Substance Use and International School Adolescents

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Introduction

The motivation to collaborate on this article was our shared concern about drug use among students in international schools. Chloé's concern focuses on the need for realistic school educational programs—a comprehensive approach that includes science, social science, social justice, and environmental consciousness. Dr. Anderson's concern was for real data (something to which Chloé had access) that could be made accessible to schools, mental health professionals, students, and parents. We hope this broad approach will prompt further, more targeted awareness and work in supporting youth who grow up as global nomads.

Keywords
Drugs, substance use, third culture kids, global nomads, TCK, drug education, international schools, substance-induced mental illness

Introduction

In a notebook, writing messages back and forth to his therapist, a tall young man described the events leading up to his arrival at the inpatient psychiatric hospital. What began as seemingly a normal night of using cannabis with some of his friends, became instead a traumatic event in which he slipped into catatonia (a state in which a person is immobile) and was checked into an inpatient psychiatric hospital by his parents. Six months later, he remains in the hospital, and although he has learned to walk again, he still cannot speak.

Chloé met this young man during her first week of work at an inpatient psychiatric hospital in London. Since then, she has heard countless stories from inpatients, some with dramatic consequences. Another university student told of recreationally using a substance while out with friends, and later being found by the police in a field, where they were exhibiting psychotic behaviors; otherwise known as 'substance-induced psychosis.' They were brought to the hospital by the police, and thus officially 'sectioned' under the Mental Health Act, meaning they are not allowed to leave the hospital until cleared by a professional. The incident will remain on a public record, potentially affecting future employment and visas. Similar laws exist in many countries around the world.

Chloé estimates that approximately 80% of inpatients at her London-based psychiatric hospital are there for substance use issues—not addiction—but substance-induced psychosis. This is when a substance elicits a psychotic reaction, lasting anywhere between a week and several months, sometimes inflicting long-term psychological disorders. Nearly all cases of substance-induced psychosis she is working with are related to cannabis.

Having grown up internationally as a third culture kid now working with substance-induced mental health issues, Chloé has a unique perspective to bring to these topics. There is much she wants current international students to understand. Being burnt out, and stressed from the academic rigor of international schools—the highs and lows of an international school and third culture kid life—at times feeling so privileged and lucky, and other times feeling so out of place—can drive adolescents living internationally to cope in

ways that Chloé has only recently learned can be very risky. Chloé hopes her personal experience and training will allow her to provide some evidence and clarity on an extraordinarily complex topic and highlight commonly missed issues. For this article, the term 'substance(s)' refers to medicine or other drug which has a physiological effect when ingested or otherwise introduced into the body.

The Gap In Substance Education: Addiction is Not the Only Risk

After talking with inpatients who were hospitalized because of psychiatric incidents triggered by cannabis, Chloé was frustrated and confused. She thought she was well educated on substance use. She had read so many studies that cannabis is harmless. She knew many people who used substances recreationally without incident. But her substance education had left her unprepared.

She was there. She remembers it. She was sixteen, and strangers visited the international school to talk about their personal experiences with substances. The speaker was usually an ex-addict whose life fell apart because of his or her addiction. They would candidly discuss their hardships with cocaine or heroin, talk about the long and arduous road to recovery, and essentially finish with 'abstinence is the best way.' This addiction story did not register. The students Chloé knew who had already used substances, all appeared okay. Many students who used substances recreationally, had no intention of using cocaine or heroin. Students left the lecture having internalized two lessons: (1) you will be fine as long as you stay away from 'hard drugs' and (2) a little bit is okay, as long as you do not become an addict.

This *current education on drugs and alcohol is seriously flawed.* It paints a simplistic brush stroke over a very complex and multifaceted topic. It leaves students with the false impression that every person who tries drugs becomes an addict. Because substance use education does not fill in the glaring gap between abstinence and addiction, students who experience these other issues may not link them to substance use and may not know how to navigate out of them. They may think that if they have 'dodged the bullet' of addiction, they have been successful. In reality, substance use poses risks to adolescents even if they do not become addicts, because substances operate at the complex intersection of genetics, chemistry, mental health, socio-economics, ethics, and more.

