



## “The White Version of Cheating?” Ethical and Social Equity Concerns of Cognitive Enhancing Drug Users in Higher Education

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### Abstract

So-called cognitive enhancing drugs (CEDs) are relatively common in higher education, especially among students who are white, male, and attend highly selective institutions. Using qualitative data from a diverse sample of 32 students at an elite university, the present study aims to examine whether students perceive CED use to be advantageous, equitable, and fair. Participants were either medical or nonmedical users of CEDs—primarily ADHD stimulant medications such as Adderall. Data were first coded openly, then axially into themes, and finally arranged to respond to research aims around social and ethical concerns. Ethical perceptions and behavioral justifications varied by participants’ personal use frequency, class standing, and perceived social norms surrounding CEDs. Among the salient themes to emerge was the belief that CED use is a lesser or more tenable form of cheating, that the vagueness and prevalence of ADHD justifies nonmedical use, and that above all, CEDs are advantageous. Some participants expressed concern about the advantageousness of CEDs when coupled with a perceived imbalance of their use among students from traditionally underrepresented backgrounds, with one calling it “the white version of cheating.” Implications for cheating and drug use prevention are discussed, situating cognitive enhancement as an emerging ethical and social equity concern in higher education.

**Keywords** Cognitive enhancement · Nonmedical use of prescription stimulants · Academic integrity · Ethics · Cheating · Higher education · Social equity

The use of drugs that enhance cognition and academic performance is a relatively new phenomenon that lies at the intersection of modern medicine and our modern meritocratic pressure to enter and thrive in postsecondary settings. In the United States, the use of so-called cognitive enhancing drugs (CEDs) is pervasive among college students. Prescription

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stimulants such as Ritalin and Adderall are among the most commonly used and abused CED's with collegiate past-year use rates ranging from 10.1% nationally (Johnston et al. 2016) to reported prevalence as high as 35.5% at some institutions (Low and Gendaszek 2002). College student health literature and popular media reports have given ample coverage to this growing trend of achievement-driven college students becoming reliant on drugs as study aides (Cohen 2013; Schwarz 2012).

Cheating and academic misconduct have similarly been described as a pervasive ethical problem in the research literature, approaching epidemic proportions in higher education (Desruisseaux 1999; McCabe et al. 2001). Over three fourths of students at U.S. institutions engage in one or more incidents of academic dishonesty (McCabe and Trevino 1997) a troubling figure that has increased slowly for decades (McCabe et al. 2001). Traditional, chemical-free forms of academic dishonesty include plagiarism, exam fraud, receiving improper help or collaboration, and contract cheating (Walker and Townley 2012), among many others. A recent literature review of postsecondary academic integrity articles detailed various homework and test-taking infractions but made no reference to CED use (Macfarlane et al. 2014). The authors of this review stressed the need for more research on novel or understudied types of cheating. A few academic editorials have theorized about the academic ethics of CED use (Cakic 2009; Goodman 2010; Schermer 2008), and prior qualitative research has explored justifications for of illicit ADHD medication use (DeSantis and Hane 2010), but to the best of our knowledge, none have explicitly sought to examine associations between cheating and CED use in American higher education.

Particularly absent from this discussion are the voices of college students who themselves engage in academic enhancement drug use. How are CEDs construed as fair or unfair, beneficial or disadvantageous? Do students view it as "academic doping" (Dodge et al. 2012) and a seldom-regulated issue of academic integrity (Aikins et al. 2017; Lamkin 2011), or as something differently altogether?

The key question this paper seeks to address is: how do collegiate cognitive enhancing drug users regard the social and ethical implications of CED use? This question is explored using original qualitative data from college students at a highly selective university who use these drugs nonmedically for academic gain. Emergent findings aim to contextualize the phenomenon of collegiate CED use as it relates to cheating, fairness, and social equity in higher education.

## Review of The Literature

Two related questions emerge when positioning access and use of CED in higher education as an issue of fairness and equality: first are CEDs actually advantageous in educational settings? And second, are there notable use disparities along lines of race, class, sex, or other important demographic characteristics?

### Do they Work? The Efficacy of CEDs in Higher Education

The ADHD stimulant medications methylphenidate (MPH; e.g., Ritalin, Concerta, etc.) and mixed amphetamine salts (AMP; Adderall, Dexedrine, etc.) are the two sub-classes of prescription stimulants most widely used by college students for enhancement purposes (Gamier et al. 2010; Johnston et al. 2012; Teter et al. 2005; White et al. 2006). These are also

the two main types of prescription stimulants used as functional "CEDs" in postsecondary settings, as well as the medications most commonly identified by participants in the present study. For the purposes of this paper, it should be noted that "CEDs" refer primarily to the nonmedical use of prescription stimulants (or "NMUPS") for academic purposes, as opposed to the legitimate use of prescription stimulants and other ADHD medications when taken as prescribed by students with diagnosable disorders under physicians' care. In other words, NMUPS is a term often used in prior literature that denotes the type of user (nonmedical users) and drug (prescription stimulants), while the term "CED" refers instead to a user's intent (i.e., to enhance cognition) and are not limited to a drug or user type. The term NMUPS is accurate to describe prior research conducted specifically on those populations and substance types. In the present study however, the term "CED" is more appropriately inclusive of the small number of medical users and of the minority of participants who used non-stimulant medications in the present sample. This terminology is further discussed in the "results" section, even though the two terms are largely—but not exclusively—synonymous.

Clinical research suggests that prescription stimulants may improve some aspects of cognitive performance despite variable psychological, health, and legal risks. A monograph of applicable empirical research on the epidemiology and cognitive neuroscience of NMUPS among healthy individuals found that they "do enhance learning in ways that may be useful in the real world" (Smith and Farah 2011, p. 727). Other comprehensive reviews on the enhancement potential of NMUPS found mixed results across various cognitive domains (Bagot and Kaminer 2014; Repantis et al. 2010). Despite this clinical evidence suggesting plausible performance benefits, there is little real world data proving that college students engaging in NMUPS experience any long-term increases in cognitive functioning (Arria et al. 2008a), or any actual academic gains (Arria et al. 2013, 2017; McCabe et al. 2005).

Thus regarding their efficacy, it is plausible that CEDs may confer some cognitive and academic benefit, with the important caveat that there is no evidence said benefits translate to any actual gains in students' grade point averages (Arria et al. 2017). Still, there is a strong perception of academic advantage among CED-using college students (Arria et al. 2018). Related implications for social equity have been raised when considering selective access to CEDs as a real or perceived academic advantage (Schelle et al. 2014).

### **Who Uses CEDs? Disparities and Patterns of Risk among Collegiate CED Users**

According to the literature, notable CED prevalence disparities exist along lines of sex, race, age, geography, socioeconomic status, and institutional characteristics. A national study found that NMUPS was almost three times as prevalent among white students than among Black and Latino students, and men were twice as likely as women to report NMUPS (S. E. McCabe et al. 2005, 2007). Some of this gender difference is attributable to the disproportionate rates of ADHD diagnoses occurring in early childhood and adolescence, with 13.2% of U.S. school-aged boys diagnosed with ADHD compared to 5.6% of girls (Visser et al. 2010). Higher rates of NMUPS were also found among students with higher class standing, among those affiliated with Greek letter organizations (DeSantis et al. 2008; McCabe et al. 2006), and at institutions with more selective admissions profiles (McCabe et al. 2005). Collegiate NMUPS prevalence fluctuates in part based on the "nexus between socioeconomic status, race, and access to mental health care" (Mohamed and Fritsvold 2010, p. 68), with one study noting that 75% of adults diagnosed with ADHD are white (Lawson 2004).

