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Developing a Short-Form Measure to Predict Illicit Use of Prescription Stimulants

Joanna C. Hachtel

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Developing a short-form measure to predict illicit use of prescription stimulants

By

Joanna C. Hachtel

A Dissertation
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
in Psychology.
in the Department of Psychology.

Mississippi State, Mississippi

December 2018

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2018

Developing a short-form measure to predict illicit use of prescription stimulants

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Research relating to illicit use of prescription stimulants (IUPS) has, for the most part, focused on describing behaviors of IUPS. However, there have been few attempts to measure IUPS in a consistent manner or determine how to best predict IUPS in an effective and concise manner. Data from Mississippi State University undergraduates ($N = 703$) were analyzed to create two short-form measures to predict lifetime IUPS. The data-driven short-form consisted of 15 items and 5 factors, and accurately classified 74.8% of participants as users versus non-users. The hand-picked short-form consisted of 8 items and 5 factors, and accurately classified 84.6% of participants as users versus non-users. Results of this study can begin to provide information and possible tactics for briefly and quickly measuring risk for IUPS, particularly in applied settings, like university health centers or academic admissions. Future directions for research include testing these created short-form measures with longitudinal data collection, validating the measures on different populations, and determining if these measures can accurately predict specific behaviors related to IUPS (e.g., diversion, IUPS within certain time frames).

DEDICATION

This project would not have been possible without the unwavering support received from my parents, who instilled in me a passion for learning that made graduate school not just possible, but a remarkable experience. Thanks also goes to my mentor, Dr. Kevin Armstrong, my cohort members, and my committee members, for consistent encouragement and help along this journey

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CHAPTER I INTRODUCTION

Illicit Use

Illicit use of prescription stimulants (IUPS) is a behavior that is frequent on college campuses, comes with a number of risks, and has been measured in a variety of ways. IUPS is typically conceptualized as any kind of misuse of prescription stimulant medications, which include medications typically used to treat symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD). These medications include Adderall, Ritalin, and Strattera, among other brands and medication formulations (National Institute on Drug Abuse [NIDA], 2014). Although prescription stimulant medication is prescribed as a treatment for ADHD and other disorders, including narcolepsy, it has the potential for abuse and use for nonmedical purposes. There are many risks related to IUPS, including negative health outcomes, legal consequences, and possible academic and social implications.

IUPS has been defined in different ways in the literature, including “illicit use,” “nonmedical use,” and “recreational use” (Benotsch, Koester, Luckman, Martin, & Cejka, 2011; Judson & Langdon, 2009; Sharp & Rosen, 2007). Some studies have defined this behavior as either consuming someone else’s prescription stimulant medication, misusing one’s own medication, or even combining with other substances, although other studies have focused solely on consuming someone else’s medication.

Prevalence Rates

Studies of IUPS have focused mostly on college campuses, as this behavior seem to be particularly common among college students, perhaps due to the academic connotations of stimulant medications. There have been steady increases over the past decade in reported IUPS by college students, with lifetime prevalence rates increasing from 8.1% to 12.7% and past year prevalence rates increasing from 5.4% to 9.3% (McCabe, West, Teter, & Boyd, 2014). In a 2013 review of the literature, Weyandt and colleagues found that most studies in the literature were reporting prevalence rates ranging from 5% to 35%. A meta-analysis conducted by Benson and colleagues (2015) found an estimated prevalence of around 17%.

There are a number of reasons for the wide range of reported prevalence rates for IUPS. Some reported prevalence rates result from studies of regional universities, whereas other reported prevalence rates result from larger, nationwide samples, such as Monitoring the Future (MTF; Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2015). Prevalence rates may be affected by different regional samples, with colleges in the northeast having higher prevalence rates (McCabe, Knight, Teter, & Wechsler, 2005). Further, prevalence rates have been found to be higher at colleges with more competitive admission standards (McCabe et al., 2005).

One major limitation in understanding the reported prevalence rates in the literature is that prevalence rates will vary based on the time frame utilized. For example, prevalence rates will likely be much higher if participants are asked if they have *ever* engaged in a behavior. This lifetime prevalence may not be as useful in predicting current behaviors as more recent use. Unfortunately, lifetime prevalence is more frequently measured in the

literature, with one review showing almost half of articles reporting lifetime prevalence (Hachtel & Armstrong, 2016). Further, the weighted prevalence rates of more recent time frames are much lower than lifetime prevalence rates, with one review showing a lifetime prevalence rate of taking someone else's prescription stimulant medication of 14.0%, a past year prevalence rate of 7.0%, and a six-month prevalence rate of 4.1% (Hachtel & Armstrong, 2016).

Correlates of IUPS

Many studies have attempted to determine certain factors that are highly related to different kinds of IUPS. Certain demographic factors have been shown to be related to IUPS, including race, gender, and collegiate class standing (McCabe, Teter, & Boyd, 2006). The most frequently cited demographic factor related to IUPS is Greek affiliation, with members of Greek organizations being more likely to engage in multiple kinds of IUPS (DeSantis, Anthony, & Cohen, 2013; Kilmer, Geisner, Gasser, & Lindgren, 2015; McCabe et al., 2005; McCabe et al., 2006). Other factors shown to be related to IUPS are previous licit and illicit drug use (Jardin, Looby, & Earleywine, 2011), disinhibition and conduct problems (Van Eck, Markle, & Flory, 2012), knowledge about stimulant medications and the possible side effects (Bavarian, Flay, Ketcham, & Smit, 2013), and positive attitudes and expectancies regarding stimulant medication (Bavarian et al., 2013). Energy drink consumption has also been shown to be related to IUPS (Arria et al., 2010). Additionally, one's perception of the harmfulness of engaging in IUPS has been shown to be a risk factor for engaging in IUPS (Arria et al., 2008b). Although there are a few studies that have looked at risk factors specifically for recent IUPS (i.e., use within the past year or during college; Arria et al., 2008b; Arria et al., 2010; Bavarian et al.,

2013; McCabe et al., 2005; McCabe et al., 2006), many studies look only at correlates related to lifetime IUPS. Further, although there are numerous factors that seem to be related to IUPS, theoretical models and measures should attempt to take into account the numerous examples of empirical evidence regarding different correlates of IUPS, as some of these factors could play a causal role in IUPS.

Risks of IUPS

There are a number of negative risks and consequences related to IUPS, particularly when such medications are taken in excess or too often. Prescription stimulant medications have become increasingly prescribed and available since the 1990's (Kaye & Darke, 2012). This means that there are increasing amounts of prescription stimulant medications circulating, and thus, more available for illicit consumption.

Health Risks

In 2013, the Substance Abuse and Mental Health Services Administration (SAMHSA) published a report showing an increase in emergency department visits related to illicit use of stimulants, including prescription stimulant medications. The number of visits quadrupled between 2005 and 2011, suggesting a steady increase in negative health consequences related to illicit use of different kinds of stimulants (SAMHSA, 2013). Even with prescribed use of prescription stimulant medications, there are a number of possible negative side effects, including sleep disturbance, appetite suppression, and cardiac events (National Institute of Mental Health, 2012). Further,

there are different side effects depending on how the medication is ingested, including hallucinations, seizure, and stroke (NIDA, 2011).

Academic Risks

There are also a number of academic risks related to IUPS. The effect of prescription stimulant medications on those without ADHD is not always positive (Barch & Carter, 2005; Lakhan & Kirchgessner, 2012), and IUPS can be related to poor academic outcomes, including skipping class and studying less (Arria, O'Grady, Caldeira, Vincent, & Wish, 2008). Further, many universities have begun to include language to codes of conduct barring any unauthorized or improper assistance, which could include IUPS (Gardner, 2011). Also, many universities are changing the requirements for obtaining prescription stimulant medications at university health centers, including requiring a signed no-misuse contract, a full-hour check-up each month, completing a full and thorough assessment, and learning specific coping skills related to symptoms of ADHD (Schwarz, 2013). College administrators are hoping to decrease the ease of availability of prescription stimulant medications for students who may engage in any kind of IUPS (Schwarz, 2013).

Legal Risks

Although not frequently considered, there are a number of legal risks related to engaging in IUPS. Prescription stimulant medications are considered Schedule II substances, which means they are intended to be highly regulated due to the high potential for abuse (United States Drug Enforcement Administration, n.d.). As with other kinds of prescription medications, possession without a prescription or distribution of

prescription stimulant medications can result in serious legal consequences, including fines or even prison sentences.

However, although the aforementioned legal risks are a possibility, many college campuses focus instead on the more prevalent issues of other drug use, specifically including risky drinking behaviors, which has entire organizations focused on prevention programs solely related to drinking behaviors (National Institute on Alcohol Abuse and Alcoholism, n.d.). This is corroborated by students' willingness to discuss engaging in IUPS with researchers (DeSantis & Hane, 2010) and even on social media (Hanson et al., 2013).

Social Risks

Further, social risks related to engaging in IUPS have not been frequently discussed in the literature. Most discussions of social risk have related to how IUPS is often perceived to be an ethical and socially acceptable behavior (Judson & Langdon, 2009).

Disapproval ratings for engaging in IUPS have recently decreased among emerging adults. Monitoring the Future, an ongoing nationwide study looking at different kinds of substance use among high school and college students (MTF; Johnston et al., 2015), asks about participants' disapproval of different kinds of licit and illicit drug use. In 2011, the questionnaire was updated to include use of Adderall and Ritalin under a broader category of amphetamine use, decreasing the focus on illicit amphetamines. In 2014, for participants ages 19 to 22, 73.6% reported disapproving of trying amphetamines (e.g., Adderall, Ritalin, speed, or uppers) once or twice. This was a 10.0% decrease from 2013, showing a significant decline in disapproval among this age group.

For comparison, the disapproval rates for other behaviors include 64.7% for drinking five or more alcoholic drinks during the weekend, 71.3% for smoking marijuana regularly, and 80.6% for smoking a pack or more of cigarettes per day. Although the disapproval ratings for using amphetamines regularly is still high (92.8%), the decrease in disapproval for trying amphetamines once or twice suggests that emerging adults are increasingly approving of experimenting with prescription medications like Adderall or Ritalin.

One further limitation of this finding is the inclusion of street names of amphetamines. The MTF study did not separate out Adderall and Ritalin (i.e., types of prescription stimulant medication) from “speed” and “uppers” (i.e., street names for amphetamines). Thus, it seems plausible that disapproval for only IUPS may be lower than for illicit street drugs. Street names may imply more recreational intent, whereas college students may conceptualize the use of Adderall or Ritalin as more commonly used for academic purposes, particularly as improving academics is the most commonly reported motivation for IUPS (Hartung et al., 2013; Rabiner et al., 2009).

Theoretical Explanations of IUPS

One recent goal of the literature in this area is to better understand the different reasons why college students may be engaging in this behavior. There are a number of theories that address why people engage in prescription drug abuse.

Strain Theory

One theoretical explanation for IUPS draws on Strain Theory. Although Strain Theory has not typically been used as a theory to explain illicit drug use, it fits particularly well with the concept of IUPS. Strain Theory, initially proposed and revised

by Agnew (1992) but later utilized by Ford and Schroeder (2009) to explain IUPS, discusses three possible sources of strain. The first possible source of strain is when one does not achieve a desired goal. For college students, this would likely relate to lack of academic success (e.g., failing a class, getting a poor grade on an assignment). The second possible source of strain is when one loses some kind of positive stimulus. For college students, this would likely relate to loss of something, such as scholarship funding or poor grades. The third possible source of strain is when one gains an unwanted stimulus. For college students, this could relate to poor interactions with other students or faculty, or as Ford and Schroeder suggest, even poor grades. However, it appears that Strain Theory may not be the best or most parsimonious explanation for IUPS, as Ford and Schroeder (2009) found that, although academics may have some connection to IUPS, academic strain did not directly impact IUPS, but was rather mediated by reports of negative affect.

Theory of Planned Behavior

One of the more frequently used theories to explain health behaviors is the Theory of Planned Behavior (TPB). The TPB has been used to explain different kinds of risky or negative health behaviors, including illicit drug use. In previous studies of TPB and illicit drug use (including use of cannabis and ecstasy), attitudes strongly predict intentions of use, and intentions strongly predict actual use (McMillan & Conner, 2003). When studying illicit drug use, people often report experiencing peer pressure in relation to using, but TPB's subjective norms tend to be the least influential than attitudes or perceived behavioral control.

Judson and Langdon (2009) used TPB as a guiding theory in their study looking specifically at IUPS. They focused on student perceptions of IUPS (determining if students thought that IUPS was safe and ethical), perceptions of others' perceptions, and the assumption that stimulant medication would help control behavior. The study found that illicit users shared attitudes and normative beliefs about IUPS. Although the TPB is useful in connecting perceptions of use with actual behaviors, the theory itself does not necessarily separate different kinds of perceptions, including perceptions of benefits or risks.

Health Belief Model

The Health Belief Model (HBM) has been used to try to explain and predict behavior, specifically related to health behaviors. The HBM has four main concepts: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers (Janz & Becker, 1984). Perceived susceptibility relates to one's perceptions of the risks related to side effects and the likelihood of the side effects occurring. Perceived severity relates to the perception of the seriousness of the side effects. Perceived benefits and perceived barriers relate to the idea of a cost-benefit analysis in relation to deciding whether to engage in a behavior, as there are both benefits (at least perceived benefits, including possible academic success, appetite suppression, being able to better focus) and barriers (cost, accessibility, possibility of negative side effects) related to engaging in IUPS (Janz & Becker, 1984). Although the HBM has been used to explain different kinds of risky health behaviors, including safe sex behaviors like HIV prevention and carrying condoms, it has not been extensively used in the field related to illicit drug use, let alone IUPS.

The HBM fits well with attempting to explain IUPS. College students have lower perceived susceptibility and lower perceived severity related to the risks related to IUPS, specifically low perceived harmfulness and low expectations of possible risks related to IUPS (Arria et al., 2008b). Although research has shown that IUPS has fewer benefits than most think, college students likely perceive stimulant medication to be helpful in improving academics, which is the most commonly reported motivation for IUPS. Lastly, the perceived barriers to IUPS are not insurmountable or even daunting. The availability of prescription stimulant medications on college campuses has increased greatly since the 1990's (Kaye & Darke, 2012) and the street price for most stimulant medications is under \$10 (Partnership for Drug-Free Kids, 2015). Thus, although the HBM has not been used directly to attempt to explain IUPS, it is a promising theory for a concise yet thorough explanation of why college students may engage in IUPS.