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1.1 Genetic Predispositions and Mental Health

The genetic composition that we inherit from our parents lays the foundation for many aspects of life. It not only affects how we look and how we learn, but it also affects our susceptibility to developing psychological disorders. Even though our genetic make-up can predispose us toward an increased risk, environmental factors interacting with genetics is often what causes a psychiatric diagnosis.

An extensive twin study found that heritability for substance use is at about 34%.[i] In other words, according to this study, an individual with a family history of alcohol addiction is 34% more susceptible to developing an addiction. Additionally, since the early 1990's studies have been able to map the specific genes that influence susceptibility to substance use and dependence[ii], further demonstrating the role of genetics in substance use.

Research continues to determine whether there is a genetic predisposition to substance-induced psychosis. Many without a genetic predisposition experience it.[iii]

The research is clear, however, that individuals with an underlying mental health condition are more susceptible to substance-induced psychosis. An individual experiencing symptoms of depression, anxiety, bipolar disorder, or schizophrenia, is more likely to be susceptible to substance-induced psychosis.[iv]

Research shows that mental health and substance use have a bidirectional relationship. People with mental health difficulties are more likely to use substances, and substance users are more likely to develop mental health difficulties.[v][vi][vii][viii] The first report to suggest that cannabis is a risk factor for psychosis was a longitudinal study that followed 45,570 participants for 15 years.[ix] This study found that individuals who had used cannabis before 18 years old were 2.4 times more at risk of developing schizophrenia than non-users; this risk rose to 6.0 when the person had used cannabis more than 50 times. More recent evidence is consistent with this finding, demonstrating a strong relationship between heavy cannabis use and the risk of developing psychotic symptoms.[x][xi][xii][xiii][xiv][xv][xvi][xvii][xviii] [xix][xx] Similarly, it has been found that amphetamines, (a category of stimulant drugs of which Adderall, cocaine, ecstasy, methamphetamine, and Ritalin is a part), when used in an experimental setting, have been found to produce a paranoid psychosis in healthy individuals, and exacerbate it in those who were already experiencing mental health difficulties.[xxi][xxii]

These substances are not only connected to psychosis but also anxiety, depression, and aggression. Tomlinson, Brown, and Hoaken found that alcohol causes aggression, and

cannabis is correlated to aggression.[xxiii] Lev-Ran and colleagues conducted a systematic review and meta-analysis of longitudinal studies, including over 76,000 participants. They found that cannabis use, particularly heavy use, is associated with an increased risk of developing depressive disorders.[xxiv] Several longitudinal studies have found adolescent alcohol and cannabis use to be linked to poor psychological, physiological, and social functioning.[xxv][xxvi][xxvii] Another study found that cannabis use is associated with anxiety.[xxviii] Similarly, Crippa and colleagues found that frequent cannabis users had a high prevalence of anxiety disorders, and individuals with anxiety disorders had a high rate of cannabis use.[xxix] Additionally, alcohol has a causal link to depression; that is, alcohol can cause depression.[xxx]

There are many risks to substance use, particularly during adolescence. There are complex underlying factors that impact the way the substance affects the individual. Genetic predispositions mean that someone can be more likely to develop addictions. Mental health difficulties and substance use also have a bidirectional relationship.

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1.2 Understanding the Substance Itself and the Research About It

In unregulated circumstances, such as buying an illegal substance from a 'dealer,' individuals are unable to know precisely what they have purchased. There are many reports of substances such as cannabis being mixed with lead, glass, embalming fluid, and laundry detergent to bulk up the amount of the original product, and thus gain profits.[xxxi] Unfortunately, according to the United States Center for Disease Control, it is nearly impossible to tell when substances have been mixed with something without taking it to a lab for testing. This ultimately has severe health implications, as many of the items used to bulk the product cannot safely be consumed.

Research studies about substances of the same name should not reassure the public about the street substances. Attention must be paid by the consuming public. Research studies are conducted in regulated circumstances, where the scientists are certain of the substance being tested. Often, these scientists are testing the substance in its purest form. This cannot be ensured recreationally—even if the recreational product is 100% as advertised. In the case of the many studies of cannabidiol (CBD), the scientists are studying one particular chemical component of cannabis—the one that does not have any mind-altering effects. Therefore, CBD studies do not apply to the recreational use of cannabis.

