Chapter 2. Literature Review.

The desire to be the best – to do a lot of things and do them well, as well as to look one's best – is a common desire in human beings. The twin desires to get better and to be better than one's competitors are also not uncommon. This may lead to positive behaviors and decisions, such as training or practicing frequently, using good time management skills, making healthy food decisions, and otherwise in general making good decisions about how to manage one's health, time, and resources. Unfortunately, this competitive desire may also lead to negative behaviors and decisions. One may not train or practice enough; one may not manage their time well. The person may not make good health choices in terms of diet or exercise. One of the best examples of negative choices in terms of gaining the competitive edge can be found in professional athletics. There have been several scandals associated with performance-enhancing drugs, particularly steroids, from Tour de Force competitor Lance Armstrong to several Olympic gold medalists over the years.

While it might be easy to attribute such poor decisions on the part of public pressures and an intense desire to get that competitive edge, the fact remains that such poor decision-making is not limited to professional athletes. College students likewise are capable of making bad decisions in pursuit of the competitive edge. Their motivations are not unlike those of professional athletes: the desire to do well, to perform better than their peers, and to look their best. However, other motivations emerge which muddy the waters as much as the unethical behaviors of the athletes do. Some students use illicit substances for more than a competitive edge; they do so simply for the rush or high that comes from using such substances.

However, illicit substances like marijuana or heroin or totally licit substances like alcohol are not the only drugs of choice among college students. Completely legal substances like

Adderall, which is amphetamine and dextroamphetamine, have crept into the range of substances that college students use illicitly. There are many motivations for the illicit use, or misuse, of Adderall. The purpose of this literature review is to examine the issue of illicit use of Adderall among college students.

All of the articles reviewed for this literature review were located using scholarly databases. These articles reflect several disciplines including psychology, counseling/therapy, sociology, and criminal justice, just to name a few.

What Is Adderall?

In order to understand the phenomenon of Adderall abuse, a brief examination of Adderall and its appropriate uses is required. Adderall is most commonly prescribed for individuals suffering from attention-deficit/hyperactivity disorder, better known as ADHD (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; Desantis & Hane, 2010; DeSantis, Webb, & Noar, 2008; Hall, Irwin, Bowman, Frankenberger, & Jewett, 2005; Jardin, Looby, & Earleywine, 2011; Judson & Langdon, 2009; Low & Gendaszek, 2002; Moore, 2014; Underhill & Langdon, 2013; Weyandt, Oster, Marraccini, Gudmundsdottir, Munro, Martinez, Zavras, & Kuhar, 2014). ADHD is "characterized by symptoms of inattention, hyperactivity, and impulsivity that cause functional impairment" (Weyandt et al., 2014, p. 223). While ADHD is mostly associated with young children and adolescents, it is found and can even be diagnosed as late as the teen and young adult years and can persist into adulthood (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; Desantis & Hane, 2010; Hall et al., 2005; Jardin, Looby, & Earleywine, 2011; Moore, 2014; Underhill & Langdon, 2013; Weyandt et al., 2014).

Adderall, as noted earlier, is amphetamine and dextroamphetamine and is "classified as a

Schedule II substance by the United States Drug Enforcement Administration because of its potential for psychological and physical dependency and abuse" (Moore, 2014, p. 73). It is a stimulant, much like Ritalin and Dexetrine, and is only legally available with a prescription "with a limit of 30 days' worth of doses, and no refills" and is "subject to production quotas set by the DEA" (Desantis & Hane, 2010, p. 32). It must be prescribed by a licensed medical or healthcare professional. Moore (2014) describes how Adderall works and compares it to cocaine: "amphetamine binds to dopamine, serotonin, and norepinephrine, and catecholamines are released" (p. 73). This process can improve focus and function and can reportedly reduce fatigue (Advokat, Guidry, & Martino, 2008; DeSantis, Webb, & Noar, 2008; Teter, McCabe, Cranford, Boyd, & Guthrie, 2005). It is these stimulant effects with focus and comprehension benefits which contribute significantly to its use and abuse. Additionally, Adderall has side effects which also make it attractive as a recreational drug of choice including euphoria and hallucinations (Teter et al, 2005; Underhill & Langdon, 2013). Adderall has other side effects which contribute to its illicit use, but those effects will be discussed later in this paper.