Theory of Triadic Influence

The theory most directly related to this project is the Theory of Triadic Influence (TTI). The TTI has been used in the past to explain risk and protective factors of alcohol and tobacco use among youths (Flay, Phil, Hu, & Richardson, 1998; Flay, 1999), but more recently has been used to delve into different factors related to IUPS (Bavarian et al., 2013). The TTI is a more comprehensive theory that covers a number of possible influences (Flay, Snyder, & Petraitis, 2009). The TTI includes three streams of influence, including intrapersonal, social context, and sociocultural environment. The intrapersonal stream of influence includes one's characteristics that relate to self-efficacy; examples of this include self-esteem and self-regulation. The social context stream of influence includes one's social situation that may affect how one behaves or one's beliefs about

behaviors; examples of this include parenting styles and one's normative beliefs. The sociocultural environment stream of influence includes larger environmental factors that affect behavior; examples of this include culture and socioeconomic status. Further, the TTI includes three levels of causation, including ultimate, distal, and proximal (Flay et al., 2009). The ultimate level refers to more longstanding and underlying causes, like culture or neighborhood poverty. The distal level refers to causes that may be mediated through other variables, whereas the proximal level refers to causes that have a more direct effect on behavior.

Although the TTI is a useful and comprehensive theory that provides valuable information for conceptualizing IUPS, the extensive nature of the TTI (i.e., the nine possible combinations of streams of influence and levels of causation needing to be represented) likely requires any use of this theory to include a comprehensive and long list of questions and variables. This may not be of use for all clinical or research purposes, or for determining the best predictors of IUPS.

Benefits of the HBM

A more appropriate theory to use for the purposes of this project is the Health Belief Model. Although the HBM has not been used regarding IUPS, it may provide the framework for a more parsimonious explanation of IUPS, with specific focus on perceived susceptibility and perceived benefits. However, one aspect of the TTI which will likely be helpful in specifically predicting IUPS will be the concept of levels of causation, as defined by the TTI, particularly looking at distal and proximal level predictors. Distal and proximal predictors are often discussed in terms of relation to an individual (Lammler, Woll, Mensink, & Bos, 2013); the biopsychosocial model defines

distal predictors as being more related to one's environment and other individuals (e.g., normative societal beliefs of IUPS or availability based on location or university). Proximal predictors are typically more closely related to the individual (e.g., risk perception, past drug use). However, different constructs can be measured on multiple levels of proximity (e.g., risk perception as measured by one's own beliefs (proximal) or their knowledge of a friend experiencing some negative outcome (proximal) versus an individual knowing someone at another school who experienced a negative outcome (distal). Thus, attempts to best understand IUPS may be best served by using a combination of the HBM and TTI.

Previous Measurement of IUPS

IUPS has been measured frequently in the literature, but there have been few attempts at a standardized form of measuring IUPS.

Stimulant Survey Questionnaire

One of the earlier attempts at a standard questionnaire measuring IUPS was the Stimulant Survey Questionnaire (SSQ; Weyandt et al., 2009). The SSQ was created as a measure of both medical and non-medical use and related constructs, such as attitudes about stimulants and knowledge about stimulants on campuses. The SSQ includes many items measuring motivations, asking participants about specific motivations. The SSQ consists of four factors: (1) self-reported stimulant use, (2) perception of prevalence among peers, (3) knowledge of atypical stimulant use among peers, and (4) perception of safety of stimulants. The four factors in total accounted for roughly 51% of the variance.

The SSQ covers many constructs to be measured in relation to IUPS (e.g., route of administration, motivations, perceived harm, perception of availability, etc.), but lacks specificity in measuring constructs other than motivation. Specifically, the SSQ lacks specificity in terms of measuring specific thoughts related to use (e.g., the type of risk involved) and specific behaviors of use (i.e., misuse, consumption, diversion). The only psychometrics available for the questionnaire were the internal consistency ratings for the entire questionnaire and then for each of the factors. Overall, the Cronbach's alpha for the questionnaire was .849, with the internal consistency for each factor as follows: Factor 1 at .923, Factor 2 at .434, Factor 3 at .613, and Factor 4 at .608.

National Survey on Drug Use and Health

Another frequently cited questionnaire is the National Survey on Drug Use and Health (NSDUH) series of surveys (Center for Behavioral Health Statistics and Quality, 2015). The NSDUH questionnaires involve a nationwide study of individuals 12 years and older. The questionnaire uses an interview format, and has numerous questions about many different kinds of drugs, one of which being prescription stimulant medications. However, the NSDUH questionnaire asks participants to report if they have ever used stimulants for the experience or feeling it causes, and does not differentiate between prescription stimulant medications and illicit stimulants (e.g., methamphetamine). Further, the NSDUH questionnaire does not go beyond the scope of prevalence, duration, and frequency, and thus does not gather information regarding perceptions or motivations regarding prescription stimulant medications.

College Life Study

Another attempt to study IUPS is the College Life Study (CLS), conducted through the University of Maryland. The CLS is a longitudinal, prospective study of a large cohort of college students. The study included an initial screening of first-year students and has included follow-up measures and interviews with this select cohort. The study asked about a broad range of topics, including types of illicit drug use, social functioning, and mental health. The questions used by the CLS relating to IUPS were modeled after questions adapted from NSDUH.

The CLS has resulted in a number of individual studies looking at different correlates of IUPS. IUPS was shown to be associated with energy drink usage later in college (Arria et al., 2010), with symptoms of ADHD (Arria et al., 2011), with lower grade point averages (Arria et al., 2008c), with other kinds of illicit drug use (Arria et al., 2008a), and with previous alcohol and marijuana use (Arria et al., 2013). Further, low perceived harmfulness of IUPS was shown to be a significant predictor of IUPS using a logistic regression model (Arria et al., 2008b). Although the CLS has resulted in a number of useful findings regarding IUPS, it is not a comprehensive measure of different possible predictors of IUPS.

BEACH-Q

The most comprehensive measure of IUPS to date is the Behaviors, Expectancies, Attitudes and College Health Questionnaire (BEACH-Q). The BEACH-Q was developed by Bavarian and colleagues (2013) in an attempt to best detail and predict “prescription stimulant misuse.” The process of development of the BEACH-Q had five separate development stages, including review of the instrument by college students and health

professionals, as well as pilot testing and a complete campus study (Bavarian et al., 2013). The survey was developed using the Theory of Triadic Influence (TTI), discussed earlier, in an attempt to cover multiple aspects of possible influences.

Included in the intrapersonal stream of influence were items related to demographic factors, ADHD diagnosis, and factors related to academics, as well as items related to participants' avoidance self-efficacy in relation to avoiding misuse of prescription stimulant medications. The social context stream of influence included items related more to the participant's social environment, including extracurricular activities on campus and relationships. The sociocultural environment stream of influence included items related to the perceived culture on the campus, as well as expectations regarding prescription stimulant medications.

Throughout the development of the BEACH-Q, the psychometric properties of the measure were determined in various ways. The BEACH-Q demonstrated good content validity, indicating that health professionals reported that items seemed to match content with their concept of what was being asked, with the median scores being between "agree" and "strongly agree." Face validity was similarly measured, but with college students instead of health professionals, and all items were considered by the college students to be face valid and "straightforward." Finally, internal consistency reliability was determined to be moderate to high (above .50), with some covariates being higher than others, and stability reliability was determined to be modest to high (above .30), again depending on the covariate. The BEACH-Q was revised and presented in Bavarian et al., 2014, with updated reliability information. Internal consistency reliability for the constructs including multiple items in the revised BEACH-Q was higher than in

the original BEACH-Q, with the lowest reliabilities at 0.64 (study habits) and 0.66 (sensation seeking). The rest of the constructs had reliability of 0.79 or better.

The limitations of the BEACH-Q discussed in the initial article (Bavarian et al., 2013) consisted mostly of the possibility of useful items being excluded, specifically related to diversion of prescription stimulant medications.

The BEACH-Q has thus far been the most comprehensive attempt to determine the greatest predictors of IUPS. However, although the BEACH-Q is highly comprehensive, there are factors that are excluded from the BEACH-Q but have been shown in other studies to have possible predictive value.

The main part missing from the BEACH-Q is the inclusion of more variety for perceived harm of IUPS. Perceived harmfulness has been shown to be predictive in terms of IUPS, with lower perceived harmfulness being related to IUPS (Arria et al., 2008b). Although the original BEACH-Q includes one item regarding the possible harm of prescription stimulant medication, it does not specifically ask about the potential harm of IUPS, and only asks whether participants believe that prescription stimulants are “harmful to the body.” This item was left out of the revised version of the BEACH-Q. The literature in the area has focused on a global definition of risk or harm, with studies asking about an overall harmfulness (Arria et al., 2008b). However, this may not represent the full picture of how participants perceive risk. If separated into different domains (i.e., legal, health, and social risk), participants may report different perceptions of different kinds of risk. Specifically, participants with greater knowledge of negative health side effects are not less likely to engage in IUPS (Bavarian et al., 2013). However, there may be a different effect for types of harm other than “to the body.” Further, there

are some gender differences in perceptions of risk (Hachtel, 2015). In sum, looking at an overall perception of risk or harm may not tap into the variation or different facets of risk or harm.

Although the risks related to IUPS are well-known, college students' perceptions of those risks are not frequently studied, or, if studied, are studied in limited ways. In terms of knowledge of health risks, Judson and Langdon (2009) found that participants who reported IUPS had more knowledge of the possible negative side effects of stimulant medications. Illicit users are also more likely not to consider IUPS a socially risky or socially unacceptable behavior (Judson & Langdon, 2009). Further, believing that others are socially accepting of IUPS and engage in it themselves is also a risk factor for engaging in IUPS (Kilmer et al., 2015). Beyond overall beliefs regarding IUPS, college students have fewer negative beliefs about IUPS when relating to using prescription stimulant medications as study aids when compared to other motives, like recreational uses or appetite suppression (Lookatch, Moore, & Katz, 2014).

Although many of the theories used to explain IUPS, including the HBM and TTI, provide opportunity to include risk perception as part of a theory-driven explanation of IUPS, there has been a lack of research relating to detailed risk perception in the literature. The TTI provides a framework for asking about multiple different kinds of risk through the different streams of influence (e.g., asking about social risk through the social context stream of influence by discussing normative beliefs), but there were no specific risk questions asked in the revised BEACH-Q. Further, the HBM fundamentally includes a discussion of risk perception (i.e., perceived susceptibility); however, there have not been studies specifically using the HBM to attempt to explain IUPS.

Another limitation of the BEACH-Q is based on timeframes included in analyses. The items in the BEACH-Q ask specifically about different kinds of IUPS during college. Although using a shorter timeframe than lifetime prevalence may be a more accurate portrayal of recent behavior and would likely be more helpful in informing prevention or intervention programs, “during your time in college” can mean vastly different time frames for students depending on their year in school (i.e., for freshmen, this likely means no more than one year, whereas for seniors, this can cover anywhere between past month and past four years).

One final concern regarding the BEACH-Q is that it has 100 items and is thus not efficient for completing quickly. If a briefer but still psychometrically valid measure of IUPS could be developed, it seems reasonable to speculate that a wider variety of uses for such a measure could be found.

The Current Study

Thus, the current study aimed to build on the work of Bavarian and colleagues to create a brief yet comprehensive measure to best predict IUPS. The project’s research questions were as follows:

1. How will the BEACH-Q function with this project’s sample in comparison to the sample from Bavarian et al., 2014?
 - a. How much variance of IUPS will the BEACH-Q explain for our sample?
 - i. Hypothesis: The BEACH-Q will explain a similar amount of variance for our sample when compared to the initial variance explained by Bavarian and colleagues (2014).
 - b. How much variance will the new items explain for our sample?

- i. Hypothesis: The new measure items will explain a similar amount of variance when compared to the variance explained by the BEACH-Q.
2. How can we create a short-form measure that effectively and concisely explains IUPS?
 - a. Will there be particular items or constructs that are especially helpful in explaining variance?
 - b. How will a created short-form measure compare to the original BEACH-Q explanation of variance?

CHAPTER II

METHOD

Participants

Research in this field mostly revolves around the study of college students, particularly because this behavior is so prevalent on college campuses. This study continued this trend and used college students as participants in assisting with the development of this measure. Participants were recruited through the Psychology Research Pool (PRP) at Mississippi State University.

A power analysis was conducted using G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) for analyses related to the short-form measure (i.e., logistic regression). The suggested sample size was 337. Additional participants were added because of the rate of prevalence for consumption (24.1% reported prevalence in an MSU sample previously, so 81 participants added; Hachtel, 2015) and further participants were added to account for possible dropout or invalid responses (20% added, so 83 participants added). The number of participants recruited through the PRP was 501. This sample size was sufficient for the initial analyses conducted to determine variance (i.e., exploratory factor analyses), as one review reported roughly 40% of articles using factor analyses using a subject to item ratio of 5:1 or less (Costello & Osborne, 2005). With this sample size and the number of proposed items for the analyses, the subject to item ratio would be roughly 2.5:1.

Exclusionary criteria initially included advertising the survey to participants over the age of 18 years old and under 25 years old to decrease the chances of losing anonymity. Further, most of the literature in this field includes only individuals between the ages of 18 and 25. However, Bavarian and colleagues did not exclude participants based on age, and thus, analyses were run for this study including all participants who validly completed the survey. This meant including the 2 participants who reported ages over 25 even though the study specifically solicited people between the ages of 18 and 25.

Initially, there were 1,438 responses to the survey. Although the power analysis suggested recruiting a minimum of 501 participants, more data were collected for the purpose of running further analyses in future projects. Of 1,438 responses, 31 were discarded due to participants completing 20 percent or less of items in the measure, not including items left out due to branching. This left 1,407 participants. Finally, the data set was split in half to reserve data for future analyses. Thus, the final analyzed sample consisted of 703 participants.

The sample consisted of 267 men (38.0%) and 426 women (60.6%), with 10 participants (1.4%) missing a response. Most participants identified as White or Caucasian (490, 69.7%), with 163 (23.2%) participants identifying as Black or African American and 42 participants (6.0%) identifying as another race (e.g., Asian, Hispanic, multiracial, etc.). The mean age of the sample was 18.84, with a standard deviation of 1.35. The breakdown of class standing of participants was as follows: 521 (74.1%) freshmen, 74 (10.5%) sophomores, 46 (6.5%) juniors, 52 (7.4%) seniors, and 1 (0.1%)

unclassified or graduate. Lastly, our sample had a large proportion of participants identifying as Greek-affiliated (256, 36.4%).

Procedure

Participants accessed the survey through the Psychology Research Pool (PRP) through Mississippi State University. The PRP is used to help recruit students for research projects. Through this program, students complete studies for either class credit or extra credit opportunities. For a questionnaire with a median response time of 23 minutes, participants received 0.5 credits upon submission of the questionnaire.

