Spring 2018

General Strain Theory and Prescription Drug Misuse Among Honors Students

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Journal of the National Collegiate Honors Council 19:1 (Spring/Summer 2018).

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INTRODUCTION

Drug overdoses are the leading cause of death for Americans under fifty years of age, having surpassed deaths from guns, HIV, and even car crashes. Clearly driving this trend is prescription drug misuse, especially of opioids. Of the over 62,000 drug overdose deaths in 2016 alone, a full third resulted from the misuse of prescription opioids such as Oxycodone, Hydrocodone, Vicodin, and Morphine (Katz; NIDA; see also DHS). Evidence indicates that college students are among those losing their lives each year to prescription drug misuse (Spencer), but many facets of prescription drug misuse, including types, prevalence, and especially explanations, are understudied among college students and especially among honors students. We aim to help fill this void with the current investigation of prescription drug misuse among honors students in the context of the strains of college life. We turn first to a review of what is known about prescription drug use among college students and the few attempts to explain it using extant theories of crime.

Prescription Drug Misuse

Prescription drug misuse, defined as a nonmedical use of prescription drugs either with or without a prescription (Blanchard et al.) can be challenging to identify because, unlike illicit drugs, they are prescribed by a doctor presumably for a legitimate medical issue. Quinones gives a thorough and engaging history of the factors underlying the current opioid epidemic; briefly, these include intense direct marketing of prescription painkillers (especially Oxycodone) to prescribing doctors, loose laws that have permitted the operation of pill mills with little oversight, the change in the position among doctors acknowledging that pain is a true condition that demands treatment, and insurers' willingness to cover prescriptions for painkillers. Among the general population in the United States, it is estimated that over eleven million people—about four percent of the population—misused prescription painkillers in one recent year (Ahrnsbrak et al.). Among college students, the rate appears to be higher. Using data from a nationally representative survey of college students in the United States, McCabe et al. found that twelve percent of college students had ever misused prescription painkillers and seven percent had misused them in the past year. Given how dated the McCabe et al. study is, we can assume that the prevalence has increased significantly since then.

Criminological Theories

Several criminological theories have been applied in the few studies to date on prescription drug misuse among college students; these include social bond, social learning, and general strain.

Social Bond Theory

As devised by Hirschi, social bond theory begins with the notion that most people do not commit crimes and questions why that is the case. His answer lies in the social bond: most people refrain from crime, especially serious crime, in order not to put at risk the bond they have with others, including family, friends, teachers, and co-workers. The social bond comprises four elements: attachment, commitment, involvement, and belief. People do not typically engage in crime if they are attached to social institutions and the people in them, are committed to those institutions and their people, are involved in conventional activities, and hold a normative, law-abiding belief system.

Empirical research has found support for the social bond theory of crime (see Frailing & Harper for a list of supportive studies). This theory also has

support in explaining alcohol and drug use. For example, Han, Kim, and Ma found that attachment to teachers, educational aspirations, and internalization of school rules were associated with lower levels of substance use among students. Most relevant to the current study, both Ford, in "Nonmedical Prescription Drug Use," and Schroeder & Ford found that strong attachment to both parents and teachers was associated with lower levels of prescription drug use among students.

Social Learning Theory

As devised by Akers in *Criminological Theories* and "A Social Learning Theory of Crime," social learning theory holds that people learn to commit crime the same way they learn anything else in life. While Edwin Sutherland was the first to propose that people learn crime, Akers took the next step and tried to explain how that learning happens and how it produces crime. Social learning theory comprises four components, the first of which is differential association, which simply refers to the group of people with whom one spends the most time and that provides the context in which learning occurs. The second is definitions, which are attitudes about specific behaviors. The third is differential reinforcement, which refers to the rewards or punishments that are expected to follow certain behaviors. The fourth and final concept of social learning theory is imitation: in other words, engaging in the same or similar behavior as another upon witnessing that behavior. While social learning is complex, it posits that a typical process is involved in the production of criminal behavior. Learned definitions from the group with whom one differentially associates, imitation of the behaviors in that group, and anticipated reinforcement produce the initial criminal act. Whether this act is repeated depends on the rewards or punishments experienced. Upon repetition of criminal acts, definitions may become stronger, as might differential association with delinquent peers (Akers, *Social Learning*; Akers & Sellers).