Who Is Using?

The question of *who* is using/abusing Adderall when considering college students is somewhat dependent on the question of *why* they are using. There are two major categories of illicit use involving Adderall. One involves the individual who has a legitimate prescription for Adderall; the other involves the individual who does not have a legitimate prescription for Adderall. Within these two broader categories are several other categories which relate to the question of *why* which will be addressed in the next section.

Within the category of persons who have a legitimate prescription for Adderall there emerge two kinds of individuals. The first type of individual is the person who has a legitimate

prescription for Adderall who abuses their medication. This abuse may take the form of excessive doses – either taking more doses than prescribed or higher doses than prescribed (DeSantis, Anthony, & Cohen, 2013; Jardin, Looby, & Earleywine, 2011; Judson & Langdon, 2009). It can also manifest as ingesting the medication in forms other than the prescribed administration route, which is commonly the oral route (Weyandt et al., 2014). The two most popular routes of administration – after the common oral route – are crushing the oral suspension and snorting it and dissolving the oral suspension and injecting it as these methods are associated with faster-acting, more immediate effects (DeSantis, Webb, & Noar, 2008; Hall et al., 2005; Low & Gendaszek, 2002; Teter, McCabe, LaGrange, Cranford, & Boyd, 2006; Weyandt et al., 2014). These individuals may be increasing or otherwise modifying their dosage to enhance the effects for 'practical' reasons. Studies have shown that higher doses of Adderall have been connected to enhance focus, concentration, and improved comprehension (Ford & Schroeder, 2009; Judson & Langdon, 2009; Low & Gendaszek, 2002; Teter et al, 2005; Weyandt et al., 2014), even in individuals who do not have ADHD but are seeking "neuroenhancement" which is defined as "drug use in healthy people who do not need stimulants who attempt to improve their cognitive, emotional, and motivational functions by using the drug" (Moore, 2014, p. 73). It is worth mentioning, however, that the enhancement may well be just a perception on the part of the stimulant user (Advokat, Guidry, & Martino, 2008; DeSantis, Webb, & Noar, 2008; Ford & Schroeder, 2009; Judson & Langdon, 2009; Teter et al, 2006), since it is difficult to clinically and medically study individuals illicitly using or abusing Adderall (Teter et al, 2005; Weyandt et al., 2014).

The abuse may also manifest as recreational use of their medications – that is to say, while the person may have a legitimate need for the medication, such as a diagnosis of ADHD,

they misuse the medication for reasons which are termed *nonmedical. Nonmedical use* of a medication is “the intentional use of an approved medication without a prescription, in a manner other than how it was prescribed, for purposes other than prescribed, or for the experience or feeling the medication can produce” (as cited in Moore, 2014, p. 73). This nonmedical use most often manifests as recreational usage which, according to Hall et al. (2005), is not surprising, given that “The college years, for some, are times of psychoactive drug use, and recreational stimulant use is more frequent among 18- to 25-year-olds than in any other age group” (p. 168). This observation is echoed frequently throughout the literature (Ford & Schroeder, 2009; Giordano, Prosek, Daly, Holm, Ramsey, Abernathy, & Sender, 2015).

This abuse on the part of the prescribed user is unsurprising; their access to and possession of Adderall can be justified and is legally protected. Theoretically, an individual who has been diagnosed with ADHD is under a doctor’s supervision. However, this does not make them immune to the abuse of their medication (Judson & Langdon, 2009). In fact, at least one study suggests that individuals with legitimate prescriptions are more likely to abuse Adderall than individuals without prescriptions (Weyandt et al., 2014). However, the difficulty in this determination is the individual may *think* they are using their medication appropriately *according to their understanding of its use* and therefore *not* abusing it (Jardin, Looby, & Earleywine, 2011; Judson & Langdon, 2009; Low & Gendaszek, 2002). Furthermore, several studies suggest that individuals who abuse their ADHD medication are more likely to abuse other substances such as illegal drugs and/or alcohol (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; Jardin, Looby, & Earleywine, 2011; Judson & Langdon, 2009).

