studies should evaluate whether the current results replicate when assessing actual use rather than behavioral intentions, though prior research in other realms suggests (Johnson et al., 2014) a positive outcome of this research. The study's sample was comprised only of college students. However, as this population is highly susceptible to engage in NUPS, this restriction was justified. Future investigations might assess the predictive validity of attitudes and vested interest in other at-risk populations (e.g., adolescents).

5. Conclusion

Results provide initial evidence on the utility of vested interest in amplifying the predictive value of attitudes in the context of NUPS. The findings indicate that researchers might find it useful to focus on interventions concentrated on perceptions of vested interest in NUPS. The implications of the study suggest that VIT may be useful in future campaign development. A persuasive NUPS prevention campaign integrating vested interest into the persuasion mix would involve creating persuasive messages arguing that using prescription stimulants for nonmedical reasons is not in the target's self-interest, insofar as many of the benefits attributed to these substances are nonexistent or not authenticated, and the dangers of misuse are not fully appreciated. Future campaigns testing the utility of VIT in applied settings to maximize their overall preventive effectiveness are indicated by the current findings.

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HIGHLIGHTS

- Assessed the utility of vested interest theory for college student NUPS
- Vested interest moderated the relationship between attitudes and intentions.
- There was an attitude-intention link for moderately and highly vested students.
- Future campaigns might find it useful to manipulate vested interest to lower NUPS.

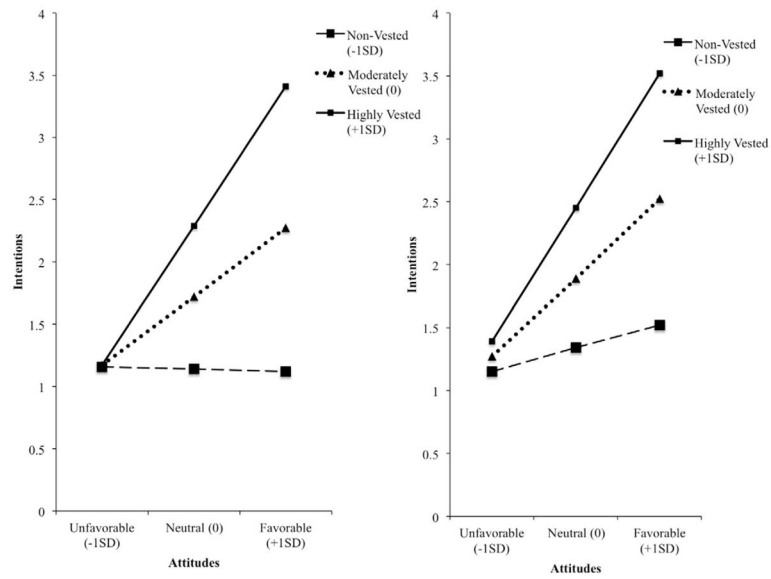


Fig. 1. Vested interest moderating the effect of attitudes on behavioral intentions. The figure on the *left* represents the full sample, ages 19–49 ($N = 162$). The figure on the *right* depicts the moderating effect for the younger subsample of respondents, ages 19–29 ($n = 129$).

Table 1

Descriptive statistics and measure summary information.