Participants accessed the survey through the PRP website, where they had multiple options for possible studies to take or alternative activities to complete. Upon selection of this questionnaire, participants were redirected to the Qualtrics platform, where they read an informed consent document. As the study took place online, signed consent forms were not collected, and participants were considered consenting if they selected that they agreed to participate and continued with the study. Participants were informed that they could drop out of the study at any time if desired.

Participants first completed the BEACH-Q measure. Then, participants completed the additional questions added, as discussed below. There were certain items overlapped, including demographic items and intentions of IUPS, to make it possible to use each measure (i.e., separating the BEACH-Q and the second measure) completely independently.

Measure Creation

This measure was created as an attempt to best predict IUPS among college students. The literature of the field was reviewed and predictors included in the literature are reviewed below. For complete questionnaire, please see Appendix A.

IUPS

As discussed previously, IUPS has been defined in a number of ways, including breaking down specific behaviors (e.g., consumption, misuse, diversion) and using an umbrella term (e.g., IUPS to describe all three of the behaviors). Due to the debate of how to define different kinds of IUPS, this project asked participants about specific behaviors (e.g., have you ever consumed someone else's prescription stimulant medication (whether you had a prescription of your own or not)) and then those items were labeled to reflect the specific labels (e.g., consumption). This also made it clear which behaviors were being included with which terms.

Participants were asked about a number of behaviors during a number of time frames. Branching was used through Qualtrics to prevent participants having to answer questions in a redundant manner. Specifically, if a participant answered "no" to ever engaging in the behavior during their lifetime, they were redirected to the next set of questions, rather than having to answer "no" for the behavior in each time frame. The time frames included during their lifetime, during college, in the past year, and the past month. Participants were also asked how frequently they had engaged in the behavior during each time frame.

The specific behaviors of IUPS that were measured are as follows: misuse, consumption, and diversion. Misuse was measured by asking participants if they had

taken a larger or more frequent dose than prescribed; only participants with current or past prescriptions were asked if they have misused their prescription. Consumption was measured by asking participants if they had consumed someone else's prescription stimulant medication (whether they had a prescription of their own or not); all participants were asked to answer questions about consumption. Finally, diversion was measured by asking participants if they had sold, shared, or traded prescription stimulant medication; participants did not need to have a current or past prescription to respond to items related to diversion. Although these specific behaviors were measured, they were also combined into a variable of overall lifetime IUPS, indicating that participants had endorsed any of the previously mentioned behaviors.

ADHD Symptoms

To measure symptoms of ADHD, the Adult ADHD Self-Report Scale (ASRS) was included. Although the BEACH-Q includes three symptoms of inattention and three symptoms of hyperactivity/impulsivity, the ASRS was included because of its ability to function either as a continuous or categorical measure, enhancing possible analyses. In an adolescent sample, the ASRS showed high internal consistency ($\alpha = 0.93$) and high concurrent validity (Adler et al., 2012). Further, the ASRS has shown utility in identifying college students who may benefit from assessment of ADHD symptoms (Garnier-Dykstra, Pinchevsky, Caldeira, Vincent, & Arria, 2010). ADHD symptoms were measured as two sets of variables: one continuous variable of the total ASRS score (ranging from 0 to 72) and two categorical variables of whether the participant meets the cut-off score for significant inattention or hyperactive symptoms.

Risk Perception

As mentioned in the introduction, perceived harmfulness has been shown to be related to IUPS. Participants with lower perceived harmfulness of engaging in IUPS were roughly 10 times as likely to have engaged in IUPS in the previous year (Arria et al., 2008b). However, one of the limitations of that study is the general definition of perceived harmfulness. The items asked included vague terminology about harm, providing “physically or in other ways” as the only prompt. However, there is utility in breaking down the perception of risk or harm related to IUPS into different areas of risk. Specifically, social risk perception is rated lower than legal or health risk perception, and those who have engaged in consuming someone else’s prescription stimulant medication report lower risk perceptions than those who have not engaged in IUPS (Hachtel, 2015).

Further, the little previous research has focused solely on self-report of perceptions of risk. However, based on the theories discussed previously, proximal characteristics and behavioral markers can be most helpful in predicting behavior. Thus, the developed measure included questions about knowledge of others’ outcomes related to risk (e.g., “Do you know someone personally who has gotten into legal trouble due to illicit use?”) and questions about changes in behavior because of risk perception (e.g., Have you ever stopped or reduced illicit use of stimulant medication because of possible legal trouble?). Questions were included for legal, health, and social risk, as well as items related to possible academic consequences.

Risk perception scores were measured as a continuous variable, ranging from a score of 1 (not risky at all) to 4 (very risk), so that lower scores represented lower perceived risk. Separate questions were asked for legal risk, health risk, and social risk,

and those risk questions were asked regarding misuse of one's own prescription stimulant medication (i.e., taking a larger or more frequent dose), consuming someone else's prescription stimulant medication, and diverting (i.e., sharing, selling, or trading) prescription stimulant medication.

Further, to attempt to include both proximal and distal predictors of risk perception, participants were asked about their experience with and knowledge of negative outcomes of engaging in IUPS. These questions were further broken down into negative legal, academic, health, and social outcomes. Participants were asked if they know someone personally who has experienced a negative outcome, if they know someone at their own school who has experienced a negative outcome, and if they know someone at another school who has experienced a negative outcome. These were measured as a categorical variable, with participants responding "yes" or "no."

Intentions of IUPS

In the creation of the BEACH-Q, Bavarian and colleagues (2013) adapted an item from previous surveys to determine participants' intentions of engaging in IUPS. The original item in the BEACH-Q inquired about intentions of engaging in prescription stimulant misuse during college, and the item was adapted for this questionnaire to fit with the definitions of terms used. Participants were asked how likely it is that they will engage in IUPS (defined in the item as consumption, or consuming without a prescription) while in college, with response options ranging from 1 (very unlikely) to 4 (very likely).

The original items in the BEACH-Q were also presented during the BEACH-Q portion of the survey. The BEACH-Q includes three items scored from 1 (definitely

won't) to 5 (definitely will) and asks participants how likely it is that they will use stimulants without a prescription, for nonmedical purposes, and in excess of what may be prescribed to them. The original items were presented along with the new item to determine if responses were consistent in different parts of the measure and to determine if one item could be as predictive as the three items originally included in the BEACH-Q.

Sensation Seeking

Although not predictive in nature, sensation seeking has been shown to be related to IUPS (Jardin, Looby, & Earleywine, 2011). Jardin, Looby, and Earleywine (2011) used the Sensation Seeking Scale (SSS-V), a 40-item measure with high internal consistency (.91). However, for the sake of developing this questionnaire and with length in mind, a shorter measure was used to ensure that the questionnaire was not unnecessarily long. Rather than the 40-item measure, the Impulsive-Sensation Seeking (ImpSS) subscale of the Zuckerman-Kuhlman Personality Questionnaire cross-cultural short form (ZKPQ-50-CC) was substituted. The ZKPQ-50-CC is a revised version of the original and short-form ZKPQ and has been validated across a number of cultures and languages (Aluja et al., 2006). The ZKPQ-50-CC has similar psychometric properties as the original ZKPQ. Specifically, the subscale used in this measure, the ImpSS, has a mean score of 6.00 ($SD = 2.55$) and adequate internal consistency reliability ($\alpha = 0.72$) for participants from the United States.

Positive Expectancies

To measure expectancies of what will occur during or after IUPS, the Prescription Stimulant Expectancy Questionnaire-II was included. The PSEQ-II was developed to

measure different expectations of prescription stimulant medications, including both positive expectations (e.g., I can study/work for hours, distractions disappear) and negative expectations (e.g., I feel sick to my stomach, I get nervous and edgy). The PSEQ-II includes 45 items scored on a scale with response options including 0 (not at all), 1 (sometimes), and 3 (very often or always). The positive expectancies included two factors, Cognitive Enhancement ($\alpha = 0.95$) and Social Enhancement ($\alpha = 0.87$), and the negative expectancies included two factors, Anxiety and Arousal ($\alpha = 0.89$) and Guilt and Dependence ($\alpha = 0.77$) (Looby & Earleywine, 2010). During the factor analysis conducted to determine the factor loadings, the total variance explained by the four factors was 48.97%. The Cognitive Enhancement factor was significantly positively correlated with IUPS in the past month, whereas the Anxiety and Arousal factor and the Guilt and Dependence factor were significantly negatively correlated with IUPS in the past month. The variables included in analyses were the continuous variable of positive expectancies and the continuous variable of negative expectancies.

History of Other Drug Use

Although not always discussed as predictive, history of other drug use and illicit drug use has been shown to be related to IUPS (Jardin, Looby, & Earleywine, 2011). Further, use of other substances, particularly energy drinks, has been associated with IUPS (Arria et al., 2010). As energy drinks and other substances containing stimulants (e.g., nicotine products, coffee, etc.) could be used to gain similar outcomes as taking a stimulant medication (e.g., improving focus, staying awake), we were interested to see if conceptualizing drug or substance use as a coping mechanism could help predict IUPS.

Participants were asked if they have used the following substances: energy drinks, nicotine (e.g., cigarettes, chewing tobacco, vaping), alcohol, marijuana, cocaine, amphetamines (e.g., speed, uppers, bennies), hallucinogens (e.g., LSD, PCP, salvia, ketamine, etc.), prescription opiates (e.g., OxyContin, Percocet, Vicodin) without a prescription, and prescription sedatives (e.g., tranquilizers or depressants) without a prescription. Similar to how IUPS was measured, participants were asked if they have ever used each substance, whether they have used in the past year, and whether they have used in the past month, depending on their responses (e.g., a participant who answered that they have never tried marijuana were not asked if they have used marijuana in the past year or past month).

Knowledge of Others' Use

Hall and colleagues (2005) ran analyses to determine what factors could be predictors for IUPS for men and women. They found that, for men, knowing where to acquire prescription stimulant medication was predictive of IUPS and, for women, have prescription stimulant medication offered to them was predictive of IUPS. These two items, along with other select items included in the Hall et al., 2005, article, including perception of accessibility of prescription stimulant medications knowledge of others' use, were included in the measure. Questions regarding knowledge of others' use were scored on a Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Motivation and Benefit Perception

Judson and Langdon (2009) asked participants to endorse specific motives for engaging in IUPS, including helping with concentration, staying awake, and getting high.

Participants who reported engaging in IUPS were more likely to endorse a higher number of motives when compared to participants who reported never engaging in IUPS. Thus, a list of possible motivations was included and the total sum of each participant's endorsed motivations was used as a continuous predictor variable. Further, as the motivations item were only answered by those who reported engaging in consumption of someone else's prescription stimulant medication, there were also questions assessing the possible usefulness of prescription stimulant medication (getting at benefit perception by both users and nonusers), that were answered by all participants.

The benefit perception questions were scored on a scale from 1 (always useful) to 5 (never useful). Benefit perception items covered the same constructs as the motivation items (e.g., controlling appetite, enhancing exercise, to help concentrate) but included more variability in responses (continuous rather than categorical).

Statistical Strategy

Statistical analyses were completed using IBM SPSS Version 24.0 (IBM, 2016). Descriptive statistics were run to determine the demographic characteristics of the sample collected, including specifically reporting demographic characteristics to match what was reported in Bavarian et al., 2014 (i.e., race, gender, age, and class standing). Other demographic characteristics of importance not included in Bavarian et al., 2014, include Greek affiliation, ADHD diagnosis, and prescription holding. Further, as IUPS was conceptualized as a combination of consumption and misuse in Bavarian's article, chi-square analyses were conducted to determine if there are significant differences between the groups of illicit users (as defined by engaging in consumption and/or misuse, per Bavarian's article) and consumers (as defined only by taking someone else's prescription

stimulant medication) to determine if IUPS can be comparably used as an outcome variable (i.e., it is not significantly different than consumption). Although the measurement of IUPS was similar, Bavarian and colleagues utilized a different time frame (during college) and did not measure lifetime IUPS. Thus, for the analyses presented below, it was specifically stated which outcome variable (e.g., IUPS during college versus IUPS during lifetime) was used for each analysis.

To determine if the BEACH-Q and new measure perform similarly on our sample, we ran an exploratory factor analysis for both the BEACH-Q and the new measure to determine how much variance of IUPS is explained by each total measure. Further, to determine what items would go into a short-form measure, the factor loadings of the new measure were reviewed to determine which factors were most effective in explaining the most variance in IUPS, or if specific items would be particularly effective.

Once the short-form measure was selected from the available factors and items, it was compared to the BEACH-Q and total new measure using a forced binary logistic regression (the analysis used by Bavarian and colleagues) to determine how the short-form measure performed when compared to the BEACH-Q and the total new measure.

Predictor variables for these analyses included the following: prescription holding, ASRS screening status, other drug use, knowledge of others' use, accessibility, being offered stimulant medication, class standing, gender, Greek affiliation, race, GPA, risk perception, positive expectancies, negative expectancies, number of motivations endorsed, benefit perception, intentions of IUPS, and sensation seeking.

CHAPTER III

RESULTS

Data Cleaning

Before running analyses, specific items were recoded to aid in creating a total sum score for the BEACH-Q and sum scores for constructs on the new measure. Specific items on the BEACH-Q and new measure were recoded so that higher scores on the total sum score would theoretically represent higher risk for engaging in IUPS. For example, items asking about the perceived usefulness of stimulant medication were initially coded using a Likert scale (1 to 5) with lower scores indicating higher perceived usefulness (i.e., “always useful”), and were recoded so that higher scores indicated higher perceived usefulness.

Descriptive Statistics

As one of the aims of this study was to compare the utility of the BEACH-Q from Bavarian and colleagues’ original work, demographics of the current sample were reviewed to determine if the demographic makeup was similar or different to Bavarian’s. The final analyzed sample consisted of mostly White or Caucasian (69.7%), mostly women (60.6%), mostly freshmen (74.1%), with approximately 36 percent reporting Greek affiliation.

These demographics differ greatly from the demographics of the sample used in Bavarian et al., 2013. That sample had a more equal gender breakdown (55.2% women)

and had more participants identifying as White or Caucasian (79.0%), Asian/Pacific Islander (8.2%), and Hispanic (5.2%). Further, Bavarian's sample was more distributed throughout class standing, with only 12.4% of the sample reporting that they were in their first year of undergraduate. Lastly, Bavarian and colleagues did not report the breakdown of Greek affiliation of their sample, though that may not have been a relevant statistic for their university. Overall, there were considerable differences in demographics between the two samples.