The second type of individual with a legitimate prescription is the person who distributes. It is worth mentioning that this individual may also be abusing their medication in the ways

described previously. In fact, DeSantis, Anthony, and Cohen (2013) note that "distributors were more likely to use a greater number of illicit substances, misuse their medications by taking a higher-than-recommended dose, and mix their medication with other drugs or alcohol to intensify the effects" (p. 447). However, this individual's particular misuse in this circumstance is that they sell, trade, or otherwise give away their medication. Illegal distribution of their medication on the part of prescription holders appears to be the most common means of non-prescription holders obtaining Adderall (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; DeSantis, Webb, & Noar, 2008; Hall et al., 2005; Jardin, Looby, & Earleywine, 2011; Moore, 2014; Weyandt et al., 2014). This should not be surprised given the significant numbers of prescription holders who have reported being contacted by non-prescription holders to sell, give away, or trade for access to Adderall (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; Hall et al., 2005; Moore, 2014; Weyandt et al., 2014).

The step from "lending" or giving away to friends to dealing does not appear to be a long one. In fact, the phenomenon of diverting personal prescriptions for the purposes of distribution/dealing appears to be something of a social one. According to many of the studies on the phenomenon of illicit Adderall use, it is fairly easy to obtain through a peer or a peer of a peer, the proverbial 'friend of a friend' social connection (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; DeSantis, Webb, & Noar, 2008; Moore, 2014; Weyandt et al., 2014) rather than the "drug dealers standing on street corners" (DeSantis, Webb, & Noar, 2008, p.320). Many individuals who distribute OR obtain Adderall through these illegal channels do not regard this circumstance as morally, ethically, or legally problematic (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; DeSantis & Hane, 2010; DeSantis, Webb, & Noar, 2008; Giordano et al., 2015; Judson & Langdon, 2009; Weyandt et al., 2014). Many of

them regard the act of selling, giving away, or otherwise diverting their medication to others as bonding or social activity, with membership in a fraternity, sorority, or other Greek-type organization enabling even easier access (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; DeSantis & Hane, 2010; DeSantis, Webb, & Noar, 2008; Moore, 2014; Underhill & Langdon, 2013).

The individual *without* a legitimate prescription seems to be the larger of the two broader categories. It contains people who use Adderall in the context of self-diagnosing as ADHD, people who are using it for "justifiable" reasons, and people who use it recreationally. These motivations will be discussed in-depth in the next section. However, brief descriptions of these groups are necessary. While only licensed medical or healthcare professionals can actually make a diagnosis of ADHD and prescribe Adderall or other approve stimulants (Advokat, Guidry, & Martino, 2008; Weyandt et al., 2014), this does not prevent individuals from diagnosing themselves with ADHD and therefore self-medicating. Individuals who are using it for "justifiable" reasons are those individuals interested in keeping up with and doing well in their academic workloads and otherwise perceive themselves as using it for reasons which are *not* abuse/misuse or recreational and are therefore acceptable. As will be discussed shortly, many of these individuals do not have difficulties reconciling their illicit use of Adderall because they are doing it for "good" reasons and think that "Adderall is definitely not a drug" (DeSantis & Hane, 2010, p. 31). They clearly distinguish their use/misuse of Adderall from that of those individuals who essentially use Adderal recreationally.

In terms of demographics, misuse of Adderall is most prevalent among white males (DeSantis & Hane, 2010; DeSantis, Webb, & Noar, 2008; Weyandt et al., 2014), specifically white males who are members of fraternities (DeSantis & Hane, 2010; DeSantis, Webb, & Noar,

2008; Weyandt et al., 2014). It appears that the likelihood of stimulant abuse increases following the joining of a Greek organization, especially if the individual lives in the fraternity or sorority house (Advokat, Guidry, & Martino, 2008; DeSantis, Webb, & Noar, 2008; Weyandt et al., 2014). Those individuals who are not members of such organizations appear to regard the campus library as the clearinghouse for locating individuals who can provide access (Moore, 2014).