For similar reasons, it is important to underscore that *medical use is not the same as recreational use*. The use of substances medically does not mean it is safe for recreational use. There are valid reasons that medicines are prescribed by a doctor who has an extensive education in medicine and a thorough understanding of an individual's circumstance and medical history. There is also a reason that prescriptions typically last a short period of time. Substances have the potential to be dangerous and need to be carefully monitored. A prescription substance may be safe for one person, and dangerous for another. Substances used safely in a controlled medical environment are different from a recreational setting.

1.3 Ethics in Substance Distribution

International schools tend to be globally aware. Yet, ethics of illegal substance distribution are rarely discussed. Just as we have begun to shop for ethical and fair-trade clothing, household, and other products, it is appropriate to consider the distribution chain of illegal substances. Following the purchase money back to the origin of the product will often reveal individuals and organizations that are directly involved in child slavery, sex trafficking, and human trafficking.[xxxii]

For example, in the U.K., when a person purchases an illegal substance, it comes through the system of *county lines drug trafficking*. This is a practice wherein the illegal substance is trafficked into smaller towns from major cities. A 2020 report from the Home Office branch of the U.K. government states that 27,000 young people are involved in the county lines substance trade.[xxxiii] Young people are tasked to act as 'runners' to move illegal substances and cash, so their bosses stay under the radar of law enforcement. This is because there is a perception that law enforcement will be less likely to suspect a child or young person of trafficking illegal substances. Unfortunately, this county-lines drug trade takes on overtones of child slavery. Drug dealers target vulnerable children, specifically those attending pupil referral units (an alternative to mainstream schools for young people who have behavior difficulties, special educational needs, short- or long-term illnesses, and young mothers) to distribute the illegal substance. Other young people are recruited through debt bondage, a circumstance in which young persons who use illegal substances pay off their purchasing debt by working for the traffickers for free. Debt bondage is the most common method of enslavement. Still, other young people will take

part of their own volition; however, these young people are often from a marginalized community and tend to see drug trafficking as an exit strategy from their challenging circumstances. Young people exploited in this manner often endure physical, mental, and sexual abuse, and in some instances will be trafficked far from their home to suit the needs of the illegal substance network. The network often exploits landowners, too: the traffickers may take over a local property, generally owned by a vulnerable person (e.g., someone who is older or has a mental or physical disability) to use as a base to operate their criminal activity.

Similar illegal substance networks exist outside the U.K. The difference is that in Southeast Asia, these networks can be difficult to track as the substances are trafficked across several countries, some of which do not have resources, financial or otherwise, to appropriately follow the chain of events. These are networks that prey on underdeveloped countries, and specifically its most impoverished people, as they often have little alternatives for income.[xxxiv] Within Southeast Asia, many illegal substances originate from Vietnam and the 'golden triangle,' a term coined by the United States Central Intelligence Agency to refer to an intersection between the borders of Thailand, Laos, and Myanmar. The golden triangle, along with neighboring countries, specifically border areas that are havens for trafficking of all kinds, including drugs, humans (mostly women, children, and babies), weapons and arms, and wildlife. These organized crimes are heavily intertwined in this region.[xxxv]

Modern substance education in international schools can be a forum for educating students about the supply chain. Students are open to these themes of ethics and fairness, caring for other people, and the interconnectivity of their world. Third culture kids have experienced first-hand this interconnectivity, and they can, perhaps, be ambassadors for these concepts. By understanding the distribution mechanisms for the substances before they become purchasers or users of them, possibly these young people will make wiser choices.

Substance Use and The Developing Brain: Why Adolescents Often Engage In Risk-Taking Behaviour

Another vital factor to consider is the effect of substances on the developing brain. The latest research suggests that the brain is developing until approximately age 27.[xxxvi] During brain development, neural pathways are expanding and strengthening, and the brain's structures are growing. There is a dynamic change in neurochemistry, fiber architecture, and overall tissue composition. As these changes occur, the brain is vulnerable to stress factors, such as alcohol, drugs, significant life events, and trauma.

Specific areas of the brain during adolescence are underdeveloped, most notably, the prefrontal cortex. The prefrontal cortex is the area of the brain responsible for decision-making, planning, problem-solving, controlling impulsivity, and thinking through the consequences of actions.[xxxvii] Given that this area is underdeveloped, a typical adolescent brain will rely on the more developed amygdala for issues that will be addressed by the prefrontal cortex at full maturity. The amygdala is the part of the brain associated with emotions, impulses, aggression, and instinctive behavior.[xxxviii] This indicates that adolescents, young people from around ages 10-19, are likely to make decisions and problem-solve from the emotional and impulsive part of the brain. This provides a good neurological context for why adolescents often engage in risk-taking behavior.