Hypothesis 1a

A logistic regression was performed to determine the effectiveness of the complete BEACH-Q measure, including demographics items, on determining the likelihood of participants ever having engaged in IUPS. Predictor variables included in the logistic regression were constructs as defined by Bavarian and colleagues, with demographics also included; however, four items were not included in the logistic regression, because they were the items used to create the dependent variable of IUPS. Higher scores on the sum of the BEACH-Q items were associated with higher risk for lifetime IUPS. The model was significant ($\chi^2(92) = 522.355, p < .001$), explained 73.3% (Nagelkerke R^2) of variance of IUPS, and correctly classified 91.6% of cases. A logistic regression was also run for the outcome variable of IUPS during college, to match the analyses run in Bavarian et al., 2013. However, the logistic regression analysis continued to abort due to issues with convergence criteria. Thus, this analysis was run with the predictor variables including a sum total of the BEACH-Q, along with unadded items and demographics. The model was significant ($\chi^2(39) = 380.756, p < .001$), explained 67.3%

(Nagelkerke R^2) of variance of IUPS during college, and correctly classified 92.3% of cases. Given that the logistic regression with the outcome variable of IUPS during college required using the sum total BEACH-Q score, the logistic regression with the outcome of lifetime IUPS described above was rerun to use the sum total BEACH-Q score rather than the individual constructs. The model was still significant ($\chi^2(39) = 255.106, p < .001$), but only explained 42.5% (Nagelkerke R^2) of variance of IUPS compared to the original 73.3%, and correctly classified 80.1% of cases, compared to the original 91.6%. Given this decrease in effectiveness of the model when using the sum total BEACH-Q score, it is possible that the utility of the measure is not appropriately captured with the presented analyses.

Further, the analysis in Bavarian et al., 2013, was run on the original BEACH-Q. The revised BEACH-Q was not utilized until Bavarian et al., 2014, and the analysis was a regular linear regression predicting IUPS frequency. Bavarian and colleagues (2014) used SEM to determine an R^2 for the outcome variable of IUPS frequency with the updated BEACH-Q. With the SEM results, Bavarian and colleagues found an R^2 of 0.46, indicating that 46% of the variance was explained.

To best compare the variance explained by the model, a regression was conducted with the BEACH-Q constructs and demographics as the predictor variables and IUPS frequency as the outcome variable. For this analysis, the R^2 was .789, indicating that 78.9% of the variance of IUPS frequency was explained, which is much larger compared to the original variance explained with Bavarian and colleagues' original sample.

Table 1

BEACH-Q Means and Standard Deviations

	Mean	Std. Dev.	Minimum	Maximum
Overall	166.17	35.93	92	295
Men	167.89	35.96	92	295
Women	164.50	35.72	103	290

Hypothesis 1b

A logistic regression was performed to determine the effects of the new measure items, including demographics items, on the likelihood of participants ever having engaged in IUPS. This analysis included all items and constructs included in the initial stages of the new measure other than items asking about detailed IUPS behaviors (i.e., 148 items). The model was significant ($\chi^2(28) = 755.490, p < .001$), explained 92.9% (Nagelkerke R^2) of variance of IUPS, and correctly classified 97.4% of cases.

Hypothesis 2

The main goal of this project was to take the large amount of new measure items and decrease them into a brief, efficient short-form measure. The initial attempt to run the EFA analysis on all 199 items resulted in a factor structure, but the determinant value (5.26E-092) provided within the correlation matrix suggested that multicollinearity within the data may be an issue. To help decrease the amount of items and decrease multicollinearity, factor scores below 0.7 were suppressed and removed in subsequent analyses, and the eigenvalue cut-off for factors was increased from one to two. Removing items with factor loadings below 0.7 removed a total of 98 items, leaving 101 items still with high multicollinearity. Next, the correlation matrix provided in the EFA analysis

was used to identify pairs of items that were highly correlated. These pairs were analyzed to determine which item in each pair would be most appropriate to delete, using factor loadings (i.e., the item with a lower factor loading was deleted, and if the factor loadings were approximately the same, the decisions were based on evidence in the literature). Seventeen items were deleted for being correlated above 0.9, 20 items were deleted for being correlated above 0.8, 17 items were deleted for being correlated above 0.7, and 26 items were deleted for being correlated above 0.6. Multicollinearity was checked at each stage, and the determinant was an appropriate value (.003) after items correlated above 0.6 had been removed. However, after removing the highly correlated items, the items did not appear to be loading well onto the factors being forced. Thus, the eigenvalue cutoff was dropped back down to one and factor scores were not suppressed in an effort to provide the items more flexibility in factor structure. The resulting analysis showed a six factor structure, but with six items loading poorly (0.5 or below) onto factors. The final analysis consisted of 15 items loading onto five factors, and explained 69.92% of variance. For items included in the data-driven EFA, please see Appendix B.

Table 2

Data-Driven Short-Form Means and Standard Deviations

	Mean	Std. Dev.	Minimum	Maximum
Overall	32.42	5.82	17	49
Men	32.33	5.83	17	48
Women	32.46	5.86	19	49

Factor Structure of the Data-Driven Short-Form

The final data-driven EFA resulted in five factors. Factor 1 was labeled “ADHD Symptomology” and included the following items originally from the ASRS:

- “How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?”
- “How often do you make careless mistakes when you have to work on a boring or difficult project?”
- “How often do you have difficulty getting things in order when you have to do a task that requires organization?”
- “How often do you have difficulty unwinding and relaxing when you have time to yourself?”
- “How often do you have difficulty waiting your turn in situations when turn taking is required?”

Factor 2 was labeled “Knowledge of Others’ Negative Consequences” and included the following items:

- “Have you heard of someone at your school who has experienced a negative health event due to illicit use?”
- “Have you heard of someone at your school who has gotten into legal trouble due to illicit use?”
- “Have you heard of someone at your school who has experienced social rejection due to illicit use?”
- “Have you heard of someone at another school (not the school you attend) who has gotten into academic trouble due to illicit use?”

Factor 3 was labeled “Risk Perception of IUPS” and included the following items:

- “How much of a legal risk is posed by consuming someone else’s prescription stimulant medication?”

- “How much of a health risk is posed by diverting prescription stimulant medication?”

Factor 4 was labeled “Negative Expectancies of Prescription Stimulants” and included the following items:

- “My heart races”
- “I feel sick to my stomach.”

Lastly, Factor 5 was labeled “Perceived Availability of Stimulant Medication” and included the following items:

- “Stimulants are as easy to get as alcohol”

“I know students on campus who take stimulants for nonmedical purposes.”

Table 3

Factor Structure of the Data-Driven Short-Form

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Explained variance (%)	23.91	15.95	11.78	10.27	8.01
α	.851	.812	.721	.724	.745
Items					
How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?	.818				
How often do you make careless mistakes when you have to work on a boring or difficult project?	.794				
How often do you have difficulty getting things in order when you have to do a task that requires organization?	.791				
How often do you have difficulty unwinding and relaxing when you have time to yourself?	.779				

Table 3 (continued)

How often do you have difficulty waiting your turn in situations when turn taking is required?	.773				
Have you heard of someone at your school who has experienced a negative health event due to illicit use?		.828			
Have you heard of someone at your school who has gotten into legal trouble due to illicit use?		.807			
Have you heard of someone at your school who has experienced social rejection due to illicit use?		.783			
Have you heard of someone at another school (not the school you attend) who has gotten into academic trouble due to illicit use?		.778			
How much of a legal risk is posed by consuming someone else's prescription stimulant medication?			.887		
How much of a health risk is posed by diverting prescription stimulant medication?			.879		
My heart races.				.883	
I feel sick to my stomach.				.880	
Stimulants are as easy to get as alcohol.					.910
I know students on campus who take stimulants for nonmedical purposes.					.865

Logistic Regression With the Data-Driven Short-Form

A logistic regression was run to determine how well the data-driven short-form measure would predict IUPS. The predictor variables included the factor scores created for each factor, and the outcome variable was IUPS. The model was significant ($\chi^2(5) = 114.623, p < .001$), explained 21.0% (Nagelkerke R^2) of variance of IUPS, and correctly classified 74.8% of cases.

Hand-Picked Short-Form

Although the data-driven EFA yielded a brief measure with good predictive ability, it included multiple items relating to the same construct (e.g., five items relating to ADHD symptomology, four items relating to knowledge of others' negative consequences, etc.) and did not include constructs shown to be critical in previous literature (e.g., IUPS intentions, stimulus-seeking, etc.). Thus, in addition to the data-driven EFA, a hand-picked measure was also created to determine if a briefer, more pointed measure would better predict IUPS. The constructs desired for the hand-picked short form included previous diagnosis, risk perception (Arria et al., 2008b; Hachtel, 2015), other drug use (Arria et al., 2010; Jardin et al., 2011), IUPS intentions (Bavarian et al., 2013), impulsivity/sensation-seeking (Jardin et al., 2011), gender (McCabe et al., 2006), and Greek affiliation (DeSantis et al., 2013; Kilmer et al., 2015; McCabe et al., 2006).

To create the hand-picked short form, items relating to the above constructs were entered into a logistic regression analysis with IUPS as the dependent variable. The creation of this measure began with 31 items. The 31-item measure model was significant ($\chi^2(36) = 310.618, p < .001$), with 54.1% of variance explained (Nagelkerke R^2) and a classification percentage of 84.7%. However, as the primary goal of this project was to determine a more concise way to predict IUPS, items were removed to create a shorter measure. After the initial logistic regression analysis was run, items not significantly contributing to the model (as determined by the "Variables in the Equation" section of the output) were removed for the next analysis, with the exception of gender and Greek affiliation, as these items are consistently included in analyses in the literature. This left

the hand-picked measure with eight items (see Appendix C for the final hand-picked short form). The 8-item measure model was significant ($\chi^2(10) = 304.806, p < .001$), with 50.7% of variance explained (Nagelkerke R^2) and a classification percentage of 84.6%.

Table 4

Hand-Picked Short-Form Means and Standard Deviations

	Mean	Std. Dev.	Minimum	Maximum
Overall	3.99	1.84	2	12
Men	4.14	1.81	2	11
Women	3.90	1.86	2	12

Factor Structure of the Hand-Picked Short-Form

An exploratory factor analysis was run on the 8-item hand-picked measure to determine if a valuable factor structure would emerge from the hand-picked items. With a cut-off eigenvalue of one, three factors emerged; however, the three factors only explained approximately 53% of variance. Thus, the analysis was rerun with the items forced into five factors. The five factor model explained 75.29% of the variance.

Factor 1 was labeled “Other Drug Use” and included the following items:

- “Have you ever tried prescription sedatives (e.g., tranquilizers or depressants; including Xanax, Valium, Ativan, Ambien, sleeping pills, yellow jackets) without a prescription?”
- “Have you ever tried marijuana?”

Factor 2 was labeled “Gender” and included only the following item:

- “What is your gender?”

Factor 3 was labeled “ADHD and Greek Affiliation” and included the following items:

- “Have you ever been diagnosed with ADHD (Attention-Deficit/Hyperactivity Disorder) or ADD (Attention Deficit Disorder)?”
- “What is your Greek affiliation?”

Factor 4 was labeled “Impulsivity/Sensation-Seeking” and included only the following item:

- “I often get so carried away by new and exciting things and ideas that I never think of possible complications.”

Factor 5 was labeled “Perceptions and Likelihood of IUPS” and included the following items:

- “How much of a health risk is posed by consuming someone else’s prescription stimulant medication?”

“How likely is it that you will engage in illicit use of prescription stimulant medication (i.e., using someone else’s prescription stimulant medication) while in college?”

Table 5

Factor Structure of the Hand-Picked Short-Form

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Explained variance (%)	23.33	15.14	14.23	11.58	11.01
Items					
Have you ever tried prescription sedatives (e.g., tranquilizers or depressants; including Xanax, Valium, Ativan, Ambien, sleeping pills, yellow jackets) without a prescription?	.805				
Have you ever tried marijuana?	.783				
What is your gender?		.894			
Have you ever been diagnosed with ADHD (Attention-Deficit/Hyperactivity Disorder) or ADD (Attention Deficit Disorder)?			.876		
What is your Greek affiliation?			.580		
I often get so carried away by new and exciting things and ideas that I never think of possible complications.				.981	
How much of a health risk is posed by consuming someone else's prescription stimulant medication?					-.849
How likely is it that you will engage in illicit use of prescription stimulant medication (i.e., using someone else's prescription stimulant medication) while in college?					-.651

Logistic Regression With Factor Scores

A subsequent logistic regression analysis was completed using the factor scores from the hand-picked short-form, rather than the total sum, for better comparison to the analysis conducted with the data-driven short-form. The model was significant ($\chi^2(5) = 281.318, p < .001$), with 46.6% of variance explained (Nagelkerke R^2) and a classification percentage of 82.3%.

Comparison to BEACH-Q

Although the data-driven short form and hand-picked short form explained less variance of IUPS than the BEACH-Q (21.0% and 46.6% versus 74.4%) and had a lower classification percentage (74.8% and 82.3% versus 91.9%), the BEACH-Q is a lengthy measure of 100 items and covers multiple constructs possibly unrelated to IUPS. Thus, each short-form measure can operate as a brief screening measure with only slightly lower accuracy than the BEACH-Q.

Table 6

Correlation Matrix of Measures

	BEACH-Q	DDSF	HPSF with Demo.
BEACH-Q	-	.583	.709
DDSF	.583	-	.452
HPSF.	.709	.452	-

Post-hoc Analyses

Validity

Pearson correlations were conducted between theoretically related constructs to determine the convergent validity of constructs measured. There was a significant positive correlation between the new measure of inattention and the BEACH-Q measure of inattention, $r = .535, p < .001$, suggesting that participants responded in similar ways to the two constructs. There was a significant positive correlation between the new measure of hyperactivity and the BEACH-Q measure of hyperactivity, $r = .465, p < .001$. There was a significant positive correlation between the new measure items' total ASRS score and the BEACH-Q measure of ADHD-Like symptoms, $r = .560, p < .001$. There

was a significant positive correlation between the added items' measure of impulsivity and sensation-seeking and the BEACH-Q measure of sensation-seeking, $r = .519, p < .001$. There was a significant positive correlation between the new items' and BEACH-Q measure of positive expectancies of IUPS, $r = .479, p < .001$. There was a significant positive correlation between the new items' and BEACH-Q measure of negative expectancies of IUPS, $r = .368, p < .001$.

Reliability

There were some inconsistencies in how participants reported their race or ethnicity. For the item in the new measure, the options given for race included: White or Caucasian, Black or African American, Asian, Hispanic, Pacific Islander, other, or prefer not to say. In the BEACH-Q, the options given for race included: White non-Hispanic (includes Middle Eastern); Black non-Hispanic; Hispanic or Latino/a; Asian or Pacific Islander; South Asian; American Indian, Alaskan Native, or Native Hawaiian; biracial or multiracial; and other. It appears that participants may have chosen to identify themselves in the new measure by the race they felt was the best fit, rather than choosing "other" or "prefer not to say," whereas in the BEACH-Q, they were provided with more detailed and thorough options.