DeSantis, Webb, and Noar (2008) report, in addition to the data on white male Greek organization members, those individuals most likely to abuse Adderall are also likely from the U.S. Northeast and are "from colleges with more competitive admission standards" (p. 315). As will be discussed further in the next section, there is little variation across genders in terms of motivations to illicitly use Adderall; however, Moore (2014) reports "More men than women cited experimentation as the reason to use stimulants" (p. 74). Other authors add that Latino students are almost as likely as Caucasian students to abuse prescription stimulants; however, Asian and African American students are less likely to engage in prescription stimulant abuse than Caucasian and Latino students (DeSantis, Webb, & Noar, 2008; Judson & Langdon, 2009; Teter et al., 2005). Advokat, Guidry, and Martino (2008) report that Adderall abuse is more likely among traditional students in comparison to non-traditional students and that "illicit use was less likely in so-called noncommuter schools" (p. 604).

As noted earlier, it is somewhat difficult to clinically or medically study abuse of Adderall and other stimulants. Since much of the information regarding misusers of stimulants is dependent on self-reporting by the misusers themselves, it can admittedly be difficult to judge demographics. However, Moore (2014) reports on "a fascinating study of wastewater on a university campus" which "showed concrete evidence of abuse of Adderall and Ritalin" (p. 74).

Researchers analyzed wastewater downstream from campus dorms "during periods of high academic stress, such as midterms, the last week of classes, and finals week" and during periods of "normal" stress. The researchers found that during these periods of high academic stress, the wastewater "showed increased metabolites of Adderall and Ritalin" meaning that students in the dorms were ingesting significant amounts of prescription stimulants. This study demonstrates *quantitative* data which supports other studies which identify college students as the group most likely to actively abuse prescription stimulants like Adderall. This finding also points to one of the – if not *the* – primary reasons college students use/misuse Adderall.

Why Are They Using Illicitly?

Much of the literature regarding this issue focuses on the motivations of college students to use Adderall illicitly. The motivations break down into three broad categories: "serious" uses, such as managing "self-diagnosed" ADHD, recreational uses, and other nonmedical uses. These usages, as observed earlier, have been observed in individuals with and without licit prescriptions for Adderall. These motivations show little difference between genders, across ethnicities, and even across ages (Advokat, Guidry, & Martino, 2008).

The primary illicit use of Adderall is related to academic performance. This may manifest in a number of ways. Many surveyed students report that they use Adderall to keep up with their workloads, particularly around exam times (DeSantis & Hane, 2010; DeSantis, Webb, & Noar, 2008; Judson & Langdon, 2009; Moore, 2014; Underhill & Langdon, 2013; Weyandt et al., 2014). Studies of "academic strain" and academic pressures reveal that students feel that they need assistance to deal with their homework, projects, and other academic obligations and otherwise improve or perform well in competitive academic environments (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; DeSantis & Hane, 2010; DeSantis, Webb, &

Noar, 2008; Ford & Schroeder, 2009; Giordano et al., 2015; Hall et al., 2005; Judson & Langdon, 2009; Low & Gendaszek, 2002; Moore, 2014; Teter et al., 2005; Teter et al., 2006; Underhill & Langdon, 2013; Weyandt et al., 2014). Within these academically related motivations users cite improved focus and concentration, as well as the ability to "tune out" distractions (DeSantis, Webb, & Noar, 2008). An aspect of stimulant use which overlaps between serious and recreational uses is the ability of Adderall to combat fatigue/increase energy and to allow users to stay awake or alert longer. In the case of academic motivations, users can stay awake or alert to study or work on academic tasks longer (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; DeSantis & Hane, 2010; DeSantis, Webb, & Noar, 2008; Ford & Schroeder, 2009; Hall et al., 2005; Judson & Langdon, 2009; Moore, 2014; Teter et al., 2005; Teter et al., 2006; Weyandt et al., 2014).