2.1 Neurological Changes

Research shows that adolescents who use substances are vulnerable to changes in brain functioning, behavior, and cognition. The structural changes in the brain between adolescents who use substances and those who do not are significant enough to be observable and measurable.[xxxix] Substance use in adolescents decreases the volume of the prefrontal cortex and the hippocampus. The reduced volume may have the effect of neurologically shaping an individual's personality. The prefrontal cortex is also found to play a large role in personality development. The hippocampus is responsible for motivation, emotion, learning, and memory.[xl] Studies have shown alcohol and cannabis use to detrimentally influence attention, visuospatial functioning, and learning and retrieval of verbal and nonverbal information among adolescents.[xli][xlii][xliii][xliv][xlv]

Substance use in adolescence not only changes specific brain regions but also how the brain regions network with each other and, thus, how the brain operates as a whole. Studies have shown that substance use in adolescents is associated with a decline in the function of the network within the brain, meaning that the brain has to recruit

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different regions to address issues, to compensate for the lack of connecting infrastructure.[xlvi][xlvii][xlviii][xlix] This difficulty in communication between brain regions is most likely experienced because adolescents who use substances frequently and/or heavily, tend to have smaller volumes of white matter: that material which is not only responsible for learning and basic brain functions but also for communicating between different parts of the brain.[l] Less white matter means that different brain regions have fewer avenues of communicating with other brain regions. Reduction of white matter volume, through cannabis use in adolescence, increases a person's susceptibility to depressive symptoms.[li] Adolescents who consume alcohol to the point of being hungover, experience decreased neurological performance over time.[lii]

Mixing cannabis and alcohol can be particularly deleterious for the adolescent brain. One study showed the combination of cannabis, with a mildly intoxicating dose of alcohol, induced significant neuronal cell death in the developing brain.[liii] This study postulates that the THC in cannabis amplifies the effect of a mild alcohol dose to that of a high dose, indicating that the combination of cannabis and alcohol is damaging to the developing brain.

These structural changes are not to be underestimated in their ability to shape an individual. However, there is hope. Some studies have shown that there is a potential to reverse the structural brain changes with long-term abstinence[liv]; in these circumstances, time is of the essence. The sooner the substance use stops, the more likely an individual will be able to reverse the changes.

These are all lessons that are currently missing from substance education in our schools that only offer the options of abstinence or addiction – that even mild use or experimentation of substances during adolescence can cause structural neurological changes that are at times not perceptible. That they should not be underestimated. That they are reversible if caught early.

Why International Schools?

Chloé's experiences as a third culture kid and then working in a psychological inpatient hospital in London align with Dr. Anderson's experience as the mother of three third culture kids and a therapist working with third culture families.

The 'alcohol culture' and drug problem among international school students came into sharp focus for Suzanne in 2012, when several students received positive school drug tests and were referred to Suzanne for counselling. It was timely. Suzanne was reading several books at that time. One was Madeline Levine's book *The Price of Privilege,* reflecting on Suniya Luthar's 2008 foundational research about affluent youth showing increased levels of depression, anxiety, and accompanying use of substances to self-medicate.[lv] The other was Malcolm Gladwell's book *Outliers,* in which he outlines the influences that propel successful people to advance, including the attribute he describes as 'entitlement' – being able to tailor one's environment to meet one's needs and interests.[lvi] As a counsellor with some familiarity with addictions, Suzanne wondered how closely aligned the attribute of entitlement aligns with the thinking patterns of addiction. Is someone who believes they are special/entitled more likely to believe they are not susceptible to the negative effects of addiction?