There were also inconsistencies in how participants reported their class standing. For the item in the new measure, participants were asked to report their class standing and were given the following options: freshman (first semester), freshman (other than first semester), sophomore, junior, senior, and unclassified or graduate. In the BEACH-Q, participants were asked to report their year in school and were given the following options: 1st year undergraduate, 2nd year undergraduate, 3rd year undergraduate, 4th year

undergraduate, 5th year or more undergraduate, graduate student, and other. It is likely that there were some participants who could answer in different ways depending on their classification. It is possible that some participants may be labeled with a class standing due to credit hours but have been on campus or in college a different number of years than expected for traditional class standings.

CHAPTER IV

DISCUSSION

Major Hypotheses

Although IUPS has been a considerable focus of research in the field of prescription misuse among college students, there is a lack of consistent and concise measurement in the field. The main goals of this project were to identify critical constructs that would best aid in predicting IUPS and identify the most concise form to maximize predictive capability while minimizing measure length.

Hypothesis 1

The BEACH-Q is a thorough and comprehensive measure of multiple proximal and distal constructs relating to IUPS. However, the utility of the BEACH-Q is limited due to the length of the measure and complex nature of the constructs involved. The BEACH-Q successfully and effectively explained a great amount of variance of IUPS and was able to classify a vast majority of participants correctly as users versus non-users. Further, the BEACH-Q actually performed better with the current sample in explaining variance of frequency of IUPS than the original analyses run by Bavarian and colleagues, although this comparison cannot be accurately made without considering the differences in measurement and sample. As stated previously, the demographics of the current sample were different than the sample used by Bavarian and colleagues. Further, the type of analysis is not a perfect comparison; Bavarian and colleagues ran logistic

regression analyses with the original BEACH-Q and ran SEM analyses with the updated BEACH-Q. Thus, comparisons from the current analyses and the analyses originally run with both versions of the BEACH-Q have possible confounding factors. Overall, the BEACH-Q appears to be a valuable measure with multiple important constructs relating to IUPS and other issues that may be important for college students. However, although the BEACH-Q was not specifically created to be a brief screening measure and should not be expected to perform as such, the measure would not work as a brief screening measure.

Hypothesis 2

After determining the effectiveness of the BEACH-Q in predicting IUPS, the new measure was then examined more closely in an attempt to create a brief but comprehensive predictive measure of IUPS. Two separate types of short-form measures were created: a data-driven short-form resulting solely from the results of an exploratory factor analysis and a hand-picked short-form that better represented the constructs commonly discussed in the literature. One of the main issues with items included in the new measure was multicollinearity. A large proportion of the items included were correlated highly (i.e., above 0.6), and thus were not necessary in the factor analysis. Although using this method to delete items removed a large portion of the measure, this method allowed the constructs to remain and have overlapping items removed, quickly decreasing the number of items included. The final factor structure for the data-driven short-form included many important constructs often cited in the literature, including negative expectancies of prescription stimulants, ADHD symptomology, and perceived availability of stimulant medication. Also, this short-form included items related to risk

perception of IUPS (including legal and health risk of different IUPS behaviors), which previous measures have not included in as much detail.

However, although the data-driven short-form had strong predictive value in a brief measure, there were some constructs that went unrepresented, including other drug use and impulsivity/sensation-seeking. Thus, an alternative short-form measure was created to better represent constructs in the literature. This process began by identifying relevant constructs (e.g., impulsive/sensation-seeking, risk perception, other drug use, ADHD symptomology, etc.), and then reducing the number of items relating to those constructs to create a short-form measure. Although the final iteration of the hand-picked short-form also left out certain theoretically important constructs (e.g., ADHD symptomology, risk perception), the final constructs included were retained because they were the most predictive of IUPS.

Post-hoc Analyses

Limited reliability analyses were conducted based on availability of items and constructs for such analyses. One indication of reliability is that there were modest correlations across related constructs on the BEACH-Q and the new measure. One explanation for the modest correlations is that the constructs were not more highly related due to being composed of different types of items. For example, the BEACH-Q items regarding inattention are highly related to paying attention in class or in academic settings (e.g., paying attention in class, keeping assignments organized), whereas the new measure items regarding inattention are broader in scope (e.g., remembering appointments, finishing details of a project, keeping attention during repetitive work).

Although these constructs likely overlap, the relationship between the two measurements may not be as strong as if the items were closer in content.

Another challenge in determining reliability between the new measure and the BEACH-Q was due to the difference in operationalization of key variables. For example, even slightly different wording in questions regarding race/ethnicity or class standing resulted in some participants choosing different responses for each item. This was also present for the items asking about likelihood of IUPS during college. This item was originally presented in the BEACH-Q, and then was adapted for the new measure to match terminology used elsewhere in the project (e.g., asking about likelihood of “illicit use of prescription stimulant medication” rather than likelihood of using “for nonmedical purposes” or “without a prescription from a healthcare provider”). Although overall the responses were consistent across questions and some difference in responding could be a result of expected measurement error for an internet survey, it is also possible that conceptualizing IUPS in different ways depending on the terminology could change the way participants think about IUPS while answering questions.

Literature and Theory Discussion

Although the literature surrounding IUPS among college students is vast and thorough, there have been few attempts to create measures relating specifically to IUPS. A number of larger or national surveys (e.g., Monitoring the Future, College Life Study) have included questions relating to IUPS, but the measurement of IUPS is not the main use of those measures. Other measures have been created in relation to IUPS, but have either been long and complex (i.e., the BEACH-Q) or have been lacking important details relating to IUPS (i.e., the SSQ).

The HBM has been used as a theoretical guide to measure many different health behaviors, and would likely be helpful in framing IUPS. Specifically, the data-driven short-form included a number of concepts that relate well with the HBM, including knowledge of others' use or consequences, expectations of IUPS, and risk perception of IUPS. This may be particularly useful, as the important factor relating to HBM is the perceived benefits of IUPS, rather than the actual benefits. These concepts may be useful when analyzing the cost-benefit analysis that may be undertaken by college students when deciding to engage in IUPS, in that the expectations of IUPS need to outweigh the perceptions of risk. Further, this cost-benefit analysis includes a consideration of the obstacles that stand in the way of engaging in IUPS. For most students, obstacles to engaging in IUPS are limited or non-existent, given that stimulant medications are often easily available on campus and IUPS is a relatively prevalent behavior among college students.

Limitations

Although the BEACH-Q was used as the “gold standard” for this project, there were a number of barriers preventing appropriate comparisons between the BEACH-Q and these newly formed measures. First, although the BEACH-Q is a comprehensive, theory-driven measure that has resulted in a number of publications, the specifics of how to operationalize the constructs represented is unclear. As discussed previously, the logistic regression analysis used to gather an R^2 value for the BEACH-Q was completed by creating a total subscale scores for the most relevant BEACH-Q constructs (with certain constructs included in the logistic regression separately due to lack of additive clarity). Although these variables were created to represent the constructs in Bavarian and

colleagues' research as closely as possible, there were certain subscales that were up to interpretation of how to create or define. Further, the demographic makeup of the sample from Bavarian's research was considerably different than the current sample. This is to be expected, as the research was conducted in different areas of the country and different types of universities. However, this limits even further the ability to make appropriate comparisons between the results found by Bavarian and the results from the current study.

Both a strength and limitation of this project is the specificity of the measures used to predict IUPS. By limiting the scope of the intended predicted variable (i.e. predicting only IUPS), the measures created were able to be more concise and more directed at predicting IUPS. This is likely helpful for using measures to predict IUPS in other research projects or in applied settings (e.g., doctors' offices, student health centers, Greek organizations, etc.). However, the result of brief but predictive measures is also that they may not predict other illicit behaviors, including other types of substance use, other risky behaviors, or IUPS in different time frames.

Another limitation of this project is the lack of ability to run certain reliability and validity analyses. Specifically, items were not included so that divergent validity could be assessed. Further validation of these measures is needed, with specific focus on test-retest reliability and divergent validity.

Lastly, this project was conducted during one semester, and is thus a cross-sectional analysis of IUPS. This is a common limitation within the literature, and presents difficulty with making claims of predictive ability. Future studies should attempt to study

IUPS in a prospective fashion, particularly if the goal is to determine the predictive ability of a measure.

Future Directions and Recommendations

This project was intended to be a first step in the larger goal of creating a concise, efficient measure to best predict IUPS in a college setting. Thus, much work is left to be done with improving the psychometric properties of these measures and determining the effectiveness of these measures on other populations.

Predictive Validity

One specific future direction is to further validate the short-form measures created in this project. A first step in continuing validation efforts could be running a confirmatory factor analysis of the data-driven short-form on a new sample of undergraduate students. Determining predictive validity could also be accomplished by using the created measures in a prospective study of IUPS by college students. Although the logistic regression analyses used in this project allow for participants to be classified into users versus non-users, the classification rates are using cross-sectional data. It would likely be more beneficial to see how well these constructs predict IUPS at a later time. This information would assist in creating intervention programs for universities in an attempt to reduce the prevalence of IUPS on college campuses. For example, if health risk perception was shown to be particularly predictive of future IUPS, universities could require incoming students to complete a psychoeducational program to increase perceptions of health risk related to IUPS. A prospective study could also include

analyses for test-retest reliability, to determine which constructs are stable over time and which constructs may shift or need to be reassessed.

Divergent Validity

Another needed future direction is a project to help determine the divergent validity of the short-form measures created in this project. Although convergent validity was assessed in this project, it was not possible to assess divergent validity with the measures used in this study. Further projects using either of the short-form measures should be also used to confirm that the measures have adequate divergent validity. This was not possible in this project, due to all of the constructs measured being theoretically related to IUPS in some way. Thus, the next project should include other theoretically unrelated constructs (e.g., psychosis, depression).

Other Uses for Short-Form Measures

Another possible future direction could be developing a measure to predict specific IUPS behaviors (i.e., misuse, consumption, and diversion), rather than lifetime IUPS. The short-form measures created in the current project were created to specifically predict IUPS overall. However, there may be benefits to being able to accurately predict specific IUPS behaviors. For example, determining risk of diverting medication may be beneficial for medical doctors or university health centers. This may be particularly helpful in determining what type or amount of psychoeducation to provide students receiving stimulant medications, or could even help guide policy for how often students need to have a check-in with their physician. Further, as discussed previously, identifying specific risk factors for specific groups or overall could be beneficial in creating

psychoeducational programs for college students. For example, incoming college students could be asked to complete certain psychoeducational modules based on how they respond to a screener for IUPS risk.

Face Validity and Measurement of IUPS

Developing a screening measure for substance use risk behavior to use in settings where respondents may feel pressure to underreport their use would require eliminating items that ask about behaviors people might be unwilling to answer in an honest manner if they thought it might have negative ramifications. For example, if a patient completed this measure in a physician's waiting room, the patient may not want to reveal that they have a history of sharing stimulant medication out of fear the physician may not renew or initiate a prescription. One future direction of this line of research is determining the best way to measure IUPS without face validity to prevent underreporting or skewed reporting of rates of IUPS. Although college students generally perceive IUPS as not socially or legally risky, and are typically open and honest when reporting these behaviors, there could be other situations in which college students would not feel as comfortable disclosing accurate information regarding their previous IUPS behaviors. For example, students affiliated with an athletics team or a Greek organization may hesitate to report previous IUPS behaviors if they are concerned with that information being disclosed to those affiliations or if they are concerned that endorsing IUPS would reflect poorly on their affiliation. This particular concern is the primary motivation for creating a measure of IUPS that is not face valid to attempt to gain more information about predictors and correlates of IUPS. The short-form measures created in this project were useful at classifying participants into users versus non-users and explained a great amount of

variance of IUPS; however, the items included on the measures were clearly related to IUPS (e.g., risk perception of IUPS, perception of ease of access, use of other drugs). If there were a measure that could predict IUPS with items that would be less likely to receive false or underreported responses, it is possible that researchers could learn more about IUPS in select groups of individuals (e.g., athletes).

IUPS at Different Universities

One important aspect of measuring IUPS is the effect of demographic variables on prevalence of IUPS. A direct comparison to Bavarian and colleagues' previous results was impossible to make for a number of reasons, one of which being that the demographic makeup of their sample was drastically different from the sample used in this project. A future direction in this field, as well as in the validation of these short-form measures, could be recruiting samples from multiple universities across the country. Previous literature has shown effects of demographic variables on IUPS (e.g., race/ethnicity, Greek affiliation), and different areas of the country will likely have different demographics broken down in their sample. It would be beneficial to confirm the results of this project on other samples to determine if these short-form measures would be beneficial for general use, or if there are other factors that need to be considered.

IUPS Among Children and Adolescents

This project focused solely on predicting IUPS among college students. However, college students sometimes report engaging in IUPS before coming to college. It may be that intervention and prevention programs need to begin much earlier than when

individuals are first entering college. It is possible, however, that adolescents have different motivations for use and may have different risk factors for engaging in IUPS. Thus, the short-form measures developed in this project may not be appropriate for predicting risk of IUPS in middle school or high school students. A future project could be to determine if modifications of these short-form measures would be useful with younger populations.

Summary

This manuscript describes the initial development of two short-form measures for IUPS. Two approaches were implemented, resulting in a data-driven short-form measure and a hand-picked short-form measure. Both of these short-form measures were shown to explain variance of lifetime IUPS and have accuracy in classifying participants into users and non-users. Although they explained less variance of IUPS compared to the complete BEACH-Q, each short-form measure was significantly shorter than the 100-item BEACH-Q and may result in more practical utility. Further development of these short-form measures would benefit from being influenced or guided by the Health Belief Model, which helps to include attitudes relating to IUPS and perceptions of risks and benefits of IUPS. It is anticipated that further development will provide better opportunities for IUPS to be better assessed in clinical and educational settings.

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APPENDIX A

PREDICTORS AND CORRELATES OF NONPRESCRIPTION STIMULANT USE

BQ_1-9 For this first set of questions, think about your time as a college student, and rate how much you agree or disagree with the following statements.

	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
It is difficult for me to pay attention during class (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often feel restless (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is difficult for my to concentrate on my academic work (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am an impulsive person (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have difficulty keeping track of my different school assignments (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely plan ahead (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like "wild" parties (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy getting into situations where I do not know how things will turn out (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer friends who are unpredictable (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_10-12 During your time in college, how often have you:

	None of the time (1)	A little of the time (2)	Some of the time (3)	Most of the time (4)	All of the time (5)
Attended class (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read assigned course readings (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worked on course assignments (e.g., papers, projects, etc.) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_13-18 During your time in college, how often have you felt:

	None of the time (1)	A little of the time (2)	Some of the time (3)	Most of the time (4)	All of the time (5)
Worried about your academic performance (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helpless about your academic performance (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stressed about your academic performance (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sad or blue (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anxious (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worried (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_19-22 Please rate how much you agree or disagree with the following statements:

	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
Courses at this university are academically demanding (e.g., there is a heavy workload, instructors expect a lot from students) (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students at this university compete with each other for the best grades (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professors at this university pay the most attention to students that perform the best in their classes (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receiving praise for my academic performance from my professors is important to me (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_23-24 .