These disparities are important in a broader sense because higher education is rightly viewed as a vehicle for social mobility (Karen 2002; Perna and Finney 2014). Accordingly, the field of higher education has continually sought to identify the complicated social factors that enable or limit equitable access to and success within postsecondary settings, especially for historically underserved populations (DiMaggio 1982; Gorski 2012; Harper et al. 2009; Roscigno and Ainsworth-Darnell 1999). Offering a critical perspective on race and equity, Bensimon and Bishop (2012) contended that researchers of higher education often fail to ask “critical questions that begin with an understanding of the racialized patterns in higher education structure, policies, and practices that reproduce inequalities in access and success” (p. 2). This study asks students to consider whether collegiate CED use has any role in the reproduction of social advantage and disadvantage.

Previous research on the motivations of prescription stimulant using college students reflects the belief that stimulant medications are effective CEDs, with academic motives for use including improving concentration, study habits, organization, grades, reducing hyperactivity, and treating undiagnosed or self-diagnosed ADHD (Barrett et al. 2005; Schelle et al. 2014; Teter et al. 2005). Many students also abuse prescription stimulants nonmedically for recreational, non-academic purposes, which is associated with high-risk behaviors and developing substance use disorders in adulthood (Arria et al. 2008b; Low and Gendaszek 2002; McCabe et al. 2017; Teter et al. 2005). Accordingly, MPH and AMP are classified by the Drug Enforcement Agency as habit-forming Schedule-II controlled substances with a high potential for abuse (U.S. Department of Justice 2008). This also means that the diversion (i.e., sale or redistribution) of prescription stimulants is illegal.

The illegality of nonmedical CED use raises questions about why such behavior persists, and how justifications compare with other forms of cheating. In a previous qualitative study of 175 collegiate CED users, DeSantis and Hane (2010) identified several “dominant arguments” presented by college students when asked about their reasoning for illicit ADHD use (p. 34). Interestingly, several factors associated with both CED use and cheating overlap, and contrasting these two bodies of literature provides useful insight into both phenomena.

### **Cheating in Higher Education and Ethical Comparisons to CED Use**

Considering the common influences of both cheating and CED use in postsecondary settings, it is hardly surprising to find that both groups share certain traits. These shared characteristics include students who are white, male, affiliated with Greek letter organizations, have more advanced class standing, and have lower grade point averages (Crown and Spiller 1998; McCabe et al. 2005). Other important factors that motivate cheating behaviors include students’ levels of interest in course material, the perception of “fairness” of exams, and dependence on good grades to secure financial support and long-term goals (Genereux and McLeod 1995).

This paper aims to clarify the complex relationship between these many use justifications, to explore perceived risk factors, and to understand overall how college students make meaning of their own CED use. Furthermore, special attention is paid to understanding how students view this phenomenon ethically, if it is seen as a broader issue of fairness, and if such beliefs factor into their own calculations of benefit and risk. This study draws data from in-depth qualitative interviews with 32 students who use stimulant medications at a highly-selective American university.

## Methods

Data were collected via one-on-one, semi-structured interviews, occurring between November 2009 and July 2010. The data collection site is among the "most selective" undergraduate admissions profiles and in the "top tier" of national universities according to national rankings (USNews.com 2013), where NMUPS is more prevalent (McCabe et al. 2005). The host institution has a "very large" and mostly undergraduate student body, and its campus is primarily residential, and urban, located in the Western United States.

Participants were recruited through flyers placed in academic buildings and residence halls, departmental e-mail list-serves, and via announcements in select undergraduate classes. Eligible participants had to be full-time students at least 18 years of age, and must have taken a stimulant medication (e.g., MPH, AMP) explicitly for academic purposes (as opposed to recreational purposes) at least once in college. Prospective participants inquired by e-mail or phone and scheduled a time to meet with a member of the research team.

One-on-one meetings occurred in-person in an academic building on campus with dedicated sound-proof spaces (i.e., study rooms) used for this explicit purpose. Students were required to provide informed consent and to complete a demographic questionnaire prior to the interviews to reconfirm eligibility (i.e., that they had taken a CED for academic purposes while in college).

Interviewers were trained and certified for human subjects research in the social and behavioral sciences, and all recruitment materials and procedures used were approved by the appropriate Institutional Review Boards. The interview protocols used in the present study evolved from previous protocols that were piloted in an exploratory qualitative research study of collegiate CED use involving 12 participants and the same research team (REDACTED, YEAR). Interviews were digitally recorded and ranged from 32 min to 105 min but typically lasted about an hour. Afterward, participants were given a \$20 gift card. To ensure anonymity and confidentiality, participants were assigned pseudonyms, all names and any other identifying data were scrubbed from transcripts. All audio recordings were eventually destroyed.

Data presented in this paper are derived from the questionnaires and hour-long, semi-structured interviews with 32 students who used CED's medically (i.e., "licitly" or with a prescription) or nonmedically ("illicitly") for academic purposes. Most of the data presented that relate to cheating, fairness, and the social equity of CED use stem from the specific question probes "do you think your [drug/medication] use puts you at an advantage?" or "do you think the academic use of [drugs/medications] is a cheating/academic integrity issue?" Other parts of the interview protocol included questions designed to explore (1) past and current personal use habits; (2) ethical and health perceptions of benefits and harms (including cheating probes) attributed to personal and peer use; and if applicable, (3) solicitation and diversion (including related legal/ethical concerns).

Data analysis procedures were consistent with a grounded theory approach for social science research (Creswell 2003; Jones et al. 2006), with reanalysis occurring between 2013 and 2015 to focus on issues of race, equity, and ethics. The focus on atheoretical findings of interest is similar in practice to DeSantis & Hane's organization of "dominant arguments" (p.33). In the present study, concepts were openly coded from each interview, codes developed were then regrouped axially into conceptual themes, and finally, those themes were rearranged to respond to the central research question: how do CED users view the social and ethical implications of CED use in college?

## Results

### Sample Characteristics and User “Typologies”

Of the 32 students who used CEDs for academic purposes, ADHD stimulant medications were the primary drugs, with 29 having used Adderall, 9 used Ritalin (including Concerta, Focalin, and Cylert), 2 used Provigil (brand name for Modafinil, a narcolepsy medication with purported focus enhancing properties), and one participant used Strattera (a non-stimulant ADHD medication). Several participants used multiple medications. The term “CED” is used instead of NMUPS because it is inclusive of non-stimulant medications, and because it captures the enhancement motivations for participants who used drugs both medically and nonmedically.

The majority of participants exclusively used CEDs nonmedically ( $n = 27$ ), or without a prescription. Five participants received medications legally through medical channels, though one student initially used Adderall without a prescription before seeking and acquiring an ADHD diagnosis and valid prescription, and a fourth-year female student without an ADHD diagnosis regularly received prescriptions through a friend’s parent who was a doctor. Another key distinction regards the frequency of use among nonmedical users. Students were considered “regular” or “frequent” users ( $n = 12$ , 44.4% of illicit user group) if they used CEDs more than 10 times total over the course of their collegiate career. Of the “infrequent” or “occasional” CED users ( $n = 15$ , 55.6% of illicit user group), 10 used CEDs on less than three occasions. “Licit/medical users” all took medications regularly, as prescribed, ranging from 1 to 2 times per week to daily. Thresholds used to establish frequency classifications (e.g., “frequent/regular” versus “infrequent/occasional”) were constructed subjectively based on variance within the sample (see Table 1).