One of the more troubling "serious" illicit uses of Adderall is part of the phenomenon of self-diagnosis. As noted earlier, only a licensed medical or healthcare professional can provide a legitimate diagnosis of ADHD, and only a licensed medical or healthcare professional can write a prescription for Adderall. However, there appears to be a trend in college students of diagnosing themselves and self-medicating their alleged ADHD with illicitly-obtained Adderall (DeSantis & Hane, 2010; Judson & Langdon, 2009; Underhill & Langdon, 2013). In fact, some of these individuals feel "better" or "more focused" while on Adderall and view this as a confirmation of their self-diagnosis, which re-affirms their justifications for using Adderall (DeSantis & Hane, 2010). Whether or not these individuals actually have ADHD is unknown, but such self-diagnostic and self-medicating behaviors put these individuals at significant risk. Adderall requires medical supervision, and such individuals are not being supervised by licensed

professionals (Advokat, Guidry, & Martino, 2008; DeSantis & Hane, 2010; Moore, 2014; Underhill & Langdon, 2013).

Another significant segment of the Adderall-abusing college population reports using Adderall recreationally. This population utilizes Adderall much like illegal stimulants such as cocaine and street methamphetamine. Adderall has been known to produce a high – "feeling good" and euphoria (Teter et al., 2005). They are engaging in "sensation seeking" behaviors (Low & Gendaszek, 2002, p. 284), which is unsurprising given the propensity of college-aged individuals to experiment with illicit substances (Ford & Schroeder, 2009; Giordano et al., 2015; Jardin, Looby, & Earleywine, 2011). Some of the recreational users admit to only using Adderall, while other segments of the population report mixing Adderall with alcohol and/or other illicit substances (Advokat, Guidry, & Martino, 2008; DeSantis, Anthony, & Cohen, 2013; DeSantis & Hane, 2010; DeSantis, Webb, & Noar, 2008; Giordano et al., 2015; Hall et al., 2005; Jardin, Looby, & Earleywine, 2011; Judson & Langdon, 2009; Low & Gendaszek, 2002; Moore, 2014; Teter et al., 2005; Underhill & Langdon, 2013; Weyandt et al., 2014). And, as noted earlier, there is overlap with this group and the academic group in terms of using Adderall in order to stay awake/alert and 'get more energy' in order party and socialize. This nonmedical use of the stimulant carries with it significant risks which will be discussed in the impacts section.

As noted earlier, Adderall has several side effects which produce other effects that prompt college students to use Adderall in a nonmedical fashion. The most commonly cited and therefore studied effect is Adderall as a means of losing weight. A common side effect of prescription stimulants like Adderall and Ritalin is weight loss (Moore, 2014). This usage is seen mostly in female users, though it does appear in male users, and represents a unique variation in the demographics of Adderall abusers (Moore, 2014). In several studies, several abusers reported

using Adderall as a means of losing weight (DeSantis, Webb, & Noar, 2008; Ford & Schroeder, 2009; Moore, 2014; Underhill & Langdon, 2013; Weyandt et al., 2014). Much like the other scenarios discussed about these illicit users, this nonmedical use of Adderall poses a significant risk to the user and can be further abused by individuals suffering from eating disorders such as anorexia.

The Impact of Illicit Use

The impact of illicit Adderall use includes both short term and long term impacts. These impacts can be legal, behavioral, and/or physiological. The legal implications are clear: these illicit usages of a legally controlled, Schedule II substance – using and/or distributing – can carry serious legal fines and punishment. While most users report not considering their illicit use as illegal, since the drug itself is legal, this point of view is inaccurate (DeSantis & Hane, 2010). This attitude is considered part of the normalization of Adderall use which is common on college campuses because of the lack of stigma associated with its use (DeSantis, Anthony, & Cohen, 2013; DeSantis & Hane, 2010; Low & Gendaszek, 2002; Weyandt et al., 2014). However, individuals found to be in possession of Adderall without a legitimate prescription can find themselves facing criminal prosecution. Depending on the individual's criminal history, the amount the individual is caught with, and the state in which the individual lives, the impact of criminal prosecution may be less or more than another individual in similar circumstances. Nevertheless, if the individual is fully prosecuted and found guilty, the implications of this verdict are serious.