	No (1)	Yes (2)
Has a health care professional EVER diagnosed you with Attention Deficit Hyperactivity Disorder or Attention Deficit Disorder (ADHD/ADD)? (1)	<input type="radio"/>	<input type="radio"/>
Have you EVER had a prescription for prescription stimulants? (2)	<input type="radio"/>	<input type="radio"/>

BQ_25-27 During your time in college, how many times per academic term have you:

	Never (1)	Less than once (2)	1-2 times (3)	3-5 times (4)	6-9 times (5)	10-19 times (6)	20-39 times (7)	40 or more times (8)
Been approached for prescription stimulants? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shared prescription stimulants for free (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shared prescription stimulants for money (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_28-31 For the following items, select the response that is currently most true for you.

	Not at all confident (1)	Somewhat confident (2)	Moderately confident (3)	Very confident (4)	Completely confident (5)
If a health care provider prescribed you medical stimulants, how confident are you that you would not use more than was prescribed to you? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If someone (e.g., friend, family member, acquaintance) offered you prescription stimulants, how confident are you that you would refuse the offer? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If you knew someone (e.g., friend, family member, acquaintance) who you could get prescription stimulants from, how confident are you that you would not ask him/her for the drug? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If you had a lot of school work to do in a short amount of time, how confident are you that you would not misuse prescription stimulant to help you finish your work? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_32-34 How would the following people react if they discovered you engaged in prescription stimulant misuse during college?

	Very negatively (1)	Negatively (2)	Neutrally (3)	Positively (4)	Very positively (5)
Friends (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Campus Faculty and Staff (for example, instructors and advisors) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_35-37 How many of the following people have ever suggested you engage in prescription stimulant misuse during college?

	None (1)	A few (2)	Some (3)	Most (4)	All (5)
Friends (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Campus Faculty and Staff (for example, instructors and advisors) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_38-40 What proportion of students at this university do you believe have ever used prescription stimulants:

	0% (1)	1-10% (2)	11-25% (3)	26-50% (4)	51-75% (5)	More than 75% (6)
Without a prescription from a health care provider? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For nonmedical purposes (i.e., to help with studying, to stay awake, to get high)? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In excess of what was prescribed to them? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_41-43 What proportion of your close friends (i.e., friends that you associate the most frequently) do you believe have ever used prescription stimulants:

	0% (1)	1-10% (2)	11-25% (3)	26-50% (4)	51-75% (5)	More than 75% (6)
Without a prescription from a health care provider? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For nonmedical purposes (i.e., to help with studying, to stay awake, to get high)? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In excess of what was prescribed to them? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_44-46 Please rate how much you agree or disagree with the following statements:

	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
I think it is okay for college students to use prescription stimulants without a prescription from a health care provider (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it is okay for college students to use prescription stimulants for nonmedical purposes (i.e., to help with studying, to stay awake, to get high) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it is okay for college students to use prescription stimulants in excess of what has been prescribed (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_47 If you said "Strongly disagree" or "Disagree" to the previous questions, why do you feel this way?

BQ_48-49 During your time in college, how frequently have you:

	None of the time (1)	A little of the time (2)	Some of the time (3)	Most of the time (4)	All of the time (5)
Seen advertisements for prescription drugs on television (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seen advertisements for prescription drugs in print media (e.g., Internet, Magazines, Newspaper) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_50-51 Please rate how much you currently agree or disagree with the following statements:

	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
College is a time when students experiment with different drugs (e.g., alcohol, marijuana, prescription drugs, etc.) (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to find a health care provider (i.e., nurse or doctor) to write a prescription for a prescription stimulant, even if a student does not really have ADD/ADHD (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_52-63 Please indicate how often you would expect each item below to occur to you if you were to engage in prescription stimulant misuse during college.

	None of the time (1)	A little of the time (2)	Some of the time (3)	Most of the time (4)	All of the time (5)
I would get better grades (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would find studying more enjoyable (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be able to stay awake (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be able to concentrate/focus better (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would lose weight (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be able to party longer (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel anxious (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel dizzy/lightheaded (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My heart would race (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would not be able to sleep (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would get in trouble (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would get headaches (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_64-66 How likely is it that, during your time in college, you will use prescription stimulants...

	Definitely won't (1)	Probably won't (2)	Not sure (3)	Probably will (4)	Definitely will (5)
Without a prescription from a health care provider? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For nonmedical purposes (i.e., to help with studying, to stay awake, to get high)? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In excess of what may be prescribed to you? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_67-69 During your time in college, have you ever used prescription stimulants...

	No (1)	Yes (2)
Without a prescription from a health care provider? (1)	<input type="radio"/>	<input type="radio"/>
For nonmedical purposes (i.e., to help with studying, to stay awake, to get high)? (2)	<input type="radio"/>	<input type="radio"/>
In excess of what was prescribed to you? (3)	<input type="radio"/>	<input type="radio"/>

BQ_70 During your time in college, on how many occasions per academic term have you participated in prescription stimulant misuse?

- Never (1)
- Less than once (2)
- 1-2 occasions (3)
- 3-5 occasions (4)
- 6-9 occasions (5)
- 10-19 occasions (6)
- 20-39 occasions (7)
- 40 or more occasions (8)

BQ_71 When was the first time you engaged in prescription stimulant misuse?

- Elementary school (1)
- Middle school (2)
- High school (3)
- College (4)
- I have never engaged in prescription stimulant misuse (5)

BQ_72 IF you have EVER participated in prescription stimulant misuse, how do you take the drug? (Select

"Yes" to all that are true for you and "No" to all that are NOT true for you)

	Yes (1)	No (2)
Swallow (mouth) (1)	<input type="checkbox"/>	<input type="checkbox"/>
Snort (nose) (2)	<input type="checkbox"/>	<input type="checkbox"/>
Inject (veins) (3)	<input type="checkbox"/>	<input type="checkbox"/>
Smoke (4)	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify) (5)	<input type="checkbox"/>	<input type="checkbox"/>
NOT APPLICABLE (6)	<input type="checkbox"/>	<input type="checkbox"/>

BQ_73 IF you have EVER participated in prescription stimulant misuse, how much money have you spent

per pill? (Select "Yes" to all that are true for you and "No" to all that are NOT true for you)

	Yes (1)	No (2)
No charge (1)	<input type="checkbox"/>	<input type="checkbox"/>
\$1-\$5 (2)	<input type="checkbox"/>	<input type="checkbox"/>
\$6-\$10 (3)	<input type="checkbox"/>	<input type="checkbox"/>
More than \$10 (4)	<input type="checkbox"/>	<input type="checkbox"/>
NOT APPLICABLE (5)	<input type="checkbox"/>	<input type="checkbox"/>

BQ_74 IF you have EVER participated in prescription stimulant misuse, who provided you with the drug?

(Select "Yes" to all that are true for you and "No" to all that are NOT true for you)

	Yes (1)	No (2)
Myself (Because I have a prescription) (1)	<input type="checkbox"/>	<input type="checkbox"/>
Friend (2)	<input type="checkbox"/>	<input type="checkbox"/>
Family member (3)	<input type="checkbox"/>	<input type="checkbox"/>
Acquaintance (For example, a friend of a friend, or a classmate that is not a friend) (4)	<input type="checkbox"/>	<input type="checkbox"/>
Internet (5)	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify) (6)	<input type="checkbox"/>	<input type="checkbox"/>
NOT APPLICABLE (7)	<input type="checkbox"/>	<input type="checkbox"/>

BQ_75 IF you have EVER participated in prescription stimulant misuse, why did you do so? (Select "Yes"

to all that are true for you and "No" to all that are NOT true for you)

	Yes (1)	No (2)
To improve focus (1)	<input type="checkbox"/>	<input type="checkbox"/>
To make studying more enjoyable (2)	<input type="checkbox"/>	<input type="checkbox"/>
To stay awake (3)	<input type="checkbox"/>	<input type="checkbox"/>
To improve concentration (4)	<input type="checkbox"/>	<input type="checkbox"/>
To lose weight (5)	<input type="checkbox"/>	<input type="checkbox"/>
To party longer (6)	<input type="checkbox"/>	<input type="checkbox"/>
To experiment (7)	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify) (8)	<input type="checkbox"/>	<input type="checkbox"/>
NOT APPLICABLE (9)	<input type="checkbox"/>	<input type="checkbox"/>

BQ_76 IF you have EVER participated in prescription stimulant misuse, how often did your use produce the outcome(s) you desired?

- None of the time (1)
- A little of the time (2)
- Some of the time (3)
- Most of the time (4)
- All of the time (5)
- NOT APPLICABLE (6)

BQ_77-81 During your time in college, on how many occasions per academic term have you used:

	Never (1)	Less than once (2)	1-2 times (3)	3-5 times (4)	6-9 times (5)	10-19 times (6)	20-39 times (7)	40 or more times (8)
Tobacco (i.e., cigarettes, cigars, hookah) (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol (i.e., beer, wine, liquor) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marijuana (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cocaine (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescription pain killers (e.g., OxyContin, Vicodin, Codeine) without prescription, for nonmedical reasons, and/or in excess of what was prescribed (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_82-85 Finally, please tell us about yourself. During your time in college, how often have you:

	None of the time (1)	A little of the time (2)	Some of the time (3)	Most of the time (4)	All of the time (5)
Attended a place of worship (e.g., a church, mosque, or synagogue)? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relied on religious teachings when you have a problem? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Turned to prayer or meditation when you faced a personal problem? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relied on your religious beliefs as a guide for day-to-day living? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BQ_86 To what extent do you agree with the following statement: In general, I want to do what persons who are important to me think I should do.

- Strongly disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly agree (5)
- Not applicable (6)

BQ_87 How old are you (in years)?

BQ_88 How many hours a week do you work, volunteer, and/or intern?

BQ_89 How many credits are you enrolled in this academic term?

BQ_90 What is your gender identity? (e.g., Female, Male, F:M Transgender, M:F Transgender, Other, Not sure)

BQ_91 What is your year in school?

- 1st year undergraduate (1)
- 2nd year undergraduate (2)
- 3rd year undergraduate (3)
- 4th year undergraduate (4)
- 5th year or more undergraduate (5)
- Post baccalaureate student (6)
- Graduate student (7)
- Other (please specify) (8) _____

BQ_92 What is your approximate cumulative college grade/grade point average?

- I do not yet have a GPA (1)
- F (0.00-0.49) (2)
- D (0.50-1.49) (3)
- C (1.50-2.49) (4)
- B (2.50-3.49) (5)
- A (3.50-4.00+) (6)

BQ_93 How do you usually describe yourself? (Please select the ONE group that you MOST identify as)

- White, non Hispanic (includes Middle Eastern) (1)
- Black, non Hispanic (2)
- Hispanic or Latino/a (3)
- Asian or Pacific Islander (4)
- South Asian (5)
- American Indian, Alaskan Native, or Native Hawaiian (6)
- Biracial or multiracial (7)
- Other (8)

BQ_94 Are you an international student?

- No (1)
- Yes (2)

BQ_95 Where do you currently live?

- Campus housing (i.e., residence hall) (1)
- Fraternity or sorority house (2)
- Parent/guardian's home (3)
- Other off-campus housing (e.g., an apartment or studio) (4)

BQ_96 Are you a member of a social fraternity or sorority? (e.g., National Interfraternity Council, Multicultural Council)

- No (1)
- Yes (2)

BQ_97 Are you a member of an intercollegiate or club college sports team?

- No (1)
- Yes (2)

BQ_98 Where do you go most often for health care?

- Campus health services (1)
- Pharmacy (2)
- Family doctor (3)
- Hospital (4)
- Other (please specify) (5) _____
- I do not receive health care (6)

BQ_99 How would you describe the current state of your finances?

- Poor (1)
- Fair (2)
- Good (3)
- Very good (4)
- Excellent (5)

BQ_100 How would you describe your general health?

- Poor (1)
- Fair (2)
- Good (3)
- Very good (4)
- Excellent (5)

Q101 Have you ever been diagnosed with ADHD (Attention-Deficit/Hyperactivity Disorder) or ADD (Attention Deficit Disorder)?

- Yes (1)
- No (2)

Q102 Do you currently have a diagnosis for ADHD (Attention-Deficit/Hyperactivity Disorder) or ADD (Attention Deficit Disorder)?

- Yes (1)
- No (2)

Q103 How dissatisfied are you with the amount of time that you need to spend studying to be successful?

- I'm satisfied with the amount of time (1)
- I'm slightly dissatisfied with the amount of time (2)
- I'm dissatisfied with the amount of time (3)
- I'm very dissatisfied with the amount of time (4)

Q104 How dissatisfied are you with your current GPA?

- I'm satisfied with my current GPA (1)
- I'm slightly dissatisfied with my current GPA (2)
- I'm dissatisfied with my current GPA (3)
- I'm very dissatisfied with my current GPA (4)

Q105 Do you currently have a prescription for stimulant medication?

- Yes, I have a current prescription for stimulant medication (e.g., Adderall, Concerta, Ritalin, Vyvanse, etc.) (1)
- No, I have a current prescription for a non-stimulant medication (e.g., Strattera, Effexor, etc.) (2)
- Yes, but I do not know what it is (3)
- No (4)

Q106 Have you had a prescription in the past but no longer have one?

- Yes (1)
- No (2)

Answer If Do you currently have a prescription for stimulant medication? Yes, I have a current prescription for stimulant medication (e.g., Adderall, Concerta, Ritalin, Vyvanse, etc.) Is Selected Or Have you had a prescription in the past but no longer have one? Yes Is Selected

Q107 Have you ever taken a larger dose than prescribed?

- Yes (1)
- No (2)

Answer If Have you ever taken a larger dose than prescribed? Yes Is Selected

Q108 When did you first try taking a larger dose than prescribed?

- In college (1)
- In high school (9th to 12th grade) (2)
- In grades 7th to 8th (3)
- Before 7th grade (4)

Answer If Have you ever taken a larger dose than prescribed? Yes Is Selected

PLDC Have you taken a larger dose than prescribed during college?

- Yes (1)
- No (2)

Answer If Have you ever taken a larger dose than prescribed? Yes Is Selected

Q109 Have you taken a larger dose than prescribed in the past year?