| | | 19–49 year old full sample (<i>N</i> = 162) | 19–29 year old subsample (<i>n</i> = 129) |
|-------------------------|------------------------|--|--|
| Gender | Male | 46.9% | 47.3% |
| | Female | 53.1% | 52.7% |
| Age | <i>M</i> | 25.24 | 22.99 |
| | <i>SD</i> | 5.98 | 2.73 |
| Race | White | 75.9% | 73.6% |
| | Black | 7.4% | 6.2% |
| | Hispanic | 7.4% | 8.5% |
| | Asian | 7.4% | 9.3% |
| | Other | 1.9% | 2.3% |
| College characteristics | Four-year | 76% | 79.1% |
| | Two-year | 22.4% | 19.4% |
| | Public | 80.6% | 77.5% |
| | Private | 19.4% | 22.5% |
| College location | Northeast region of US | 26% | 29.5% |
| | Midwest region of US | 21.4% | 20.2% |
| | Southern region of US | 30.1% | 30.2% |
| | Western region of US | 22.4% | 20.2% |
| NUPS | Yes | 34% | 32.6% |
| | No | 66% | 67.4% |
| Attitudes | <i>M</i> | 2.87 | 2.92 |
| | <i>SD</i> | 1.36 | 1.37 |
| | Favorable | 16.9% | 19.1% |
| | (+1SD) | | |
| | Neutral (0) | 78.7% | 75.5% |
| Intentions | Unfavorable (–1SD) | 4.4% | 5.5% |
| | <i>M</i> | 2.04 | 2.13 |
| | <i>SD</i> | 1.70 | 1.75 |
| Vested interest | <i>M</i> | 3.74 | 3.91 |
| | <i>SD</i> | 2.21 | 2.22 |
| | High (+1SD) | 25.3% | 28.7% |
| | Average (0) | 24.1% | 43.4% |
| | Low (–1SD) | 29.6% | 27.9% |

Table 2

Exploratory factor analysis—measure of subjective best self-interest—eigenvalues, explained variance, and factor loadings.

Please take a moment to think of *all the good and bad things* that you believe can happen when using prescription stimulants nonmedically. With all of the good and bad things in mind, would you consider it to be in your *best self-interest* to use prescription stimulants nonmedically for the following reasons?

It would be in my *best self-interest* to use prescription stimulants nonmedically to...

| | Factor 1 |
|--|----------|
| Eigenvalues | 19.46 |
| Explained variance (%) | 88.45 |
| Items | |
| ...allow me to be more focused on something. ₂ | .97 |
| ...help me concentrate better. ₂ | .97 |
| ...make my focus crystal clear. ₁ | .96 |
| ...help me pay attention really well. ₁ | .96 |
| ...help me learn/work very efficiently. ₁ | .96 |
| ...help my thoughts stay on track better. ₁ | .96 |
| ...help me get my work done more efficiently. ₂ | .96 |
| ...make my concentration excellent. ₁ | .95 |
| ...make distractions disappear. ₁ | .95 |
| ...help me absorb material the first time through. ₁ | .95 |
| ...make me more productive with my school work. ₂ | .95 |
| ...make my mind razor sharp. ₁ | .95 |
| ...make my memory better. ₁ | .94 |
| ...prevent my mind from wandering. ₁ | .93 |
| ...make me get less bored by my work. ₂ | .93 |
| ...help me ignore distractions more easily. ₁ | .93 |
| ...make me enjoy studying/working a lot more. ₁ | .93 |
| ...make my work seem more interesting. ₁ | .93 |
| ...make my thoughts follow more logically. ₁ | .92 |
| ...help me study/work for hours. ₁ | .92 |
| ...make me need fewer breaks when studying/working. ₁ | .90 |
| ...help me stay awake longer or all night. ₂ | .81 |

Note. Scale items denoted with ₁ were adapted from the prescription stimulant expectancy questionnaire-II's 20-item cognitive enhancement subscale (Looby & Earleywine, 2010). Items denoted with ₂ were adapted from the stimulant medication outcome expectancy questionnaire's 8-item academic subscale (Labbe & Maisto, 2010). Two items that did not reach a criterion greater than .50 (Meyers et al., 2006) in Looby and Earleywine's (2010) original scale validation ("I don't end up day dreaming" and "It's no trouble to sit still") were not included. Additionally, any items that were similar and thus redundant from the two scales were only included once.

Table 3

Correlation matrix for past NUPS, intentions, attitudes, and vested interest ($N = 162$).