Dozens if not hundreds of studies find empirical support for social learning as an explanatory theory of crime (see Frailing & Harper for a long but still partial list), and social learning is considered among the best criminological theories in terms of its ability to explain crime. The theory is commonly employed in empirical tests of the reasons for alcohol and drug use; ever since Akers & Cochran found strong support for social learning in explaining marijuana use, other researchers have followed suit in testing the theory. Most relevant to the current study is the support for social learning theory's ability to explain prescription drug misuse among adolescents (Ford & Schroeder;

Schroeder & Ford), among young adults (Higgins et al.), and among college students (Peralta & Steele; Watkins). However, the support is qualified; as Higgins et al. report: "nonsocial reinforcement is a more important internal reward than the social gratification that comes from associating with peers that are perceived to produce this behavior" (958). In other words, the internal thrill or high that comes from misusing prescription drugs strongly associates with their use and, unlike with alcohol and other drugs, friends' use of these substances is not as important. In line with this idea, Quintero, Peterson, & Young find that college students perceive prescription drugs as less dangerous than illicit drugs, as more socially acceptable, and as helpful in improving physical and academic productivity, suggesting social learning explanations would be incomplete.

General Strain Theory

As devised by Agnew in "Stability and Change in Crime over the Life-Course" and "Foundation for a General Strain Theory of Crime," general strain theory identifies three categories of strain that can lead to crime. The first and the most in line with Merton's 1938 classic strain theory is the inability to achieve positively valued goals, such as achieving monetary success. The second category of strains is the loss of positively valued stimuli caused by, for instance, breaking up with a significant other. The third category is the introduction of negatively valued stimuli, such as victimization by crime. Strains can lead to a negative view of others and in turn result in negative emotions, especially anger, that can then lead to criminal coping, including crime and substance use. Thousands of strains can fall into each of these categories, and Agnew, in "Building on the Foundation of General Strain Theory" and "A General Strain Theory of Terrorism," identifies a number of strains as more likely to lead to crime; these include failure to achieve goals when these goals can be easily met with crime, abusive or neglectful parenting, negative experiences in school, abuse or rejection by peers, abuse by significant others, unemployment, poverty, and homelessness.

Empirical research supports general strain as an explanatory theory for a variety of criminal and other deviant behaviors, from bullying to terrorism (see Frailing & Harper for a list of supportive studies). General strain theory has also been useful in explaining substance abuse as a response to the strains of victimization (Cudmore et al.; McNulty-Eitle et al.), of other traumatic experiences (Ham et al.), and of the dissolution of a romantic relationship (Larson & Sweeten). Most relevant to the current study, Ford and Schroeder found that academic strains among college students were associated with

prescription stimulant misuse. No matter the theory explaining prescription drug misuse, though, honors students are never a focus of these studies.

RESEARCH QUESTION AND HYPOTHESES

The current study takes its cue directly from Ford and Schroeder's work, which found that a certain type of college-life strain was associated with a certain type of prescription drug misuse. We broadened their examination to include other strains and other prescription drugs, so our research question is: Are different strains of college life associated with misuse of different kinds of prescription drugs among honors students? We hypothesized that academic strains would be associated with prescription stimulant misuse and that relationship strains would be associated with prescription painkiller misuse.

METHODOLOGY

We received IRB approval from our university to conduct a paper-and-pencil survey about strains of college life and alcohol and drug misuse. We reached out to all professors teaching honors classes at our small Jesuit university and administered the survey in the classes where professors permitted us to do so in the spring of 2017. Ultimately, 93 honors students completed the survey, which is about a quarter of the honors population at our university.

Independent Variables

In accord with Ford and Schroeder's study, we operationalized academic strain as three variables: scholarship, high self-expectations, and high GPA. The latter two were measured at the interval level on a scale of 1 to 5 where 1 indicated strongly disagree and 5 indicated strongly agree. The first, on scholarship was measured at the nominal level as a yes or no answer.