Establishing these three user typologies was important for this analysis because legality and the presence of ADHD influenced perceptions of fairness, and because participants had more or less developed opinions and justifications about CED use based on their level of experience with the drugs. The sample consisted of 17 women and 15 men; 16 participants identified as white, nine as Asian, four as Latino/a, and one as Middle Eastern. The average self-reported

**Table 1** CED User Typologies

Typology	N (% of total sample)	Definition
Nonmedical or illicit, frequent/ regular users	12 (37.5%)	Acquired CEDs through nonmedical channels, used without prescription on more than 10 occasions over college career for academic purposes
Nonmedical or illicit, infrequent/ occasional users	15 (46.9%)	Acquired CEDs through nonmedical channels, used without prescription on less than 10 occasions over college career for academic purposes
Medical or licit users*	5 (15.6%)	Had medical diagnosis of ADHD or acquired CEDs through medical channels, uses CED medications on regular, weekly basis. *Includes one “quasi-licit” user who was not diagnosed with ADHD, and one “licit/illicit” who used CEDs illicitly prior to obtaining ADHD diagnosis and beginning medical use.

GPA was 3.34, with participants coming from diverse fields of study. Age, class standing, and other demographic characteristics are shown on Table 2.

**Overview of Emergent Themes**

Consistent with prior research on the motives of collegiate stimulant users, this sample generally believed that using CEDs under certain academic conditions could be advantageous for them and for others. "I love it [Adderall]. I wouldn't use it if I didn't. ... I mean, it helps with studying – you know that it will improve your grades or your retention," said a frequent nonmedical user. Another frequent user asked: "why spend 20 hours studying without Adderall when I can spend 5 to 7 on it and get the same result?"

"Medical/licit users" (students with legal prescriptions) tended to agree, which could be expected, as their medications were prescribed to treat a diagnosed condition that is known to impede academic performance. Said one: "On the whole, I would say it's helpful ... academically, it's definitely helped me in the sense that I am definitely a better student, hands down".

Understandably, some "illicit/nonmedical users" became defensive or had difficulty justifying their actions. A few appeared to have never contemplated the ethics of CED use before. "I mean, it's hard to say if it's fair because some people work really hard and don't take it ... Now you're making me feel bad [laughter]. Yeah, I guess it would be unfair. I just don't really care about it though. It's not unethical to me," said the licit user who had her prescriptions filled by a friend's parent who was a physician. Below, a first-year undergraduate and

**Table 2** Participant demographics by CED user typology (N)

	Nonmedical CED users, frequent	Nonmedical CED users, infrequent	Medical users	Total (N = 32)
<b>Sex</b>				
Male	8	5	3	16
Female	4	10	2	16
<b>Ethnicity</b>				
White	4	8	4	16
Asian	2	7	–	9
Latino/a	3	–	–	3
Middle Eastern	2	–	1	3
Other/mixed	1	–	–	1
<b>Age</b>				
18–19	1	6	–	7
20–22	9	6	2	17
23–30	1	3	2	6
30+	1	–	1	2
<b>Academic discipline, major</b>				
STEM sciences	4	5	1	10
Social sciences	6	4	4	14
Arts, humanities	2	1	–	3
Business/economics	–	3	–	3
Other/multiple majors	–	2	–	2
<b>Class standing</b>				
1st year, undergraduate	1	2	–	3
2nd year, undergraduate	–	5	–	5
3rd year, undergraduate	4	1	1	6
4th year +, undergraduate	6	4	3	13
Graduate student	1	3	1	5

occasional nonmedical user attempted to illustrate the “grey area” of fair CED use as it relates to use frequency:

It’s kind of like a gray area, I’d say. I think someone who did it every single day when they don’t need it, that’s kind of cheating, but if it’s just one time when you’re having a really hard time and it does help you ... I guess technically would make it cheating, but – I don’t know ... I could see where someone might see that as cheating, ‘cause it did give me kind of an unfair advantage.

To the above student, the frequency and context of use factored into her ethical calculus, and she qualified the few times she used it during difficult circumstances. This quote introduces several forthcoming themes about what participants felt constituted fair or unfair CED use, and it exemplifies the challenge of disentangling interrelated themes. Those themes include concerns about the perceived availability and prevalence of CEDs, use frequency, and perceived identity-based patterns of which types of students are thought to benefit the most from CEDs.

### **Social Norms: “It’s Not Unfair if Everybody’s Doing It”**

Participants were specifically asked to estimate the percentage of their peers at “[host university]” who use CEDs. Six participants did not provide estimates, and some qualified their responses with a range, or with different estimates for licit and illicit users or differently for fraternity and sorority members. The totality of these estimates ranged from 10%–95%, averaging 35% across the sample. College students are known to over-report rates of peer drug use (McCabe 2008), thus it is possible that estimates from the present sample were similarly inflated. Participants who felt that CEDs were more ubiquitous and advantageous expressed the belief that it would put them at a competitive disadvantage to not use drugs. Said a fourth-year, occasional nonmedical user, *“I think it puts you at more of a disadvantage to not take it. ... When you get into these bio or pre-med classes where everyone’s trying to go to graduate school, people are going to try to do things to get an upper-hand, and one of those things, unfortunately, is Adderall.”* When this student was pressed about whether he viewed his own behavior as cheating, he continued, *“Yeah, I do. That’s why I don’t like it. ... It makes you feel better about it if everyone’s doing it. Like if everyone’s cheating, and you’re the only one not cheating, and your grade suffers for it, then you would rather have just done what everyone else did.”* The sentiments of this student recall previously seen rationales of “minimizing” behaviors that are perceived as common or harmless (DeSantis and Hane 2010). The perceived frequency of others’ use acting as a justification for one’s own use was a recurring theme in the present study as well.

The thought of prevalent CED use among peers was unsettling to some nonmedical users who bemoaned their lack of access to them. This resentment seemed to rationalize, or even coerce, their own use. *“I mean, I like [stimulant medications]. I don’t like that everybody uses them because it makes me feel at a disadvantage if I don’t,”* said a frequent, nonmedical user. Another student (a second-year student who had only used Adderall twice) was asked if she “needed Adderall in order to succeed in college,” to which she dishearteningly agreed, adding: *“it shouldn’t be like that. But honestly a lot of people take it ... I have to compete with people who are on Adderall, and people who are ridiculously smart, or people who are both, which is a lot of people, too.”* This student thus blends two notable rationales: not only are CEDs ubiquitous, but the fiercely competitive environment of college justifies their use. At highly-

selective institutions, including the data collection site of the present study, a selective admissions profile contributed to the perception that using CEDs is tenable if it allows one to fairly compete with "others" who are either all on CEDs, or who are naturally gifted without them. This idea connects closely to a forthcoming theme about "*leveling the playing field*."

Another important influence on the perceived fairness of CED use depended on whether participants had plentiful or limited access to CEDs. In other words, to paraphrase, it's not unfair if everybody's doing it, but it *is* unfair if everybody *else* is doing it. For example, a graduate student whose source was no longer available lamented, "*I'm looking at other people doing it ... I think it just might be rooted in the fact that I'm jealous that they have this tool and I don't.*" Real or imagined competitive pressure was less of a concern or use motive for students who had more consistent access to CEDs and took them more frequently. Said a third-year student who used Adderall several times without a prescription every finals period, "*no, I don't really think about that [peer competition] at all. It's basically just all for me. Like if it's gonna help me out to do it, I don't really care what other people are doing ... I don't think of it as cheating, no*".

### **Just another Resource, like Coffee**

Participants often mentioned the acceptability of caffeine when weighing the ethics of illicit stimulant medication use. A student who used CEDs nonmedically before obtaining his own medical prescription asked, rhetorically, that if CEDs amount to academic dishonesty, "*then what's the difference between that and caffeine? ... Or someone who has a laptop as opposed to someone who has to drive to campus to use a computer? ... If it's a resource thing, then it's like where do we draw the line? It's a very slippery slope.*" Likening CED use to coffee or caffeine has been seen as a form of "minimization" in prior research (DeSantis and Hane 2010), but it is noteworthy that students constructed debatable equivalences between CEDs and other academic resources and advantages.