In 2017, Suniya Luthar published research to follow up on the affluent youth who were now young adults. She found rates of substance addiction two to three times higher than national norms.[lvii] It was not nearly as distressing as editorial comments of the Journal of the American Academy of Child & Adolescent Psychiatry affluent[lviii] youth have been identified as 'at-risk' in 2009.[lix][lx][lxi]

Suniya Luthar has identified features of families that lead to youth that are at risk of substance use and misuse. One of those factors is excessive pressure to succeed academically and in extra-curriculars.[lxii] In Suzanne's counselling office, this pressure is articulated repeatedly by teens like this, "If I don't get a good grade on this quiz, I will fail the class, and then I won't get into a good university, and I won't get a good job, and I will not have a good life." Another factor is physical and emotional isolation from parents. While it is not true of every family, families in international schools often have domestic help to assist with caring for and taking care of the children, often while both parents are working or traveling, leaving children at home unattended by parents. All the elements exist inherently within the context of living internationally, as Chloé described earlier: increased stress from moving, academic pressure, parents more likely to be away from home for long periods, access to drugs and alcohol.

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Studies have shown that in the United States, 37% of students have tried alcohol by eighth grade, and by the time students reach 12th grade, this increases to 72%.[lxiii] Similarly, cannabis is reported as being used at least once by 16% of eighth-graders, and 42% of 12th graders.[lxiv] Other substance uses, such as misusing narcotic pain pills and amphetamines, are around 4% and 3%, respectively.[lxv] While there is no current research focusing solely on international schools to provide comparable data, both Chloé and Suzanne have anecdotal experience leading them to believe the numbers are similar, and perhaps more extreme, at international schools.

It stands to reason. Adolescents frequently use substances as a coping mechanism for stress, particularly if the adolescent does not have another effective method of tolerating distress.[lxvi][lxvii][lxviii] How could this relate to international schools? Well, moving is frequently considered a highly stressful life event, which to many living within the international framework seems insignificant, however, its impact should not be downplayed simply because the experience of moving is widespread within the community. A simple application of the Holmes & Rahe Life Stress Inventory to the experience of moving (without knowing any of the additional individual stressors of families) puts them in a category of likely to be suffering from chronic stress.[lxix] Many families move every few years. Even if adolescents are not in a family that moves frequently, their social circles are changing all the time, given the constant rotation of new students arriving, and other students leaving. Social structures are stressful for adolescents in the best of circumstances, never mind if peers are flowing in and out.

Additionally, international schools are renowned for their academic rigor, which places a lot of stress on their students. Chloé can attest to how stressful it was, and how thinly stretched she felt, trying to manage sports, creativity, service, extended essay, three higher level and three standard level classes, on top of the average adolescent experience; it was completely overwhelming. Chloé recalls the last two years of high school at an international school as more physically and mentally demanding than her current life as managing more than one job in her mid-twenties.

Coupling this international school stress with a developing adolescent brain, and the ease of access to illicit substances in some countries, one can easily envision a situation in which international students could be more susceptible to substance use.

Addressing this issue, along with the gaps that Chloé has identified with traditional substance education, would lead to better outcomes for third culture kids.

Implications: Substance Abuse Programs in International Schools

If international schools are to reduce the risk of substance use and misuse and their potentially life-altering consequences, schools need to engage educators, parents, and students to not only educate about the substances themselves, but also address the isolation and excessive academic pressure the students experience.

... we strongly believe that there needs to be a complete restructuring and revamping of substance education within schools.

Ideally, the physical and emotional isolation that youth feel from their parents would be addressed at its roots, in the home. The reality is that often schools are the second stop for youth to receive the support they are not receiving at home. Students today – especially in the last two to four years before university – often spend many more hours on campus than they do in their homes, between academics and extra-curricular activities. International schools can recognize their educators play a vital role in the development of youth, give them tools to be mentors and supporters of students, and help them refrain from passing any feeling of burden on to the students.

Perhaps a way of addressing this within international schools would be to teach varying strategies for coping with stressful situations, with an eye toward improving adolescents' distress tolerance and mitigating their need to fall onto substance use for support. Intercultural research into authentic happiness has identified three areas that contribute to authentic happiness; "maturity of character—becoming the best person we can be; loving relationships, such as marriage and family and contributing to society—making a positive difference in the lives of others."[lxx] Schools could support the development of the whole person, by teaching mindfulness, distress tolerance, emotional regulation, and interpersonal skills. These might be lessons that would benefit every school.