Having little guidance for relationship strains save for that from Larson and Sweeten, who found that breaking up with a partner was associated with alcohol and drug use, we largely created our own relationship strains, operationalizing these variables as: fighting with friends a lot, a recent stressful breakup, and a good relationship with parents. These were all measured at the interval level on a scale of 1 to 5 where 1 indicated strongly disagree and 5 indicated strongly agree.

In accord with previous studies on prescription drug misuse, we also included a number of control variables that are consistent with both social bond and social learning theories. The control variables for social bond theory

were: spending a lot of time studying, spending a lot of time in extracurricular activities, and believing that religion is really important. The control variables for social learning theory were: friends using drugs and alcohol and spending a lot of time with friends. All of the control variables measured at the interval level on a scale of 1 to 5 where 1 indicated strongly disagree and 5 indicated strongly agree.

Finally, we included demographic variables measuring age, race, ethnicity, gender, and year in school of the survey respondents.

Dependent Variables

Our dependent variables of interest were prescription stimulant misuse and prescription painkiller misuse. For the prescription stimulant misuse variable, we asked respondents if they had ever, in the past six months, and in the past month "used a prescription stimulant (such as Ritalin, Cylert, Dexedrine, Adderall) without a prescription, in order to study, or in order to get high." For the prescription painkiller misuse variable, we asked respondents if they had ever, in the past six months, and in the past month "used a prescription painkiller (such as Darvocet, Tylenol with Codeine, Percocet, Vicodin, Hydrocodone, OxyContin) without a prescription or in order to get high;" the phrasing of these questions is consistent with previous studies on prescription drug misuse among college students. These variables were measured at the nominal level as a yes or no answer.

Largely to contextualize our findings on prescription drug misuse, we also asked respondents if they had ever, in the past six months, or the past month, engaged in binge drinking, in marijuana use, and in illicit drug misuse, including use of cocaine, crack cocaine, methamphetamine, heroin, ecstasy, LSD, psychedelics, or hallucinogens. These variables were also measured at the nominal level as a yes or no answer. (The full survey is available on request.)

RESULTS

Table 1 provides descriptive data on the respondents. In terms of gender, the sample is representative of the undergraduate population as a whole at the university, but the sample is both younger and whiter than the undergraduate population as a whole and than the honors population.

Table 2 provides descriptive data on the independent variables. Nearly all respondents were on scholarship and rated both expectations of themselves and their GPAs as high. Ratings on relationship strains were mixed; few

respondents agreed that they fought with friends or were under stress from a recent breakup, but they rated a good relationship with parents high. Bond variables were rated about average, with religion as important rated lower than time studying or time in extracurricular activities. Learning variables—both friends using drugs and alcohol and time spent with friends—were rated high.

Table 3 provides descriptive data on the dependent variables. The most prevalent form of substance use among the respondents was binge drinking, followed by marijuana, then illicit drugs, then prescription stimulant misuse, and finally, prescription painkiller misuse. The prevalence of binge drinking ever, in the past six months, and in the past month is similar to (though slightly higher than) the prevalence of marijuana use in the three time periods. Illicit drug use is less prevalent among the respondents; just about a quarter reported ever using these drugs, which is similar to (but slightly higher than) the percent that reported ever misusing prescription stimulants. The prevalence of prescription painkiller misuse is low, with less than 10 percent of respondents reporting ever misusing prescription painkillers.

Table 4 provides the results of our first logistic regression analysis, where we examined each independent variable's ability to predict prescription

Table 1. Demographic Description of Respondents (N=93)

Gender	Number (Percent)
Male	32 (34.3)
Female	56 (60)
Nonconforming	4 (4.3)
Average Age	19.5 (SD: 1.27)
Race[2]	Number (Percent)
White	78 (83.8)
Black	3 (3.2)
Asian	6 (6.5)
Other	6 (6.5)

Ethnicity[1]	Number (Percent)
Hispanic	8 (8.6)
Not Hispanic	85 (91.4)
Year in School	Number (Percent)
First Year	44 (47.3)
Second Year	14 (15.1)
Third Year	19 (20.4)
Fourth Year	16 (17.2)

1. The question in the survey on ethnicity was modeled after the university's demographic data gathering protocol, which uses the categories seen in the table and is largely consistent with U.S. Bureau of the Census' definitions.