Viewing both caffeine and CEDs as simply two comparable and available resources was a recurring argument against the use of study drugs as cheating or unethical. "*I don't know that it's cheating so much as using all the options available,*" said a regular illicit user. "*To use the metaphor, caffeine is freely available and some people drink coffee and some people don't. I don't know that drinking coffee is cheating. I don't know that taking a pill is going to be cheating.*"

The argument that Adderall was just "another resource" gained traction especially among students who felt it was equally accessible to everybody. Thus if non-users feel disadvantaged, they could easily find and decide to use these substances on their own. "*It's so easy to get that that's almost a moot point,*" said an occasional nonmedical user. When asked if Adderall imparted an unfair advantage, another regular nonmedical user said, "*No, no. I mean, it's out there.*" Another frequent, nonmedical user agreed, "*[Ritalin/Adderall] is a resource. Whether you get notes from last year, whether you get class exams, the bottom line is it's a resource for you to use*".

### **Not As Bad as Plagiarism and Other Kinds of "Real" Cheating**

Prior research has shown that the perceived ethical tenability of cheating can depend on the specific cheating method or circumstance (Molnar and Kletke 2012). Similarly, participants in this sample often compared the use of CEDs to other known forms of cheating, such as

plagiarism or using unauthorized notes on a closed-book test. Said a frequent illicit Adderall user, *“taking a drug to study harder kind of sounds like cheating but not like looking at answers that other people are writing, or something. ... I don't think of it as cheating ... it doesn't seem that bad.”* Though generally thought to be advantageous, most participants did not consider using Adderall to be as egregious as other types of cheating:

I would consider cheating to be bringing notes to class, or looking on someone's paper, or getting a copy of the test beforehand. But just having something that gives you a mental advantage? Some people are naturally smarter than others, or are slower or faster, or have more energy. So I just feel like they [CEDs] just kind of boost your natural abilities. If you're not smart to begin with, it's not gonna help you. It only kind of amplifies everything. – frequent, nonmedical user

When drawing ethical comparisons, plagiarism and exam fraud were the primary examples given, and both were deemed more unethical than using enhancement drugs in part because the resulting content was authentically their own. *“An academic integrity issue is like someone else helped you or someone else wrote it, or you're taking ideas from somebody else. It always involves a second or third party ... In this case, I'm still writing my own paper, it's not like someone else wrote it,”* said a licit user. In other words, copying an essay online or borrowing exams could be considered worse because the material is “stolen,” whereas CEDs allow for authentic—albeit perhaps expedited or enhanced—outcomes. This “authenticity” argument gained traction among many students. Said a frequent, nonmedical user, *“I'm not using other people's materials as my own, right? I'm still harnessing my own brain capacities. I'm doing my own work. This is a tool that allows me to get my work done.”*

Some users thought that CED use was more tolerable than plagiarism or using improper aids on assignments because CEDs simply accelerates the same learning processes. *“Adderall hasn't taught me anything that I wouldn't have learned in any other way. It just helped me deal with a limited amount of time,”* said a frequent, nonmedical user, who continued, *“it's not that because I took Adderall I figured out this theory. It's just because I took Adderall that I figured it out today and not tomorrow.”*

Though not articulating his perspective in these exact terms, the above participant would seem to adopt the view of academic CED use as a “process good” compared to an “outcome good” (Goodman 2010), whereby the process of doing work (e.g., working through a theory) has value beyond simply the outcome (e.g., a grade). Viewing academic achievement from a non-zero sum perspective (i.e., without enforced grading curves) also seemed to help justify CED use because, for some, doing something personally “advantageous” was of no consequence or disadvantage to others. *“I think people at [host institution] are extremely smart, and so I would never call myself at an advantage over them, but [Adderall] gives me an advantage over where I would be without it, I would say that,”* said a first-year illicit user. Rationalizing academic achievement as a solitary pursuit similarly seemed to negate any feelings of unethical wrongdoing at the expense of others. Other nonmedical users felt that using Adderall was not cheating because there is nothing wrong or immoral about improving one's own focus.

### **Perceived Patterns of Use: Are CEDs the “White Version of Cheating?”**

Aforementioned literature provides the most accurate picture of how collegiate CED use varies along lines of race, gender, and other known covariates (McCabe et al. 2007), but several participants cited sociocultural reasons for the perceived racial disparity of CED use. An illicit

user who identified as Vietnamese, for example, felt that her parents were ignorant of ADHD because they held a different cultural regard for psychology and pharmacotherapy. Additionally, a student of Middle-Eastern descent who was diagnosed with ADHD felt that CED use is more common among white students "... *for economic reasons. We can afford it. We're kind of bored. It's a little cultural.*"

Though it may seem trivial or cynical, "boredom" surprisingly emerged as a recurring reason why participants thought that students from more affluent socioeconomic backgrounds were especially likely to use prescription drugs. "*I particularly avoided going to a white high school just because the amount of drugs was way higher for some reason ... maybe it was money, or cause they were bored,*" said a licit user. Regarding the convergence of social class, ennui, and access to drugs, a first-year nonmedical user described the first time she tried Adderall:

I grew up in a town where everyone's rich and all the kids don't have anything to do ... That's basically where all my drug experimentation comes from, it's like, "Well, I'm bored. Let's f-k around." So we had just gotten piercings, and my friend was like, "I have some Adderall and I'm kinda tired. Do you want to try it?"

A student who identified as mixed Latino descent had a history of risky drug use. He discussed many socio-economic parameters that he felt influenced CED use patterns in college. He began by describing how his "*urban community*" regarded ADHD:

Participant: In society it's like, in the urban community, when you had energy and you think a lot about this process, your parents say to go outside and play, go kick rocks, go play with your friends, whatever's clever for the parent ... because there's not really any money for healthcare or anything like that, for Adderall, for a doctor to diagnose you and take care of that.

Interviewer: Is it about the money? Or do you think it's about kind of like the knowledge to get that going?

Participant: It's both, because the parent also doesn't understand 'cause she never grew up. Nine times out of ten, the parent that grows up in the community stays in the community, because she has that "the world is flat" type of idea. And so the only way [kids] know how to survive is to follow the parents' tracks. And it's sad, but that's the reality. Now if they grew up never knowing [about ADHD] when they were all hyper and everything, they're going to do the same thing to their children. The apple doesn't fall far from the tree, exactly. ... Then when they [the kids] get to college, or for whatever reason, they get somewhere to a different area, you learn just like I learned, this is like cheating. You take Adderall – you take this medication ... I'm like constantly just thinking about it. I'm like, "this is great! It's unheard of!" And then when you come up to the, I want to say, suburbs, or well-off people—as we say in [my neighborhood], "the people on the hill" basically, they have the knowledge. Their parents are educated. They know what it takes ... So I tell people, this whole Adderall thing is the white version of cheating. You want to get good grades, you want to do everything – you want to know why you have a 4.3 GPA, or whatever, and he does all of that? There's a reason.