Behaviorally-related side effects of Adderall include "high abuse potential" and "drug dependence" (Moore, 2014, p. 73). Underhill & Langdon (2013) also report anxiety/nervousness, psychosis, hallucinations, and agitation. While some of these side effects overlap with

physiological effects, they may also qualify as behavioral effects since the individual's behavior can and will change. These effects can be complicated when misusers mix the Adderall with other medications and can lead to risk-taking behaviors. One example of such risky behaviors is risky sexual behaviors which can put the misuser at risk for other problems (Moore, 2014).

Physiologically, individuals who use Adderall are, as noted, subject to several side effects. In addition to the ones mentioned so far, an individual *just taking Adderall as prescribed* may be subject to the following side effects: "anorexia, weight loss, nausea, abdominal pain, diarrhea or constipation, and xerostomia" as well as "increased risk of serious cardiovascular adverse events and sudden death" (Moore, 2014, p. 73). Weyandt et al. (2014) add the following effects to Moore's (2014) list: "decreased appetite, weight loss, dry mouth, insomnia, nausea, diarrhea, dizziness, headache, nasal congestion, feeling jittery, and anxiety" (p. 226). There is also the potential for the following effects, though not as frequently: "insomnia, tachycardia, irritability, fatigue, increased blood pressure/hypertension, upper respiratory tract infections, anxiety, decreased libido, and dyspnea" (Weyandt et al., 2014, p. 226). Use of prescribed stimulants like Adderall is not generally permitted during pregnancy because of the possible impact on the fetus (Moore, 2014). The impact on the fetus of methamphetamines and stimulants has "been linked with birth defects such as cleft lip, heart malformations, biliary defects, low birth weight, small head circumference, stillbirth, cerebral hemorrhage, undescended testicales, developmental delays, and impaired memory in the cerebral cortex" (Moore, 2014, p. 77).

These issues become more complicated when the misuse mixes Adderall with other substances such as alcohol and/or other illegal drugs. The effects of Adderall in conjunction with other such substances are not well understood and are therefore more difficult to affect. Of course, Adderall mixed with other stimulants can enhance the stimulating effects of both

substances which can lead to other complications (DeSantis, Webb, & Noar, 2008). In other words, the illegal substances can enhance the effects of the Adderall and vice versa. This can lead to intensified physiological responses which can interfere with cardiac and pulmonary functions. These risks and effects underline the necessity and importance of medical supervision of individuals taking Adderall and strong strictures against mixing Adderall with other substances, illicit or otherwise.

Beyond College

It is easy to assume that once the pressures of college are lifted following graduation that many misusers of Adderall will cease their behaviors. This belief is often held by the illicit users themselves and reflects certain attitudes regarding their academic justifications for using Adderall. However, as observed in the effects section, Adderall has a high risk for dependence and abuse, and many individuals have developed such dependences which continue even after college (Underhill & Langdon, 2013). Even as these individuals are free of the academic pressures and competitive academic environments, they find themselves subject to the highly competitive nature of work environments and the expectation to perform well, work long hours, and otherwise balance work/life (Underhill & Langdon, 2013). In other words, though the pressures and strains are no longer coursework and exam related, these individuals continue to find themselves in situations which are stressful and which they feel unequal to handling. Therefore, they turn – as they did in college – to the perceived ‘enhancements’ that Adderall can provide (Underhill & Langdon, 2013).

Solutions

The findings of many of these studies reveal that importance of patient education. Several studies highlight the need for emphatic notifications, such as interventions and campaigns,

regarding the risks involved with using Adderall alone as well as with other substances (DeSantis, Webb, & Noar, 2008; Moore, 2014; Weyandt et al., 2014). Some studies recommend emphasizing the illegal nature of and de-normalizing the accepted nature of Adderal misuse (Ford & Schroeder, 2009).