2. The question in the survey on race was modeled after the university's demographic data gathering protocol, which uses the categories seen in the table and is fairly consistent with the U.S. Bureau of the Census definitions. Respondents were asked to identify as Other if they did not identify as White, Black, or Asian, or if they identified as more than one race.

stimulant misuse and prescription painkiller misuse. Just two independent variables, one strain and one learning, significantly predicted prescription drug misuse of any kind at the .05 level. The lower the expectations respondents

Table 2. Ratings on Independent Variables

Academic Strains	Mean and SD
On scholarship (Y/N)	Yes 92 (98.9%)
High expectations of self	4.49, .716
High GPA	4.39, .822
Relationship Strains	
Fight with friends	1.63, .074
Breakup really stressful	1.86, .167
Good relationship with parents	4.23, .113
Control Variables	
Time studying (bond)	3.38, .113
Time in extracurriculars (bond)	3.62, .122
Religion is important (bond)	2.50, .157
Friends drink/use drugs (learning)	4.35, .089
Time with friends (learning)	3.98, .100

Table 3. Ratings on Dependent Variables

Binge Drink	Number (Percent) Yes
Ever	63 (67.7)
6 months	57 (61.3)
1 month	39 (41.9)
Marijuana	
Ever	61 (65.6)
6 months	50 (53.8)
1 month	34 (36.6)
Illicit Drugs	
Ever	24 (25.8)
6 months	18 (19.4)
1 month	11 (11.8)

Prescription Stimulant Misuse	Number (Percent) Yes
Ever	18 (19.4)
6 months	14 (15.1)
1 month	8 (8.6)
Prescription Painkiller Misuse	
Ever	8 (8.6)
6 month	4 (4.3)
1 month	3 (3.2)

Table 4. Logistic Regression: Prescription Drug Misuse*

	Stimulant Ever	Stimulant 6 Months	Stimulant 1 Month	Painkiller Ever	Painkiller 6 Months	Painkiller 1 Month
On Scholarship	N/S	N/S	N/S	N/S	N/S	N/S
High Expectations	N/S	B=-2.855 SE=1.129 Wald=6.393 Exp(B)=.058	N/S	N/S	N/S	N/S
High GPA	N/S	N/S	N/S	N/S	N/S	N/S
Fight Friends	N/S	N/S	N/S	N/S	N/S	N/S
Breakup Stress	N/S	N/S	N/S	N/S	N/S	N/S
Good Relationship Parents	N/S	N/S	N/S	N/S	N/S	N/S
Time Studying	N/S	N/S	N/S	N/S	N/S	N/S
Time Extracurriculars	N/S	N/S	N/S	N/S	N/S	N/S
Religion	N/S	N/S	N/S	N/S	N/S	N/S
Friends Drink/Use	N/S	N/S	N/S	N/S	N/S	N/S
Time Friends	N/S	B=3.785 SE=1.70 Wald=4.956 Exp(B)=44.017	N/S	N/S	N/S	N/S

* N/S=independent variable did not significantly predict the dependent variable.

had of themselves, the more likely they were to report prescription stimulant misuse in the past six months. The more time respondents reported spending with friends, the more likely they were to report prescription stimulant misuse, also in the past six months.

Table 5 provides the results of our second logistic regression analysis, where we examined each independent variable's ability to predict binge drinking, marijuana use, and illicit drug use. Sixteen independent variables significantly predicted drinking, marijuana, and illicit drug use at the .05 level. Two of these were strain variables: expectations of self and fighting with friends. The lower the expectations respondents had of themselves, the more likely they were to report illicit drug use in the past six months. The more respondents reported fighting with their friends, the more likely they were to report marijuana use in the past six months. Four of these predictive variables were bond variables, time studying, time in extracurricular activities, and the importance of religion. The more time respondents reported studying, the more likely they were to report illicit drug use in the past six months, and the more time they spent in extracurricular activities, the less likely they were to report illicit drug use in the past six months. The more important that respondents said religion was to them, the less likely they were to report marijuana use ever and in the past six months.