There is a lot in the above statement worth unpacking. This student saw access to medication as a part of broader access to healthcare, which he viewed as uneven. He then seemed to

conceptualize social reproduction and cultural capital, before relating both to issues of fairness and social equality. The student was then asked about when he first had this revelation:

Well, I've been through foster homes as a child. I've been through juvenile hall. I've been through different associations with family members, and growing up in different communities ... and then when I get to college, I get put into this rich environment ... and they introduced me to Adderall, and the next thing I know I'm writing a ten-page paper, and never knew I could write ten pages ... *I call that the white version of cheating. That's like, quote-unquote.*

Several other participants felt that wealth played a role in which types of students are more likely to use and benefit from CEDs. One of the most telling perspectives on the unequal distribution of CEDs came from a prolific campus distributor/dealer, who we will call "Mike." "Mike" was a regular user of several stimulant medications himself, and he claimed to be the most active CED seller on campus, earning an estimated \$225–\$250 per week selling mostly Adderall, Ritalin and other stimulant medications. Mike discussed the differences he saw in the groups of students who purchased drugs from him most often, reporting that illicit use was higher among white students, men in fraternities, and specific sub-groups of Asian students:

Just like within any other community—there's always like the [international students]. Not them [not big users], and then there's like [Asian-American cultural clubs, social groups, and fraternity members], like the cool guys—those are the big users ... They can move in both worlds. They're dressed better, upper middle class. And they will pay. So it's skewed. I'm actually really well connected, probably the best connected across the whole campus. I really don't think anyone's dealt in more worlds. And black and Latino people would come to me, but not proportional to their numbers on campus.

Mike suggested that use disparities may occur across very fine gradations within ethnic and other demographic constructs. It is also significant that a self-reported "*well connected*" dealer observed a disproportionately low number of African American and Latino/a seeking CEDs. Considering the socioeconomic underpinnings of CED use pointed out by other students—and the perceived academic benefits of medication use acknowledged by almost all participants—Mike was asked, as a self-identified Latino male, if he felt his role as a CED dealer was reproducing social advantage for privileged peers:

Mike: I just think it comes out to the dollars. I don't even think it's about drive. I probably would have cut the prices for them [peers of color], but I just don't think that's an investment that they're making or they've really been – they've really known about.

Interviewer: Do you worry about that? Like, do you ever think about your role in terms of like, your customer base being proportionally more white and Asian?

Mike: Yeah.

Interviewer: Do you worry about ...

Mike: ... widening that gap?

Interviewer: Yeah. Do you worry about students of color getting left out?

Mike: I do think about that, and it's f—ked up but it's about the bottom line. And when I say bottom line, I just mean dollars. Making dollars and cents.

When asked about the ethics of CED use as an issue of cheating or academic integrity, Mike said, *"I'm not the right person to ask about integrity."*

### On Leveling the "Playing Field" and Students with "Legitimate" ADHD

Participants felt differently about the ethics of CED use among students who genuinely had ADHD compared to nonmedical users. Many expressed skepticism about ADHD as a legitimate behavioral disorder, owing in part to knowing peers who deliberately faked ADHD symptoms just to procure medications. As evidenced by one participant and other cases of ADHD malingering or "doctor shopping" reported in the literature (Hotze et al. 2011; Lee Booksh et al. 2010), defining "genuine" ADHD can be problematic. Accordingly, some nonmedical users qualified that not all "medical" use was wholly ethical, but the majority still felt that it was generally acceptable for medical users to take ADHD medications, expressing sympathy for students with actual need. Said a first-year nonmedical user:

I feel like for someone who has really bad ADD, [Adderall] could make a huge world of difference for them ... they're slightly at a disadvantage 'cause it probably is a lot more work for them to study, but I don't think it's cheating, 'cause if they really have that serious of a problem, they should get help.

One such participant "got help" just prior to transferring from a community college. He previously tried Adderall without a prescription, so he presumed that it would help him. Anticipating the increased difficulty of his new institution (the host institution for collecting these data), he made an appointment with his doctor and was soon diagnosed with ADHD. He always suspected that he might have had ADHD (his brother was formally diagnosed), but he conceded that his positive prior experiences with Adderall and impending transfer to a more competitive university were important factors for seeking an ADHD consultation. Like this transfer student, several participants from both medical and nonmedical user groups expressed low self-perceptions about their academic self-efficacy relative to peers, which influenced their feelings about the fairness of CED use. Many students talked about how CEDs could "level the playing field," or evoked similar idioms grounded in competition. Said the transfer student, *"let's say I was playing basketball and everyone was 6'2" and I'm 4'5" or something ... Now [with Adderall], I feel like I'm tall enough to play with the big boys. I still gotta practice; I still gotta try hard. But I'm tall enough now."*

Students from all participant groups often discussed the challenging academic climate of the host institution, and feeling intimidated by competition from intelligent peers. For some, these feelings shaped the perception that they were at a competitive disadvantage, which CEDs could help overcome. This would seem justifiable for students who used medications legitimately to cope with diagnosed ADHD, said one medical user, *"at best, I still think I'm at a disadvantage."* Individuals with ADHD are known to often develop lower levels of self-esteem and are less likely to graduate college (Breslau et al. 2011). *"The number one issue people with ADHD have, is usually their self-esteem is pretty crippled. I was definitely very self-critical. And I probably still am,"* said a medical user with ADHD. Interestingly however,

several nonmedical users expressed similar sentiments about their academic self-efficacy without CEDs to justify using them. This finding is interesting considering that all were admitted to the same university.

Whether low self-esteem or low perceived self-efficacy, these self-concepts were a recurring justification for illicit CED use. A fourth-year, infrequent nonmedical user said that Adderall wasn't technically an advantage for him because he considered himself "*on the lower end of the intellectual level here*," thus he felt Adderall merely "*helps me keep up with [peers]*." This student later said, "*I think it helps level the playing field because I feel that I'm not as smart as other people here.*"

Several nonmedical users also suspected that they had ADHD but were never formally diagnosed. Others felt that legitimate diagnoses of ADHD are desirable and helpful because they offer a biological explanation for academic underperformance. A few others (e.g., "Mike") saw financial benefits.

In addition to regularly taking their ADHD medications, three of the medical users received testing or note-taking accommodations through the host institution's office for students with disabilities. These students discussed their preference to not disclose their conditions or medication use with peers because of the "awkward" solicitations that would often ensue. "*I told my girlfriend I was taking this medication. Somehow she told her friend at [another university]. And this person offered to buy over 100 from me at one time at, I don't know, three dollars a pill,*" said a fourth-year student. "*The only reason I never sold any of it was because I thought that [selling] was kind of unethical.*"

These three participants also preferred to not disclose to peers that they were receiving academic accommodations because of the perceived stigmas associated with having a learning disorder or being academically "weaker." Another participant who declined accommodations reasoned that he did so because Adderall already gave him the advantage he lacked, thus utilizing any additional resources would be cheating. This student was asked if he ever sought learning or testing accommodations, to which he responded:

No, absolutely not, 'cause, if anything, I feel like that would be wrong. ... If anything, I feel like this medication, in itself, has already given me this, and now, not only do I get to perform at the level of everybody else, but now I get priority registration and all these other perks? I feel like, well, I know that I have a problem, but now I don't have a problem. So why would I get this benefit?

This participant poses several questions worth unpacking further. If CEDs are advantageous, what should determine who would, or should, be able to benefit from them? If there is no academic or GPA advantage—which current literature suggests there is not (Arria et al. 2017)—then it may be problematic for students to eschew helpful resources because they also take CEDs. The following section disentangles some of these interrelated themes and clarifies how findings from the present study advance our understanding of how college students form ethical constructions around the equity and ethics of CED use in higher education.