Together with this, we strongly believe that there needs to be a complete restructuring and revamping of substance education within schools. The old ways of teaching substance use on a binary scale of addiction or abstinence are misleading: it does not prepare adolescents for the complexities and multiple layers it has, from ethics to

predispositions, underlying mental health conditions to developmental stages of the brain. As with any complex situation, it is difficult to know where to begin. However, comprehensive education on substances for adolescents would be an appropriate place to start. One thing is sure, on the current trajectory, substance use amongst adolescents, particularly third culture kids in international settings, is likely to continue increasing unless some form of change takes place.

[i] Tsuang, M. T., Lyons, M. J., Eisen, S. A., Goldberg, J., True, W., Lin, N., … Eaves, L. (1996). Genetic influences onDSM-III-R drug abuse and dependence: A study of 3,372 twin pairs. *American Journal of Medical Genetics*, *67*(5), 473–477. doi: 10.1002 (sici)1096-8628(19960920)67:5<473::aid-ajmg6>3.0.co;2-l

[ii] Kotler, M., Cohen, H., Segman, R., Gritsenko, I., Nemanov, L., Lerer, B., … Ebstein, R. P. (1997). Excess dopamine D4 receptor (D4DR) exon III seven repeat allele in opioid-dependent subjects. *Molecular Psychiatry*, *2*(3), 251–254. doi: 10.1038/sj.mp.4000248

[iii] Bramness, J. G., Gundersen, Ø. H., Guterstam, J., Rognli, E. B., Konstenius, M., Løberg, E.-M., … Franck, J. (2012). Amphetamine-induced psychosis - a separate diagnostic entity or primary psychosis triggered in the vulnerable? *BMC Psychiatry*, *12*(1). doi: 10.1186/1471-244x-12-221

[iv] Murray, R. M., Paparelli, A., Morrison, P. D., Marconi, A., & Forti, M. D. (2013). What can we learn about schizophrenia from studying the human model, drug-induced psychosis? *American Journal of Medical Genetics Part B: Neuropsychiatric Genetics*, *162*(7), 661–670. doi: 10.1002/ajmg.b.32177

[v] Lev-Ran, S., Roerecke, M., Foll, B. L., George, T., Mckenzie, K., & Rehm, J. (2013). The association between cannabis use and depression: a systematic review and meta-analysis of longitudinal studies. *European Psychiatry*, *28*, 1. doi: 10.1016/s0924-9338(13)76057-7

[vi] Dakwar, E., Nunes, E. V., Bisaga, A., Carpenter, K. C., Mariani, J. P., Sullivan, M. A., … Levin, F. R. (2011). A Comparison of Independent Depression and Substance-Induced Depression in Cannabis-, Cocaine-, and Opioid-Dependent Treatment Seekers. *The American Journal on Addictions*, *20*(5), 441–446. doi: 10.1111/j.1521-0391.2011.00148.

[vii] Tomlinson, M. F., Brown, M., & Hoaken, P. N. (2016). Recreational drug use and human aggressive behavior: A comprehensive review since 2003. *Aggression and Violent Behavior*, *27*, 9–29. doi: 10.1016/j.avb.2016.02.004

[viii] Murray, R. M., Paparelli, A., Morrison, P. D., Marconi, A., & Forti, M. D. (2013). What can we learn about schizophrenia from studying the human model, drug-induced psychosis?*American Journal of Medical Genetics Part B: Neuropsychiatric Genetics*, *162*(7), 661–670. doi: 10.1002/ajmg.b.32177

[ix] Andreasson S, Allebeck P, Engstrom A, Rydberg U. 1987. Cannabis and Schizophrenia: A longitudinal study of Swedish conscripts. *Lancet 26*:1483–1486.

[x] Barnett JH, Werners U, Secher SM, Hill KE, Brazil R, Masson K, Pernet DE, Kirkbride JB, Murray GK, Bullmore ET, Jones PB. 2007. Substance use in a population-based clinic sample of people with first-episode psychosis. *Br J Psychiatry 190*:515–520.

[xi] D'Souza DC, Perry E, MacDougall L, Ammerman Y, Cooper T, Wu YT, Braley G, Gueorguieva R, Krystal JH. 2004. The psychotomimetic effects of intravenous delta-9-tetrahydrocannabinol in healthy individuals: Implications for psychosis. *Neuropsychopharmacology 29*(8):1558–1572.

[xii] Di Forti M, Lappin JM, Murray RM. 2007. Risk factors for schizophrenia—All roads lead to dopamine. *Eur Neuropsychopharmacol 17S*:101–107.