- Yes (1)
- No (2)

Answer If Have you taken a larger dose than prescribed in the past year? Yes Is Selected

Q110 Have you taken a larger dose than prescribed in the past month?

- Yes (1)
- No (2)

Answer If Do you currently have a prescription for stimulant medication? Yes, I have a current prescription for stimulant medication (e.g., Adderall, Concerta, Ritalin, Vyvanse, etc.) Is Selected Or Have you had a prescription in the past but no longer have one? Yes Is Selected

Q111 Have you ever taken a more frequent dosage than prescribed?

- Yes (1)
- No (2)

Answer If Have you taken a more frequent dosage than prescribed in the past year? Yes Is Selected

Q112 When did you first try taking a more frequent dosage than prescribed?

- In college (1)
- In high school (9th to 12th grade) (2)
- In grades 7th to 8th (3)
- Before 7th grade (4)

Answer If Have you ever taken a more frequent dosage than prescribed? Yes Is Selected

PMFC Have you taken a more frequent dosage than prescribed during college?

- Yes (1)
- No (2)

Answer If Have you taken a more frequent dosage than prescribed in the past year? Yes Is Selected

Q113 Have you taken a more frequent dosage than prescribed in the past year?

- Yes (1)
- No (2)

Answer If Have you taken a more frequent dosage than prescribed in the past year? Yes Is Selected

Q114 Have you taken a more frequent dosage than prescribed in the past month?

- Yes (1)
- No (2)

Q115 Have you ever consumed someone else's prescription stimulant medication (whether you had a prescription of your own or not)?

- Yes (1)
- No (2)

Answer If Have you ever consumed someone else's prescription stimulant medication (whether you had a prescr... Yes Is Selected

Q116 How many times have you consumed someone else's prescription stimulant medication (whether you had a prescription of your own or not) during your lifetime?

- None (1)
- 1-2 times (2)
- 3-5 times (3)
- 6-9 times (4)
- 10-19 times (5)
- 20-39 times (6)
- 40 or more times (7)

Answer If Have you ever consumed someone else's prescription stimulant medication (whether you had a prescr... Yes Is Selected

Q117 When did you first consume someone else's prescription stimulant medication (whether you had a prescription of your own or not)?

- In college (1)
- In high school (9th to 12th grade) (2)
- In grades 7th to 8th (3)
- Before 7th grade (4)

Answer If Have you ever consumed someone else's prescription stimulant medication (whether you had a prescr... Yes Is Selected

PConC Have you consumed someone else's prescription stimulant medication (whether you had a prescription of your own or not) during college?

- Yes (1)
- No (2)

Answer If Have you ever consumed someone else's prescription stimulant medication (whether you had a prescr... Yes Is Selected

Q118 Have you consumed someone else's prescription stimulant medication (whether you had a prescription of your own or not) in the past year?

- Yes (1)
- No (2)

Answer If Have you consumed someone else's prescription stimulant medication (whether you had a prescriptio... Yes Is Selected

Q119 How frequently have you consumed someone else's prescription stimulant medication (whether you had a prescription of your own or not) in the past year?

- 1 time (1)
- 2-3 times (2)
- 4-5 times (3)
- 6-7 times (4)
- More than 7 times (5)

Answer If Have you consumed someone else's prescription stimulant medication (whether you had a prescriptio... Yes Is Selected

Q120 Have you consumed someone else's prescription stimulant medication (whether you had a prescription of your own or not) in the past month?

- Yes (1)
- No (2)

Answer If Have you consumed someone else's prescription stimulant medication (whether you had a prescriptio... Yes Is Selected

Q121 How frequently have you consumed someone else's prescription stimulant medication (whether you had a prescription of your own or not) in the past month?

- 1 time (1)
- 2-3 times (2)
- 4-5 times (3)
- 6-7 times (4)
- More than 7 times (5)

Q122 Have you ever sold prescription stimulant medication to someone?

- Yes (1)
- No (2)

Answer If Have you ever sold prescription stimulant medication to someone? Yes Is Selected

Q123 When did you first sell prescription stimulant medication to someone?

- In college (1)
- In high school (9th to 12th grade) (2)
- In grades 7th to 8th (3)
- Before 7th grade (4)

Answer If Have you ever sold prescription stimulant medication to someone? Yes Is Selected

Q124 How frequently have you sold prescription stimulant medication to someone in your lifetime?

- None (1)
- 1-2 times (2)
- 3-5 times (3)
- 6-9 times (4)
- 10-19 times (5)
- 20-39 times (6)
- 40 or more times (7)

Answer If Have you ever sold prescription stimulant medication to someone? Yes Is Selected

PSellC Have you sold prescription stimulant medication to someone during college?

- Yes (1)
- No (2)

Answer If Have you ever sold prescription stimulant medication to someone? Yes Is Selected

Q125 Have you sold prescription stimulant medication to someone in the past year?

- Yes (1)
- No (2)

Answer If Have you sold prescription stimulant medication to someone in the past year? Yes Is Selected

Q126 How frequently have you sold prescription stimulant medication to someone in the past year?

- None (1)
- 1-2 times (2)
- 3-5 times (3)
- 6-9 times (4)
- 10-19 times (5)
- 20-39 times (6)
- 40 or more times (7)

Answer If Have you sold prescription stimulant medication to someone in the past year? Yes Is Selected

Q127 Have you sold prescription stimulant medication to someone in the past month?

- Yes (1)
- No (2)

Answer If Have you sold prescription stimulant medication to someone in the past month? Yes Is Selected

Q128 How frequently have you sold prescription stimulant medication to someone in the past month?

- None (1)
- 1-2 times (2)
- 3-5 times (3)
- 6-9 times (4)
- 10-19 times (5)
- 20-39 times (6)
- 40 or more times (7)

Q129 Have you ever shared or given away prescription stimulant medication?

- Yes (1)
- No (2)

Answer If Have you ever shared or given away prescription stimulant medication? Yes Is Selected

Q130 When did you first share or give away prescription stimulant medication?

- In college (1)
- In high school (9th to 12th grade) (2)
- In grades 7th to 8th (3)
- Before 7th grade (4)

Answer If Have you ever shared or given away prescription stimulant medication? Yes Is Selected

Q131 How frequently have you shared or given away prescription stimulant medication in your lifetime?

- None (1)
- 1-2 times (2)
- 3-5 times (3)
- 6-9 times (4)
- 10-19 times (5)
- 20-39 times (6)
- 40 or more times (7)

Answer If Have you ever shared or given away prescription stimulant medication? Yes Is Selected

PShareC Have you shared or given away prescription stimulant medication during college?

- Yes (1)
- No (2)

Answer If Have you ever shared or given away prescription stimulant medication? Yes Is Selected

Q132 Have you shared or given away prescription stimulant medication in the past year?

- Yes (1)
- No (2)

Answer If Have you shared or given away prescription stimulant medication in the past year? Yes Is Selected

Q133 How frequently have you shared or given away prescription stimulant medication in the past year?

- None (1)
- 1-2 times (2)
- 3-5 times (3)
- 6-9 times (4)
- 10-19 times (5)
- 20-39 times (6)
- 40 or more times (7)

Answer If Have you shared or given away prescription stimulant medication in the past year? Yes Is Selected

Q134 Have you shared or given away prescription stimulant medication in the past month?

- Yes (1)
- No (2)

Answer If Have you shared or given away prescription stimulant medication in the past month? Yes Is Selected

Q135 How frequently have you shared or given away prescription stimulant medication in the past month?

- None (1)
- 1-2 times (2)
- 3-5 times (3)
- 6-9 times (4)
- 10-19 times (5)
- 20-39 times (6)
- 40 or more times (7)

Q136 Have you ever traded prescription stimulant medication for something else or traded something for prescription stimulant medication?

- Yes (1)
- No (2)

Answer If Have you ever traded prescription stimulant medication for something else? Yes Is Selected
Q137 When did you first trade prescription stimulant medication for something else or traded something

else for prescription stimulant medication?

- In college (1)
- In high school (9th to 12th grade) (2)
- In grades 7th to 8th (3)
- Before 7th grade (4)

Answer If Have you ever traded prescription stimulant medication for something else? Yes Is Selected
Q138 How frequently have you traded prescription stimulant medication for something else or traded

something for prescription stimulant medication in your lifetime?

- None (1)
- 1-2 times (2)
- 3-5 times (3)
- 6-9 times (4)
- 10-19 times (5)
- 20-39 times (6)
- 40 or more times (7)

Answer If Have you ever traded prescription stimulant medication for something else or traded something
for... Yes Is Selected

PTradeC Have you traded prescription stimulant medication for something else or traded something for
prescription stimulant medication during college?

- Yes (1)
- No (2)

Answer If Have you ever traded prescription stimulant medication for something else? Yes Is Selected
Q139 Have you traded prescription stimulant medication for something else or traded something for

prescription stimulant medication in the past year?

- Yes (1)
- No (2)

Answer If Have you traded prescription stimulant medication for something else in the past year? Yes Is Selected

Q140 How frequently have you traded prescription stimulant medication for something else or traded something for prescription stimulant medication in the past year?

- None (1)
- 1-2 times (2)
- 3-5 times (3)
- 6-9 times (4)
- 10-19 times (5)
- 20-39 times (6)
- 40 or more times (7)

Answer If Have you traded prescription stimulant medication for something else in the past year? Yes Is Selected

Q141 Have you traded prescription stimulant medication for something else or traded something for prescription stimulant medication in the past month?

- Yes (1)
- No (2)

Answer If Have you traded prescription stimulant medication for something else in the past month? Yes Is Selected

Q142 How frequently have you traded prescription stimulant medication for something else or traded something for prescription stimulant medication in the past month?

- None (1)
- 1-2 times (2)
- 3-5 times (3)
- 6-9 times (4)
- 10-19 times (5)
- 20-39 times (6)
- 40 or more times (7)

Q143 How much of a legal risk is posed by misusing one's own prescription stimulant medication (i.e., taking a larger or more frequent dose)?

- Not risky at all (1)
- Slightly risky (2)
- Risky (3)
- Very risky (4)

Q144 How much of a health risk is posed by misusing one's own prescription stimulant medication (i.e., taking a larger or more frequent dose)?

- Not risky at all (1)
- Slightly risky (2)
- Risky (3)
- Very risky (4)

Q145 How much of a social risk is posed by misusing one's own prescription stimulant medication (i.e., taking a larger or more frequent dose)?

- Not risky at all (1)
- Slightly risky (2)
- Risky (3)
- Very risky (4)

Q146 How much of a legal risk is posed by consuming someone else's prescription stimulant medication?

- Not risky at all (1)
- Slightly risky (2)
- Risky (3)
- Very risky (4)

Q147 How much of a health risk is posed by consuming someone else's prescription stimulant medication?

- Not risky at all (1)
- Slightly risky (2)
- Risky (3)
- Very risky (4)

Q148 How much of a social risk is posed by consuming someone else's prescription stimulant medication?

- Not risky at all (1)
- Slightly risky (2)
- Risky (3)
- Very risky (4)

Q149 How much of a legal risk is posed by diverting (i.e., sharing, selling, or trading) prescription stimulant medication?

- Not risky at all (1)
- Slightly risky (2)
- Risky (3)
- Very risky (4)

Q150 How much of a health risk is posed by diverting (i.e., sharing, selling, or trading) prescription stimulant medication?

- Not risky at all (1)
- Slightly risky (2)
- Risky (3)
- Very risky (4)

Q151 How much of a social risk is posed by diverting (i.e., sharing, selling, or trading) prescription stimulant medication?

- Not risky at all (1)
- Slightly risky (2)
- Risky (3)
- Very risky (4)

Q152-163 Please respond "Yes" or "No" to each of the following questions regarding illicit use of prescription stimulant medication.

Q152-162	Yes (1)	No (2)
Do you know someone personally how has gotten into legal trouble due to illicit use? (1)	<input type="radio"/>	<input type="radio"/>
Have you heard of someone at your school who has gotten into legal trouble due to illicit use? (2)	<input type="radio"/>	<input type="radio"/>
Have your heard of someone at another school (not the school you attend) who has gotten into legal trouble due to illicit use? (3)	<input type="radio"/>	<input type="radio"/>
Do you know someone personally who has gotten into academic trouble due to illicit use? (4)	<input type="radio"/>	<input type="radio"/>
Have you heard of someone at your school who has gotten into academic trouble due to illicit use? (5)	<input type="radio"/>	<input type="radio"/>
Have you heard of someone at another school (not the school you attend) who has gotten into academic trouble due to illicit use? (6)	<input type="radio"/>	<input type="radio"/>
Do you know someone personally who has experienced a negative health event due to illicit use? (7)	<input type="radio"/>	<input type="radio"/>
Have you heard of someone at your school who has experienced a negative health event due to illicit use? (8)	<input type="radio"/>	<input type="radio"/>

Q152-162 (continued)	Yes (1)	No (2)
Have you heard of someone at another school (not the school you attend) who has experienced a negative health event due to illicit use? (9)	<input type="radio"/>	<input type="radio"/>
Do you know someone personally who has experienced social rejection due to illicit use? (10)	<input type="radio"/>	<input type="radio"/>
Have you heard of someone at your school who has experienced social rejection due to illicit use? (11)	<input type="radio"/>	<input type="radio"/>
Have you heard of someone at another school (not the school you attend) who has experienced social rejection due to illicit use? (12)	<input type="radio"/>	<input type="radio"/>

Answer If Have you ever consumed someone else's prescription stimulant medication (whether you had a prescr... Yes Is Selected

Q164-167 Have you ever stopped or reduced illicit use of stimulant medication because of...

	Yes (1)	No (2)	Have never engaged in illicit use (3)
Possible legal trouble? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Possible academic trouble? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Possible negative health events? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Possible social rejection? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q168-185

Q168-185	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Very often (5)
How often do you have trouble wrapping up the final details of a project once the challenging parts have been done? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have difficulty getting things in order when you have to do a task that requires organization? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have problems remembering appointments or obligations? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When you have a task that requires a lot of thought, how often do you avoid or delay getting started? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q168-185 (continued)	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Very often (5)
How often do you fidget or squirm with your hands or feet when you have to sit down for a long time? (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you feel overly active and compelled to do things, like you were driven by a motor? (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you make careless mistakes when you have to work on a boring or difficult project? (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have difficulty keeping your attention when you are doing boring or repetitive work? (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly? (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q168-185 (continued)	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Very often (5)
How often do you misplace or have difficulty finding things at home or at work? (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often are you distracted by activity or noise around you? (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you leave your seat in meetings or other situations in which you are expected to remain seated? (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you feel restless or fidgety? (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have difficulty unwinding and relaxing when you have time to yourself? (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q168-185 (continued)	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Very often (5)
How often do you find yourself talking too much when you are in social situations? (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves? (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have difficulty waiting your turn in situations when turn taking is required? (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you interrupt others when they are busy? (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q186 Have you ever tried energy drinks?