## Discussion

Revisiting the social and ethical perceptions of CED use, this study finds that CEDs are overwhelmingly seen as advantageous among users, and that some perceived there to be unequal access to them. But the ethical implications of use are varying and remain

complicated. Individual user characteristics such as medical use status, use frequency, the presence of ADHD, perceived self-efficacy, and personal access to CEDs all influenced how CED users perceived the fairness of CED use both personally and among peers. Social norms, a resource perspective, ADHD confusion, and the ethical preference to enhance rather than steal were all cited as justifications for use. These findings corroborate prior use justifications, including "minimization" and "self-medication" arguments (DeSantis and Hane 2010), but the idea that social ethics could—in some cases, at least—dissuade use is a novel finding. Prior research established that perceived alcohol and drug use prevalence rates are commonly over-reported among college populations (McCabe 2008), and that social norms play a powerful role influencing both cheating behaviors (McCabe and Trevino 1993) and NMUPS (Reisinger et al. 2016). It is known that the perceived academic benefits of CED use associate with actual use (Arria et al. 2018), and the findings of this study further support the notion that perceived social norms influence collegiate CED use.

ADHD should rightfully be regarded as a recognized disorder with a valid biological basis, but it has been consistently problematic to screen accurately (Elder 2010; Hartnett et al. 2004; Lee Booksh et al. 2010), exacerbated by demand from parents and students seeking an advantage (Forlini and Racine 2009). These findings show that students from all backgrounds are suspicious about medication-seeking, particularly among students and families of higher socioeconomic status. Many students in this sample exhibited "ADHD confusion" (Aikins 2011), but findings of this study suggest that assuming an ambiguous stance about the legitimacy of ADHD may protect CED users from the discomforting notion that their actions are unethical, and known instances of symptom malingering among peers reinforced these beliefs. Psychiatrists often feel conflicted about prescribing drugs to healthy individuals for enhancement purposes, with social equity being a key concern (Hotze et al. 2011). This is important because dealers, like Mike, may have different ethical standards than doctors.

To this end, we were particularly interested to hear what participants said about the socio-cultural underpinnings of CED use. While a few participants expressed social equality concerns about the perceived racial/ethnic or economic distribution of CEDs, these reservations did not appear to deter use at all, or dealing, as was the case with Mike. The findings of this study are largely atheoretical, but grounding this phenomenon in the framework of cultural capital transmission may elucidate how CED use proliferates selectively in educational settings. Educational attainment (i.e., college) has been described as a form of cultural capital whereby class status socially reproduced, especially among the middle and upper class (Bourdieu 1977). Other known forms of advantageous cultural capital include private college counseling and standardized test preparation tutoring (McDonough et al. 1997), which might be seen by participants in this group as examples of other "resources" like CEDs. Extant qualitative research has found that students carry keen perceptions about social reproduction in higher education (Seider 2008), and this study reveals that students believe CEDs can also play a role in this, even if long term benefits are illusory.

Despite no prior evidence linking CED use to higher grades (Arria et al. 2017), students in this sample still identified CEDs as an advantageous resource, thus we feel that patterns of CED use should be monitored closely in secondary and postsecondary education. Several students saw CEDs as pathways to enter or persist in elite higher education, thus we must also consider what this means for students who develop a belief structure whereby illegal drugs are needed to compete in a place where they feel as though they may not otherwise belong. Career consequences and long-term effects of this are unknown.

In relation to medication seeking, future research should also consider the possibility of seeking advantage through feigning ADHD to receive academic and testing accommodations (e.g., extended time on standardized tests, exams, etc.). As one article put it “not only are individuals with ADHD the potential beneficiaries of a ‘medical excuse’ for their life problems, but they may be eligible for specific benefits under the Americans with Disabilities Act” (Conrad and Potter 2000, p. 574). It was interesting that a student in this sample who sought an ADHD diagnosis—in part—to help him compete after transferring to the host university felt that it would have been unethical to also accept accommodations.

Overall, students rarely associated CED use with personal wrongdoing, and only occasionally identified diversion or nonmedical use as illegal. Nobody, even Mike, feared the legal consequences for CED diversion, acquisition, or use. In the few instances where students considered CED use as a form of cheating, all considered it a lesser form of cheating, though justifications differed.

### Limitations

The findings in this study are limited by several factors that are common in exploratory qualitative studies with small sample groups. First, though the beliefs and values of students in this study correspond with the literature in many cases, this sample was drawn from a single institution, thus it is possible that the opinions of these students were not representative of the broader collegiate population. Second, the setting of this study was a large, urban campus with data collected no later than 2010, thus results should be viewed within this context of time and place. Student perceptions about ethics, CEDs, and drug culture in general are bound to evolve over time.

Participants held complex or ambiguous views about the ethics of CED use, and at times seemed to contradict each other or themselves. Being a sample comprised entirely of users, some use justifications could be interpreted as a reaction to discomfort or cognitive dissonance over behaviors that are illegal or unethical. Arguably the most important area of disagreement and controversy regarding CEDs is their academic efficacy. The vast majority of this sample felt that stimulant medications were generally effective CEDs with minimal health risks or drawbacks, but several participants discussed situations or circumstances where stimulants were ineffective, and most seemed wary of the potential for psychological or “academic dependence” (Aikins 2011).

Despite questionable real world efficacy with this generation’s available crop of enhancement technologies, stimulant medications are dangerous controlled substances. Any recommendation that either underachieving individuals or historically underrepresented groups of students can or should seek academically beneficial drugs—legally or illegally—to close the achievement gap, is irresponsible and highly problematic. This research corroborates previous findings that the perception of advantage does exist. Alarming, several students reported that reading research and media articles (Greely et al. 2008; Talbot 2009) piqued their curiosity and contributed to their experimenting with CEDs, which is self-reflexively problematic.

### Conclusion

This work is best seen as an exploration of student-level data at the nexus of academic ethics, cognitive neuroscience, and perhaps behavioral psychology. It presents a strong case for the

inclusion of CEDs in future research and discussions surrounding ethics and equity in higher education. CEDs are not necessarily just the "white" version of cheating, as one participant said. But if "whiteness" serves as a proxy or synonym for a more broadly "privileged" class of student, then CEDs are indeed seen by some as tool for academic advancement more often wielded by the privileged. It is significant and affirming that despite the illegality of use, CED users are not amoral. Many were aware of, and genuinely cared about the social ethics of CED use disparities.

The present paper builds upon recent studies that have begun to examine the drivers of CED use (Sattler et al. 2014), and future research would also benefit by imbedding measures to test the interrelationship between cheating proclivities and individual characteristics, including CED use. This study also identified key characteristics of CED users (use frequency, licit/illicit status, etc.) that are likely to associate with ethical perceptions. We suspect that the overlapping characteristics of students who engage in CED use (from both this study and prior research) and cheating behaviors (from the literature) suggests that a relationship exists, but supporting evidence is needed. For example, cheating has been associated with a lack of moral obligation (Crown and Spiller 1998) and other deviant behavior. Thus concerning student health and development, it would be helpful for future research to explore causality. In other words, does cheating lead to CED use then to substance abuse, or conversely, could CED use broaden to other cheating behaviors and moral bankruptcy?

This research suggests that, according to student users, CEDs are appealing because of their perceived low risk, minimal ethical barriers to initiate use, and a perception of reward that seems to grow with recurring use. A common but troubling narrative emerges among users, which is that they cannot be told not to do something that they view as enabling their success. For a growing number of college students, this includes using CEDs, and is preferable to non-pharmaceutical cheating. Approaching this issue from social and ethical perspectives may elevate the barrier to use initiation for some, and these data show that some students are framing collegiate CED use as an equality issue of social concern.

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## Compliance with Ethical Standards

**Conflict of Interest** The author declares no conflicts of interest.

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## References

Aikins, R. (2011). Academic performance enhancement: a qualitative study of the perceptions and habits of prescription stimulant-using college students. *Journal of College Student Development*, 52(5), 560–576.