Recommendations for Future Study

Several of the studies cited in this literature review made significant recommendations for future study. This review also revealed several gaps in the literature which would benefit from closer study. Though recommendations about interventions and campaigns were made, the effectiveness of such efforts requires study to determine if they actually do make a difference in the behaviors and intentions of misusers. The self-diagnostic phenomenon likewise requires further study and how such individuals should be engaged in order to either deter such behaviors or legitimize their suspicions. There seems like more than enough information regarding the *whys* or motivations of college students who use Adderall illicitly and that it has become a normalized behavior. Studying this normalization/destigmatizing phenomenon would likewise provide some useful, insightful information into such trends.

Conclusion

Many of the studies in this literature emphasized the disparity between the reality of misusing Adderall and how college students regard such illicit uses. It is clear that this disparity is dangerous, given the consequences of illicitly using Adderall. It is clear which populations are more fully engaged in misuse, which offers clear groups to target for outreach and intervention. The motivations themselves are rather clear, and it is obvious that students need to be offered alternatives to using stimulants to keep up. The literature reveals the extent of this problem, though the solutions seem less well-established.

References

Advokat, C. D., Guidry, D., & Martino, L. (2008). Licit and illicit use of medications for attention-deficit hyperactivity disorder in undergraduate college students. *Journal of American College Health*, *56*(6), 601-606.

DeSantis, A. D., Anthony, K. E., & Cohen, E. L. (2013). Illegal college ADHD stimulant distributors: Characteristics and potential areas of intervention. *Substance Use & Misuse*, *48*(6), 446-456.

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*(1/2), 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), 315-324.

Ford, J. A., & Schroeder, R. D. (2009). Academic strain and non-medical use of prescription stimulants among college students. *Deviant Behavior*, *30*(1), 26-53. doi:10.1080/01639620802049900

Giordano, A. L., Prosek, E. A., Daly, C. M., Holm, J. M., Ramsey, Z. B., Abernathy, M. R., & Sender, K. M. (2015). Exploring the relationship between religious coping and spirituality among three types of collegiate substance abuse. *Journal of Counseling & Development*, *93*(1), 70-79. doi:10.1002/j.1556-6676.2015.00182.x

Hall, K. M., Irwin, M. M., Bowman, K. A., Frankenberger, W., & Jewett, D. C. (2005). Illicit use of prescribed stimulant medication among college students. *Journal of American College Health*, *53*(4), 167-174.

Jardin, B., Looby, A., & Earleywine, M. (2011). Characteristics of college students with

attention-deficit hyperactivity disorder symptoms who misuse their medications. *Journal of American College Health*, *59*(5), 373-377.

Judson, R., & Langdon, S. W. (2009). Illicit use of prescription stimulants among college students: Prescription status, motives, theory of planned behaviour, knowledge and self-diagnostic tendencies. *Psychology Health and Medicine*, *14*(1), 97-104.

Low, K. G., & Gendaszek, A. E. (2002). Illicit use of psychostimulants among college students: a preliminary study. *Psychology, Health & Medicine*, *7*(3), 283-287.

Moore, S. C. (2014). Adderall and Ritalin: Potential influence on perinatal health. *International Journal of Childbirth Education*, *29*(4), 72-78.

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.

Teter, C. J., McCabe, S. E., LaGrange, K., Cranford, J. A., & Boyd, C. J. (2006). Illicit use of specific prescription stimulants among college students: Prevalence, motives, and routes of administration. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*, *26*(10), 1501-1510.

Underhill, B., & Langdon, S. (2013). Licit and illicit use of prescription psychostimulants in upperclassmen and alumni. *Journal of Alcohol & Drug Education*, *57*(2), 7-26.

Weyandt, L. L., Oster, D. R., Marraccini, M. E., Gudmundsdottir, B. G., Munro, B. A., Martinez Zavras, B., & Kuhar, B. (2014). Pharmacological interventions for adolescents and adults with ADHD: Stimulant and nonstimulant medications and misuse of prescription stimulants. *Psychology Research & Behavior Management*, *7*223-248. doi:10.2147/PRBM.S47013