- Yes (1)
- No (2)

Answer If Have you ever tried energy drinks? Yes Is Selected

Q187 Have you tried or used energy drinks in the past year?

- Yes (1)
- No (2)

Answer If Have you tried or used energy drinks in the past year? Yes Is Selected

Q188 Have you tried or used energy drinks in the past month?

- Yes (1)
- No (2)

Q189 Have you ever tried nicotine (e.g., cigarettes, chewing tobacco, vaping)?

- Yes (1)
- No (2)

Answer If Have you ever tried nicotine? Yes Is Selected

Q190 Have you tried or used nicotine (e.g., cigarettes, chewing tobacco, vaping) in the past year?

- Yes (1)
- No (2)

Answer If Have you tried or used nicotine in the past year? Yes Is Selected

Q191 Have you tried or used nicotine (e.g., cigarettes, chewing tobacco, vaping) in the past month?

- Yes (1)
- No (2)

Q192 Have you ever tried alcohol?

- Yes (1)
- No (2)

Answer If Have you ever tried alcohol? Yes Is Selected

Q193 Have you tried or used alcohol in the past year?

- Yes (1)
- No (2)

Answer If Have you tried or used alcohol in the past year? Yes Is Selected

Q194 Have you tried or used alcohol in the past month?

- Yes (1)
- No (2)

Q195 Have you ever tried marijuana?

- Yes (1)
- No (2)

Answer If Have you ever tried marijuana? Yes Is Selected

Q196 Have you tried or used marijuana in the past year?

- Yes (1)
- No (2)

Answer If Have you tried or used marijuana in the past year? Yes Is Selected

Q197 Have you tried or used marijuana in the past month?

- Yes (1)
- No (2)

Q198 Have you ever tried cocaine?

- Yes (1)
- No (2)

Answer If Have you ever tried cocaine? Yes Is Selected

Q199 Have you tried or used cocaine in the past year?

- Yes (1)
- No (2)

Answer If Have you tried or used cocaine in the past year? Yes Is Selected

Q200 Have you tried or used cocaine in the past month?

- Yes (1)
- No (2)

Q201 Have you ever tried amphetamines (e.g., speed, uppers, bennies)?

- Yes (1)
- No (2)

Answer If Have you ever tried amphetamines? Yes Is Selected

Q202 Have you tried or used amphetamines (e.g., speed, uppers, bennies) in the past year?

- Yes (1)
- No (2)

Answer If Have you tried or used amphetamines in the past year? Yes Is Selected

Q203 Have you tried or used amphetamines (e.g., speed, uppers, bennies) in the past month?

- Yes (1)
- No (2)

Q204 Have you ever tried hallucinogens (e.g., LSD, PCP, salvia, ketamine, mescaline (peyote); otherwise known as acid, special K, angel dust, etc.)?

- Yes (1)
- No (2)

Answer If Have you ever tried hallucinogens (e.g., LSD, PCP, salvia, ketamine, mescaline (peyote); otherwise known as acid, special K, angel dust, etc.)? Yes Is Selected

Q205 Have you tried hallucinogens (e.g., LSD, PCP, salvia, ketamine, mescaline (peyote); otherwise known as acid, special K, angel dust, etc.) in the past year?

- Yes (1)
- No (2)

Answer If Have you tried hallucinogens (e.g., LSD, PCP, salvia, ketamine, mescaline (peyote); otherwise known as acid, special K, angel dust, etc.) in the past year? Yes Is Selected

Q206 Have you tried hallucinogens (e.g., LSD, PCP, salvia, ketamine, mescaline (peyote); otherwise known as acid, special K, angel dust, etc.) in the past month?

- Yes (1)
- No (2)

Q207 Have you ever tried prescription opiates (e.g., OxyContin, Percocet, Vicodin) without a prescription?

- Yes (1)
- No (2)

Answer If Have you ever tried prescription opiates? Yes Is Selected

Q208 Have you tried prescription opiates (e.g., OxyContin, Percocet, Vicodin) without a prescription in the past year?

- Yes (1)
- No (2)

Answer If Have you tried prescription opiates in the past year? Yes Is Selected

Q209 Have you tried prescription opiates (e.g., OxyContin, Percocet, Vicodin) without a prescription in the past month?

- Yes (1)
- No (2)

Q210 Have you ever tried prescription sedatives (e.g., tranquilizers or depressants; including Xanax, Valium, Ativan, Ambien, sleeping pills, yellow jackets) without a prescription?

- Yes (1)
- No (2)

Answer If Have you ever tried prescription sedatives (e.g., tranquilizers or depressants; including Xanax, Valium, Ativan, Ambien, sleeping pills, yellow jackets) without a prescription? Yes Is Selected

Q211 Have you tried prescription sedatives (e.g., tranquilizers or depressants; including Xanax, Valium, Ativan, Ambien, sleeping pills, yellow jackets) without a prescription in the past year?

- Yes (1)
- No (2)

Answer If Have you tried prescription sedatives (e.g., tranquilizers or depressants; including Xanax, Valium, Ativan, Ambien, sleeping pills, yellow jackets) without a prescription in the past year? Yes Is Selected

Q212 Have you tried prescription sedatives (e.g., tranquilizers or depressants; including Xanax, Valium, Ativan, Ambien, sleeping pills, yellow jackets) without a prescription in the past month?

- Yes (1)
- No (2)

Q213-257 Indicate whether you would expect to experience each consequence as a result of using a prescription stimulant medication.

Q213-257	Not at all (1)	Sometimes (2)	Very often or always (3)
Distractions disappear (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I absorb material the first time through (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel very happy (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can ignore distractions more easily (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can pay attention really well (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can study/work for hours (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can't hold still (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can't sleep even if I want to (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy parties more (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't end up daydreaming (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy studying/working a lot more (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel drained the next day (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conversing with others is easier (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q213-257 (continued)	Not at all (1)	Sometimes (2)	Very often or always (3)
I feel like I can't get through the day without it (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like I'm cutting corners to do well (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel sick to my stomach (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel high (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am friendlier (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I learn/work very efficiently (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I need fewer breaks when I study/work (20)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry that I'm addicted to it (21)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm all amped up (22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel more confident in myself (23)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've come to see it as a crutch (24)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My ability to focus is better (25)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My concentration is excellent (26)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My focus is crystal clear (27)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My head hurts (28)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm free to be myself and do whatever I want to do (29)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My mind doesn't wander (30)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q213-257 (continued)	Not at all (1)	Sometimes (2)	Very often or always (3)
My mind is razor sharp (31)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My thoughts follow more logically (32)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel more relaxed in social situations (33)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My work seems more interesting (34)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My heart races (35)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can focus very well (36)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can't calm down (37)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel twitchy (38)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel as though everything is right in the world (39)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's no trouble to sit still (40)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My memory is better (41)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel guilty for taking it (42)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get nervous and edgy (43)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My thoughts stay on track better (44)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I laugh more (45)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q258-266 Please answer the following questions.

	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
I know students who I can get stimulants from. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know students who take stimulants orally for nonmedical purposes. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know students who snort stimulants. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know students on campus who take stimulants for nonmedical purposes. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been offered stimulants by another student. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have purchased stimulants from other students. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been given stimulants by other students. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stimulants are as easy to get as alcohol. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stimulants are as easy to get as marijuana. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If Have you ever consumed someone else's prescription stimulant medication (whether you had a prescr... Yes Is Selected

Q267-273 I use stimulant prescription medications...

	Yes (1)	No (2)	I have never used stimulant prescription medications (3)
To help concentrate (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To help increase awareness/stay awake (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To counteract effects of other drugs (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To give a high (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To lose weight (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To control appetite (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To enhance exercise (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q274-293 How useful is stimulant medication for helping with the following:

	Always useful (1)	Often useful (2)	Sometimes useful (3)	Rarely useful (4)	Never useful (5)
Studying for exams (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing papers (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taking exams (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Staying awake in class (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Giving class presentations (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Getting to class on time (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Earning a higher GPA (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pulling an "all nighter" to study (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pulling an "all nighter" to write a paper (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhancing eligibility for scholarship/financial support (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhancing other substances (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhancing athletic performance (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building muscle (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suppressing appetite (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reducing fatigue (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoiding getting a worse grade (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoiding academic suspension/probation (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoiding losing scholarship money (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increasing concentration (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increasing alertness (20)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q294 How likely is it that you will engage in illicit use of prescription stimulant medication (i.e., using someone else's prescription stimulant medication) while in college?

- Very unlikely (1)
- Unlikely (2)
- Likely (3)
- Very likely (4)

ImpSS For these questions, you will find a series of statements that people might use to describe themselves. Read each statement and decide whether or not it describes you. If you agree with a statement or decide that it describes you, answer TRUE. If you disagree with a statement or feel that it is not descriptive of you, answer FALSE.

	True (1)	False (2)
I often do things on impulse. (1)	<input type="radio"/>	<input type="radio"/>
I would like to take off on a trip with no preplanned or definite routes or timetables. (2)	<input type="radio"/>	<input type="radio"/>
I enjoy getting into new situations where you can't predict how things will turn out. (3)	<input type="radio"/>	<input type="radio"/>
I sometimes like to do things that are a little frightening. (4)	<input type="radio"/>	<input type="radio"/>
I'll try anything once. (5)	<input type="radio"/>	<input type="radio"/>
I would like the kind of life where one is on the move and traveling a lot, with lots of change and excitement. (6)	<input type="radio"/>	<input type="radio"/>
I sometimes do "crazy" things just for fun. (7)	<input type="radio"/>	<input type="radio"/>
I prefer friends who are excitingly unpredictable. (8)	<input type="radio"/>	<input type="radio"/>
I often get so carried away by new and exciting things and ideas that I never think of possible complications. (9)	<input type="radio"/>	<input type="radio"/>
I like "wild" uninhibited parties. (10)	<input type="radio"/>	<input type="radio"/>

Q295 What is your gender?

- Man (1)
- Woman (2)
- Transgender (3)
- Other (4)
- Prefer not to say (5)

Q296 What is your Greek affiliation?

- Current member of a fraternity or sorority (1)
- Never been a member of a fraternity or sorority (2)
- Was a member in the past, but no longer a member (3)

Q297 What is your race?

- White or Caucasian (1)
- Black or African American (2)
- Asian (3)
- Hispanic (4)
- Pacific Islander (5)
- Other (6)
- Prefer not to say (7)

Q298 What is your class standing?

- Freshman (first semester) (1)
- Freshman (other than first semester) (2)
- Sophomore (3)
- Junior (4)
- Senior (5)
- Unclassified or graduate (6)

Q299 What is your current major?

APPENDIX B
DATA-DRIVEN EFA SHORT-FORM

Q146 How much of a legal risk is posed by consuming someone else's prescription stimulant medication?

- Very risky (1)
- Risky (2)
- Slightly risky (3)
- Not risky at all (4)

Q150 How much of a health risk is posed by diverting (i.e., sharing, selling, or trading) prescription stimulant medication?

- Very risky (1)
- Risky (2)
- Slightly risky (3)
- Not risky at all (4)

Q152-163 Please respond "Yes" or "No" to each of the following questions regarding illicit use of prescription stimulant medication.

	Yes (1)	No (2)
Have you heard of someone at your school who has gotten into legal trouble due to illicit use? (153)	<input type="radio"/>	<input type="radio"/>
Have you heard of someone at another school (not the school you attend) who has gotten into academic trouble due to illicit use? (157)	<input type="radio"/>	<input type="radio"/>
Have you heard of someone at your school who has experienced a negative health event due to illicit use? (159)	<input type="radio"/>	<input type="radio"/>
Have you heard of someone at your school who has experienced social rejection due to illicit use? (162)	<input type="radio"/>	<input type="radio"/>

Q168-185

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Very often (5)
How often do you have difficulty getting things in order when you have to do a task that requires organization? (Q169)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you make careless mistakes when you have to work on a boring or difficult project? (Q174)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly? (Q176)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have difficulty unwinding and relaxing when you have time to yourself? (Q181)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have difficulty waiting your turn in situations when turn taking is required? (Q184)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q213-257 Indicate whether you would expect to experience each consequence as a result of using a prescription stimulant medication.

	Very often or always (1)	Sometimes (2)	Not at all (3)
I feel sick to my stomach (Q228)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My heart races (Q247)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q258-266 Please answer the following questions.

	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
I know students on campus who take stimulants for nonmedical purposes. (Q261)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stimulants are as easy to get as alcohol. (Q265)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX C
HAND-PICKED SHORT-FORM

Q101 Have you ever been diagnosed with ADHD (Attention-Deficit/Hyperactivity Disorder) or ADD (Attention Deficit Disorder)?

- No (0)
- Yes (1)

Q147 How much of a health risk is posed by consuming someone else's prescription stimulant medication?

- Very risky (1)
- Risky (2)
- Slightly risky (3)
- Not risky at all (4)

Q195 Have you ever tried marijuana?

- No (0)
- Yes (1)

Q210 Have you ever tried prescription sedatives (e.g., tranquilizers or depressants; including Xanax, Valium, Ativan, Ambien, sleeping pills, yellow jackets) without a prescription?

- No (0)
- Yes (1)

Q294 How likely is it that you will engage in illicit use of prescription stimulant medication (i.e., using someone else's prescription stimulant medication) while in college?

- Very unlikely (1)
- Unlikely (2)
- Likely (3)
- Very likely (4)

ImpSS For these questions, you will find a series of statements that people might use to describe themselves. Read each statement and decide whether or not it describes you. If you agree with a statement or decide that it describes you, answer TRUE. If you disagree with a statement or feel that it is not descriptive of you, answer FALSE.

	False (0)	True (1)
I often get so carried away by new and exciting things and ideas that I never think of possible complications. (ImpSS_9)	<input type="radio"/>	<input type="radio"/>

Q295 What is your gender?

- Woman (0)
- Man (1)

Q296 What is your Greek affiliation?

- Not current member of a fraternity or sorority (0)
- Current member of a fraternity or sorority (1)

APPENDIX D

HUMAN SUBJECTS INSTITUTIONAL RESEARCH BOARD APPROVAL

jbr6@msstate.edu

10/6/16

to jh2833, cm998, kja3, klb674, kln83, md1707, mhd94, mn487, tdc280, tmj238

IRB has approved the protocol with the following details.

Protocol ID: 16-298
Principal Investigator: Hachtel, Joanna
Department: Psychology
Protocol Title: Predictors and Correlates of Nonprescription Stimulant Use
Review Type: FULLBOARD
Approval Date: October 06, 2016