- Aikins, R., Zhang, X., & McCabe, S. E. (2017). Academic doping: institutional policies regarding nonmedical use of prescription stimulants in U.S. higher education. *Journal of Academic Ethics, 15*(3), 229–243. <https://doi.org/10.1007/s10805-017-9291-0>.
- Arria, A. M., Caldeira, K. M., O'Grady, K. E., Vincent, K. B., Fitzelle, D. B., Johnson, E. P., & Wish, E. D. (2008a). Drug exposure opportunities and use patterns among college students: results of a longitudinal prospective cohort study. *Substance Abuse, 29*(4), 19–38.
- Arria, A. M., O'Grady, K. E., Caldeira, K. M., Vincent, K. B., & Wish, E. D. (2008b). Nonmedical use of prescription stimulants and analgesics: associations with social and academic behaviors among college students. *Journal of Drug Issues, 38*(4), 1045–1060.
- Arria, A. M., Wilcox, H. C., Caldeira, K. M., Vincent, K. B., Garnier-Dykstra, L. M., & O'Grady, K. E. (2013). Dispelling the myth of "smart drugs": cannabis and alcohol use problems predict nonmedical use of prescription stimulants for studying. *Addictive Behaviors, 38*(3), 1643–1650. <https://doi.org/10.1016/j.addbeh.2012.10.002>.
- Arria, A. M., Caldeira, K. M., Vincent, K. B., O'Grady, K. E., Cimini, M. D., Geisner, I. M., ... Larimer, M. E. (2017). Do college students improve their grades by using prescription stimulants nonmedically? *Addictive Behaviors, 65*, 245–249. <https://doi.org/10.1016/j.addbeh.2016.07.016>.
- Arria, A. M., Geisner, I. M., Cimini, M. D., Kilmer, J. R., Caldeira, K. M., Barrall, A. L., ... Larimer, M. E. (2018). Perceived academic benefit is associated with nonmedical prescription stimulant use among college students. *Addictive Behaviors, 76*, 27–33. <https://doi.org/10.1016/j.addbeh.2017.07.013>.
- Bagot, K. S., & Kaminer, Y. (2014). Efficacy of stimulants for cognitive enhancement in non-attention deficit hyperactivity disorder youth: a systematic review. *Addiction, 109*(4), 547–557.
- Barrett, S. P., Darredeau, C., Brody, L. E., & Pihl, R. O. (2005). Characteristics of methylphenidate misuse in a university student sample. *Canada Journal of Psychiatry, 50*(8), 457–461.
- Bensimon, E. M., & Bishop, R. (2012). Introduction: why "critical"? The need for new ways of knowing. *The Review of Higher Education, 36*(1), 1–11, 7.
- Bourdieu, P. (1977). Cultural reproduction and social reproduction. In J. Karabel & A. H. Halsey (Eds.), *Power and ideology in education* (pp. 487–511). New York: Oxford University Press.
- Breslau, J., Miller, E., Joanie Chung, W. J., & Schweitzer, J. B. (2011). Childhood and adolescent onset psychiatric disorders, substance use, and failure to graduate high school on time. *Journal of Psychiatric Research, 45*(3), 295–301. <https://doi.org/10.1016/j.jpsychires.2010.06.014>.
- Cakic, V. (2009). Smart drugs for cognitive enhancement: ethical and pragmatic considerations in the era of cosmetic neurology. *Journal of Medical Ethics, 35*(10), 611–615. <https://doi.org/10.1136/jme.2009.030882>.
- Cohen, R. (2013). The competition drug, The New York Times.
- Conrad, P., & Potter, D. (2000). From hyperactive children to ADHD adults: observations on the expansion of medical categories. *Social Problems, 47*(4), 559–582.
- Creswell, J. W. (2003). *Research design: qualitative, quantitative, and mixed method approaches*. Thousand Oaks: Sage Publications Inc..
- Crown, D. F., & Spiller, M. S. (1998). Learning from the literature on collegiate cheating: a review of empirical research. *Journal of Business Ethics, 17*, 683–700.
- DeSantis, A. D., & Hane, A. C. (2010). "Adderall is definitely not a drug": justifications for the illegal use of ADHD stimulants. *Substance Use & Misuse, 45*, 31–46.
- DeSantis, A. D., Webb, E. M., & Noar, S. M. (2008). Illicit use of prescription ADHD medications on a college campus: a multimethodological approach. *Journal of American College Health, 57*(3), 315–323.
- Desruisseaux, P. (1999). Cheating is reaching epidemic proportions worldwide, researchers say. *The Chronicle of Higher Education*, p. A45
- DiMaggio, P. (1982). Cultural capital and school success: the impact of status culture on the grades of U.S. high school students. *American Sociological Review, 47*(2), 189–201.
- Dodge, T., Williams, K. J., Marzell, M., & Turrissi, R. (2012). Judging cheaters: is substance misuse viewed similarly in the athletic and academic domains? *Psychology of Addictive Behaviors, 26*(3), 678–682. <https://doi.org/10.1037/a0027872>.
- Elder, T. E. (2010). The importance of relative standards in ADHD diagnoses: evidence based on exact birth dates. *Journal of Health Economics, 29*(5), 641–656. <https://doi.org/10.1016/j.jhealeco.2010.06.003>.
- Forlini, C., & Racine, E. (2009). Autonomy and coercion in academic "cognitive enhancement" using methylphenidate: perspectives of key stakeholders. *Neuroethics, 2*(3), 163–177. <https://doi.org/10.1007/s12152-009-9043-y>.
- Garnier, L. M., Arria, A. M., Caldeira, K. M., Vincent, K. B., O'Grady, K. E., & Wish, E. D. (2010). Sharing and selling of prescription medications in a college student sample. *The Journal of Clinical Psychiatry, 71*(3), 262–269. <https://doi.org/10.4088/JCP.09m05189ecr>.
- Genereux, R. L., & McLeod, B. A. (1995). Circumstances surrounding cheating: a questionnaire study of college students. *Research in Higher Education, 36*(6), 687–704.