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---------------------|--------|-------|---------|------|------|------|------|--------|--------|----|
| 1. Past NUPS | – | | | | | | | | | |
| 2. Age | .10 | – | | | | | | | | |
| 3. Gender | -.08 | .03 | – | | | | | | | |
| 4. Race: Black | -.05 | .10 | .08 | – | | | | | | |
| 5. Race: Hispanic | -.05 | .02 | -.07 | -.08 | – | | | | | |
| 6. Race: Asian | -.20* | -.16* | -.07 | -.08 | -.08 | – | | | | |
| 7. Race: Other | .10 | .01 | .13 | -.04 | -.04 | -.04 | – | | | |
| 8. Intentions | .46*** | -.08 | -.16* | .08 | -.01 | -.08 | .08 | – | | |
| 9. Attitudes | .36*** | -.05 | -.26*** | -.01 | -.02 | .04 | .04 | .68*** | – | |
| 10. Vested interest | .18** | -.12 | -.20* | .05 | .00 | .09 | -.01 | .58*** | .56*** | – |

Note. The reference group for gender is male; the reference group for race is white.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 4
 Hierarchical linear regression model of vested interest moderating the effect of attitudes on stimulant intentions using the full sample ($N = 162$) and 19–29 year old subsample ($n = 129$).

| Predictors | At step | | Final model | | | |
|-------------------------------|--|--|--|---------------------------|---|-----------|
| | R ² change | Model R ² | Model R | t | β | SE |
| Step 1: covariates | .26 ^{***} (.35 ^{***}) | .26 ^{***} (.35 ^{***}) | .51 ^{***} (.59 ^{***}) | | | |
| Past NUIPS | | | | 5.03 ^{**} (5.05) | .93 ^{***} (1.14 ^{***}) | .19 (.23) |
| Age | | | | -2.19 (-2.18) | -.03 [*] (-.08 [*]) | .01 (.04) |
| Gender | | | | .32 (1.1) | .05 (.02) | .17 (.20) |
| Race | | | | | | |
| Black | | | | 1.65 (1.79) | .51 (.70) | .31 (.39) |
| Hispanic | | | | -.69 (.34) | -.21 (.12) | .31 (.35) |
| Asian | | | | -1.02 (-.79) | -.32 (-.27) | .31 (.34) |
| Other | | | | -.07 (.33) | -.04 (.21) | .60 (.64) |
| Step 2: main effect | .27 ^{***} (.23 ^{***}) | .53 ^{***} (.57 ^{***}) | .73 ^{***} (.76 ^{***}) | | | |
| Attitudes | | | | 5.18 (4.72) | .40 ^{***} (.43 ^{***}) | .08 (.09) |
| Step 3: main effect | .06 ^{***} (.05 ^{***}) | .59 ^{***} (.62 ^{***}) | .77 ^{***} (.79 ^{***}) | | | |
| Vested interest | | | | 5.90 (4.70) | .26 ^{***} (.24 ^{***}) | .04 (.05) |
| Step 4: interaction | .09 ^{***} (.05 ^{***}) | .68 ^{***} (.67 ^{***}) | .82 ^{***} (.82 ^{***}) | | | |
| Attitudes and vested interest | | | | 6.40 (3.99) | .19 ^{***} (.15 ^{***}) | .03 (.04) |

Note. The reference group for gender is male; the reference group for race is white. Values for full sample ($N = 162$), including respondents ages 19–49 years are presented *without parentheses*. Values for the 19–29 year old subsample ($n = 129$) are presented *in parentheses*.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 5

Simple slopes for the interaction of vested interest and attitudes when predicting intentions.

| | 19–49 year old full sample (N = 162) | | 19–29 year old subsample (n = 129) | |
|-----------------------------|--------------------------------------|---------|------------------------------------|---------|
| | b | t (151) | b | t (118) |
| Vested interest perceptions | | | | |
| Low (–1SD) | –.01 | –.12 | .14 | 1.03 |
| Moderate (0) | .41* | 5.23*** | .46 | 5.09*** |
| High (+1SD) | .83** | 9.37*** | .78 | 7.13*** |

* $p < .05$.

** $p < .01$.

*** $p < .001$.