Ten of the explanatory variables were learning variables. The more time respondents reported spending with friends, the more likely they were to report binge drinking ever, in the past six months, and in the past month, as well as marijuana use ever and illicit drug use ever. The more respondents reported that their friends drank and used drugs, the more likely they were to report binge drinking in the past month, as well as marijuana use ever and in the past six months, and illicit drug use in the past six months and the past one month.

DISCUSSION

We set out to examine whether different types of college strains could predict different types of prescription drug misuse among honors students. We predicted that academic strains would be associated with prescription stimulant misuse and that relationship strains would be associated with prescription painkiller misuse.

We found limited support for our first hypothesis, that academic strains are associated with prescription stimulant misuse, but our findings are in an unexpected direction. The lower respondents' expectations of themselves, the

more likely they were to report prescription stimulant misuse. Based largely on Ford and Schroeder's research, we expected that respondents who had the highest expectations of themselves might misuse prescription stimulants in order to study more or to be more productive in order to continue to live up to those expectations. The sample who participated in this research may help explain these unexpected findings. Nearly half were in their first year of college when they took the survey, so they were relatively new to the college setting and likely still adjusting to the change from high school. Because the data were collected in the spring semester, this adjustment may have been compounded by receiving their first-semester grades. After excelling, often easily, in high school, they may have faced challenges to their self-expectations in college, spurring them on to take more drastic measures such as misusing prescription stimulants to excel in the new setting. Expectations of self also predicted illicit drug use in the past six months in the same direction, and greater time spent studying predicted illicit drug misuse; the illicit drugs were likely to have been stimulant in nature.

We found no support for our second hypothesis, that relationship strains are associated with prescription painkiller misuse. In fact, the only relationship strain that predicted drug use was fighting with friends: those who reported more fighting were more likely to report using marijuana in the past six months. Moreover, as Table 5 indicates, bond and especially learning variables were far more important in explaining drug and alcohol use than were strain variables. This result is consistent with prior criminological research, which finds that social learning theory is almost always the strongest explanation for criminal behavior, including drug and alcohol use (e.g., Hwang & Akers; Neff & Waite). However, it would be unwise to dismiss all other theories to explain prescription drug misuse, given previous findings (e.g., Schroeder & Ford) and the results of the present study, which do not show much overlap between the independent variables that predict prescription drug misuse and those that predict binge drinking, marijuana use, and illicit drug misuse. Different variables that are central to a number of criminological theories are possibly associated with different types of alcohol and drug use.

LIMITATIONS

As with any research, this study has limitations. The first is our small sample size. Although we did survey about a quarter of the honors students at our university, our sample may not be representative enough of the honors population to draw firm conclusions. A larger sample would have likely matched

Table 5. Logistic Regression: Drinking and Drug Use*

	Binge Drink Ever	Binge Drink 6 Months	Binge Drink 1 Month	Marijuana Ever	Marijuana 6 Months	Marijuana 1 Month	Illicit Ever	Illicit 6 Month	Illicit 1 Month
Scholarship	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
High Expectations	N/S	N/S	N/S	N/S	N/S	N/S	N/S	B=-1.444 SE=.664 Wald=4.736 Exp(B)=.236	N/S
High GPA	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Fight Friends	N/S	N/S	N/S	N/S	B=.935 SE=.440 Wald=4.505 Exp(B)=2.547	N/S	N/S	N/S	N/S
Breakup Stress	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Good Relationship Parents	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Time Studying	N/S	N/S	N/S	N/S	N/S	N/S	N/S	B=.953 SE=.424 Wald=5.061 Exp(B)=2.594	N/S

Time Extracurriculars	N/S	N/S	N/S	N/S	N/S	N/S	N/S	B=-.697 SE=.344 Wald=4.091 Exp(B)=.498	N/S
Religion	N/S	N/S	N/S	B=-.526 SE=.191 Wald=7.610 Exp(B)=.591	B=-.568 SE=.198 Wald=8.225 Exp(B)=.567	N/S	N/S	N/A	N/S
Friends Drink/Use	N/S	N/S	B=1.278 SE=.512 Wald=6.230 Exp(B)=3.590	B=.921 SE=.426 Wald=4.669 Exp(B)=2.513	B=1.131 SE=.486 Wald=5.414 Exp(B)=3.097	N/S	N/S	B=1.993 SE=.850 Wald=5.502 Exp(B)=7.337	B=2.374 SE=1.194 Wald=3.957 Exp(B)=10.743
Time Friends	B=1.019 SE=.321 Wald=10.092 Exp(B)=2.770	B=.832 SE=.298 Wald=7.789 Exp(B)=.001	B=1.176 SE=.359 Wald=10.739 Exp(B)=3.243	B=.705 SE=.314 Wald=5.052 Exp(B)=2.023	N/S	N/S	B=.847 SE=.387 Wald=4.786 Exp(B)=2.333	N/S	N/S