- Goodman, R. (2010). Cognitive enhancement, cheating, and accomplishment. *Kennedy Institute of Ethics Journal*, 20(2), 145–160.
- Gorski, P. C. (2012). Perceiving the problem of poverty and schooling: deconstructing the class stereotypes that Mis-shape education practice and policy. *Equity & Excellence in Education*, 45(2), 302–319. <https://doi.org/10.1080/10665684.2012.666934>.
- Greely, H., Sahakian, B., Harris, J., Kessler, R. C., Gazzaniga, M., Campbell, P., & Farah, M. J. (2008). Towards responsible use of cognitive-enhancing drugs by the healthy. *Nature*, 456, 702–705.
- Harper, S. R., Patton, L. D., & Wooden, O. S. (2009). Access and equity for African American students in higher education: a critical race historical analysis of policy efforts. *Journal of Higher Education*, 80(4), 389–414.
- Hartnett, D. N., Nelson, J. M., & Rinn, A. N. (2004). Gifted or ADHD? The possibilities of misdiagnosis. *Roeper Review*, 26(2), 73–76.
- Hotze, T. D., Shah, K., Anderson, E. E., & Wynia, M. K. (2011). "Doctor, would you prescribe a pill to help me ... ?" A national survey of physicians on using medicine for human enhancement. *The American Journal of Bioethics*, 11(1), 3–13. <https://doi.org/10.1080/15265161.2011.534957>.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2012). *Monitoring the future national survey results on drug use, 1975–2011* (Vol. 2). Bethesda: National Institute on Drug Abuse (NIDA).
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Miech, R. A. (2016). *Monitoring the future national survey results on drug use, 1975–2015: Volume 2, college students and adults ages 19–55*. Ann Arbor: Institute for Social Research, The University of Michigan.
- Jones, S. R., Torres, V., & Arminio, J. (2006). *Negotiating the complexities of qualitative research in higher education: fundamental elements and issues*. New York: Taylor & Francis.
- Karen, D. (2002). Changes in access to higher education in the United States: 1980–1992. *Sociology of Education*, 75(3), 191–210.
- Lamkin, M. (2011). A ban on brain-boosting drugs is not the answer. *The Chronicle of Higher Education*.
- Lawson, W. (2004). ADHD: diagnosis dilemma—mental health experts debate definitions of adult attention deficit hyperactivity disorder and patterns of diagnosis and mediation by socioeconomic class. *Psychology Today*, September/October.
- Lee Booksh, R., Pella, R. D., Singh, A. N., & Drew Gouvier, W. (2010). Ability of college students to simulate ADHD on objective measures of attention. *Journal of Attention Disorders*, 13(4), 325–338. <https://doi.org/10.1177/1087054708329927>.
- Low, K. G., & Gendaszek, A. E. (2002). Illicit use of psychostimulants among college students: a preliminary study. *Psychology, Health & Medicine*, 7(3), 283–287.
- Macfarlane, B., Zhang, J., & Pun, A. (2014). Academic integrity: a review of the literature. *Studies in Higher Education*, 39(2), 339–358. <https://doi.org/10.1080/03075079.2012.709495>.
- McCabe, S. E. (2008). Misperceptions of non-medical prescription drug use: a web survey of college students. *Addictive Behaviors*, 33(5), 713–724. <https://doi.org/10.1016/j.addbeh.2007.12.008>.
- McCabe, D. L., & Trevino, L. K. (1993). Academic dishonesty: honor codes and other contextual influences. *The Journal of Higher Education*, 64(5), 522–538.
- McCabe, D. L., & Trevino, L. K. (1997). Individual and contextual influences on academic dishonesty: a multicampus investigation. *Research in Higher Education*, 38(3), 379–396.
- McCabe, D. L., Trevino, L. K., & Butterfield, K. D. (2001). Cheating in academic institutions: a decade of research. *Ethics & Behavior*, 11(3), 219–232.
- McCabe, S. E., Knight, J. R., Teter, C. J., & Wechsler, H. (2005). Non-medical use of prescription stimulants among US college students: prevalence and correlates from a national survey. *Addiction*, 100(1), 96–106. <https://doi.org/10.1111/j.1360-0443.2005.00944.x/full>.
- McCabe, S. E., Teter, C. J., & Boyd, C. J. (2006). Medical use, illicit use, and diversion of abusable prescription drugs. *Journal of American College Health*, 54(5), 269–278.
- McCabe, S. E., Morales, M., Cranford, J. A., Delva, J., McPherson, M. D., & Boyd, C. J. (2007). Race/ethnicity and gender differences in drug use and abuse among college students. *Journal of Ethnicity in Substance Abuse*, 6(2), 75–95. [https://doi.org/10.1300/J233v06n02\\_06](https://doi.org/10.1300/J233v06n02_06).
- McCabe, S. E., Veliz, P., Wilens, T. E., & Schulenberg, J. E. (2017). Adolescents' prescription stimulant use and adult functional outcomes: a National Prospective Study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 56(3), 226–233 e224. <https://doi.org/10.1016/j.jaac.2016.12.008>.
- McDonough, P., Korn, J., & Yamanski, E. (1997). Access, equity, and the privatization of college counseling. *The Review of Higher Education*, 20(3), 297–317.
- Mohamed, A. R., & Fritsvold, E. D. (2010). *Dorm room dealers: drugs and the privileges of race and class*. Boulder: Lynne Rienner Publishers.
- Molnar, K. K., & Kletke, M. G. (2012). Does the type of cheating influence undergraduate Students' perceptions of cheating? *Journal of Academic Ethics*, 10(3), 201–212. <https://doi.org/10.1007/s10805-012-9164-5>.

- Perna, L. W., & Finney, J. E. (2014). *The attainment agenda: state policy leadership in higher education*. Baltimore: Johns Hopkins University Press.
- Reisinger, K. B., Rutledge, P. C., & Conklin, S. M. (2016). Study drugs and academic integrity: the role of beliefs about an academic honor code in the prediction of nonmedical prescription drug use for academic enhancement. *Journal of College Student Development, 57*(1), 65–78.
- Repantis, D., Schlattmann, P., Laisney, O., & Heuser, I. (2010). Modafinil and methylphenidate for neuroenhancement in healthy individuals: a systematic review. *Pharmacological Research, 62*(3), 187–206. <https://doi.org/10.1016/j.phrs.2010.04.002>.
- Roscigno, V. J., & Ainsworth-Darnell, J. W. (1999). Race, cultural capital, and educational resources: persistent inequalities and achievement returns. *Sociology of Education, 72*(3), 158–178.
- Sattler, S., Mehlkop, G., Graeff, P., & Sauer, C. (2014). Evaluating the drivers of and obstacles to the willingness to use cognitive enhancement drugs: the influence of drug characteristics, social environment, and personal characteristics. *Substance Abuse Treatment, Prevention, and Policy, 9*(8), 1–14.
- Schelle, K. J., Faulmuller, N., Caviola, L., & Hewstone, M. (2014). Attitudes toward pharmacological cognitive enhancement—a review. *Frontiers in Systems Neuroscience, 8*, 53. <https://doi.org/10.3389/fnsys.2014.00053>.
- Schermer, M. (2008). On the argument that enhancement is "cheating". *Journal of Medical Ethics, 34*(2), 85–88. <https://doi.org/10.1136/jme.2006.019646>.
- Schwarz, A. (2012). Risky rise of the good-grade pill. *The New York Times*.
- Seider, M. (2008). The dynamics of social reproduction: How class works at a state college and elite private college†. *Equity & Excellence in Education, 41*(1), 45–61. <https://doi.org/10.1080/10665680701774154>.
- Smith, M. E., & Farah, M. J. (2011). Are prescription stimulants "smart pills"? The epidemiology and cognitive neuroscience of prescription stimulant use by normal healthy individuals. *Psychological Bulletin, 137*(5), 717–741. <https://doi.org/10.1037/a0023825>.
- Talbot, M. (2009). Brain gain: the underground world of "neuroenhancing" drugs. *The New Yorker*.
- Teter, C. J., McCabe, S. E., Cranford, J. A., Boyd, C. J., & Guthrie, S. K. (2005). Prevalence and motives for illicit use of prescription stimulants in an undergraduate student sample. *Journal of American College Health, 53*(6), 253–262.
- U.S. Department of Justice, Drug Enforcement Administration Office of Diversion Control. (U.S. DEA DoJ). (2008). Controlled substance schedules. Retrieved December 7, 2018 <http://www.deadiversion.usdoj.gov/schedules/index.html>
- USNews.com, U.S. News and World Reports. (2013). National College Rankings. Retrieved January 12, 2013, from <http://colleges.usnews.rankingsandreviews.com/best-colleges/>
- Visser, S. N., Bitsko, R. H., Danielson, M. L., Perou, R., & Blumberg, S. J. (2010). Increasing prevalence of parent reported attention deficit/hyperactivity disorder among children—United States, 2003 and 2007. *Morbidity and Mortality Weekly Report (MMWR), 59*(44), 1439–1443.
- Walker, M., & Townley, C. (2012). Contract cheating: a new challenge for academic honesty? *Journal of Academic Ethics, 10*(1), 27–44. <https://doi.org/10.1007/s10805-012-9150-y>.
- White, B. P., Becker-Blease, K. A., & Grace-Bishop, K. (2006). Stimulant medication use, misuse, and abuse in and undergraduate and graduate student sample. *Journal of American College Health, 54*(5), 261–268.