* N/S=independent variable did not significantly predict the dependent variable.

the honors population as a whole more closely on key demographic variables. The second limitation is the cross-sectional nature of our work. Because we collected the data at one point in time, we cannot definitively say that the independent variables produced the dependent variables. The firmest conclusion we are able to draw at this point is that they are associated with one another as described above.

The third limitation is the timeframe in which the data were collected. The university where the study was conducted is in New Orleans, and in the spring semester the university and the city celebrate Mardi Gras. Consistent with typical impressions, Mardi Gras is a weeks-long celebration during which revelers, some of whom were very likely in our sample, engage in drinking and drug use. The prevalence of drinking and drug use may be higher and therefore less representative of the sample's (and of the population's) true substance use behavior because of when the data were collected.

The fourth and probably most important limitation is our operationalization of strains. As noted above, literally thousands of strains can fall into each of the three categories of strain, and we selected a total of six strains, three academic and three relationship-related. Probably more strains affect honors students, including but not limited to financial strains and mental health challenges, that we did not inquire about. Understanding the impact that strains have on prescription drug misuse probably requires the incorporation of more actual and potential strains into future work.

IMPLICATIONS

Limitations notwithstanding, we believe our findings have some important implications for supporting honors students as they navigate the challenges of college life. Because lower self-expectations predicted more prescription stimulant misuse, it follows that honors students, particularly in their first year, may benefit from assistance with setting and managing expectations. This assistance could come from faculty and staff, but it may be most meaningful and effective if it comes from honors students who are further along in college. Upper-level students have very likely faced the same or similar challenges and can share their experience with beneficial and maladaptive coping mechanisms. Improving the ability to cope with strain is also a goal set forth by Agnew in "Controlling Crime."

The bond and learning variables that significantly predict alcohol and drug use, including prescription stimulant misuse in the case of learning variables, also have implications for honors students. Consistent with social

bond theory, opportunities for engagement in prosocial groups, programs, and events should have the effect of keeping honors students bonded to the university and reducing drug and alcohol use as a result. These opportunities must be known to and of interest to honors students, though; simply having opportunities would likely be fruitless otherwise. Regular surveys with honors students about their interests and ability to commit to (probably additional) extracurricular activities could help reveal gaps in what is offered.

Finally, and consistent with social learning theory, opportunities to spend time with prosocial peers should have the effect of reorienting the group with which honors students differentially associate and, by extension, their definitions around alcohol and drug use, their expected reinforcement as the result of use, and the models they have to imitate. Research on programs that provide prosocial peers, such as Big Brothers Big Sisters, has shown that they are effective at reducing antisocial behavior (Greenwood & Turner). Ensuring that honors students, particularly when they first start college, can find and engage with prosocial peers should reduce alcohol and drug use, and while faculty and staff should take the steps they can to make sure this is happening, the importance of involving honors students, especially those who are further along in college, cannot be overstated.

CONCLUSION

While we believe that our research is solid and our implications worth employing in honors programs, the limitations of our work demand additional study on this topic. In order to discover the particular strains of college life that are important in producing drinking and illicit drug use as well as prescription drug misuse among honors students, we urge replication of this study at larger public universities with sizeable honors programs and colleges. Larger sample sizes, as well as fewer potential confounds from data collection around Mardi Gras time, would provide an opportunity to more thoroughly operationalize academic and relationship strains and to add new, potentially important ones such as financial or mental health strains. Continuing this line of investigation will help uncover the specific reasons for drinking and drug use and provide theory-based approaches that encourage responsible use of these substances as well as prosocial coping skills for honors students dealing with the inevitable strains of college life.

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