[xiii] Di Forti M, Morgan C, Dazzan P, Pariante C, Mondelli V, Reis Marques T, Handley R, Aas M, Luzi S, Russo M, Paparelli A, Butt A, Stilo SA, Wiffen B, Powell J, Murray RM. 2009. Use of high potency cannabis is associated with a greater risk of psychosis. *Br J Psychiatry* 195:488–491.

[xiv] Fergusson DM, Poulton R, Smith PF, Boden JM. 2006. Cannabis and psychosis. *BMJ 332*:172–175.

[xv] Manrique-Garcia E, Zammit S, Dalman C, Hemmingsson T, Andreasson S, Allebeck P. 2012. Cannabis, schizophrenia and other non-affective psychoses: 35 years of follow-up of a population-based cohort. *Psychological medicine 42*(06):1321–1328.

[xvi] McGrath J, Welham J, Scott J, Varghese D, Degenhardt L, Hayatbakhsh MR, Alati R, Williams GM, Bor W, Najman JM. 2010. Association between cannabis use and psychosis-related outcomes using sibling pair analysis in a cohort of young adult. *Arch Gen Psychiatry* 67(5):440–447.

[xvii] Moore THM, Zammit S, Lingford-Hughes A, Barnes TRE, Jones PB, Burke M, Lewis G. 2007. Cannabis use and risk of psychotic or affective mental health outcomes: A systematic review. *Lancet 370*:319–328.

[xviii] Van Os J, Bak M, Hanssen M, Bij RV, de Graaf R, Verdoux H. 2002. Cannabis use and psychosis: A longitudinal population-based study. *Am J Epidemiol 156*(4):319–327.

[xix] Zammit LS, Allebeck P, Andreasson S, Lundberg I, Lewis G. 2002. Self reported cannabis use as a risk factor for schizophrenia in Swedish conscripts of 1969: Historical cohort study. *BMJ 325*:1199–1212.

[xx] Zammit S, Owen MJ, Evans J, Heron J, Lewis G. 2011. Cannabis, COMT and psychotic experiences. *The British Journal of Psychiatry 199*(5):380–385.

[xxi] Angrist B, Sathananthan G, Wilk S, Gershon S. 1974. Amphetamine psychosis: Behavioural and biochemical aspects. *J Psychiatr Rs* 11:13–23.

[xxii] Lieberman JA, Kane JM, Alvir J. 1987. Provocative tests with psychostimulant drugs in schizophrenia. *Psychopharmacology* 91:415–433.

[xxiii] Tomlinson, M. F., Brown, M., & Hoaken, P. N. (2016). Recreational drug use and human aggressive behavior: A comprehensive review since 2003. *Aggression and Violent Behavior*, *27*, 9–29. doi: 10.1016/j.avb.2016.02.004

[xxiv] Lev-Ran, S., Roerecke, M., Foll, B. L., George, T., Mckenzie, K., & Rehm, J. (2013). The association between cannabis use and depression: a systematic review and meta-analysis of longitudinal studies. *European Psychiatry*, *28*, 1. doi: 10.1016/s0924-9338(13)76057-7

[xxv] Macleod, J., Oakes, R., Copello, A., Crome, I., Egger, M., Hickman, M., et al. (2004). Psychological and social sequelae of cannabis and other illicit drug use by young people: a systematic review of longitudinal, general population studies. *Lancet, 363*(9421), 1579–1588

[xxvi] Tucker, J. S., Ellickson, P. L., Collins, R. L., & Klein, D. J. (2006a). Are drug experimenters better adjusted than abstainers and users?: a longitudinal study of adolescent marijuana use. *Journal of Adolescent Health, 39*(4), 488–494.

[xxvii] Tucker, J. S., Ellickson, P. L., Collins, R. L., & Klein, D. J. (2006b). Does solitary substance use increase adolescents' risk for poor psychosocial and behavioral outcomes? A 9-year longitudinal study comparing solitary and social users. *Psychology of Addictive Behaviors, 20*(4), 363–372.

[xxviii] Kedzior, K. K., & Laeber, L. T. (2014). A positive association between anxiety disorders and cannabis use or cannabis use disorders in the general population- a meta-analysis of 31 studies. *BMC Psychiatry*, *14*(1). doi: 10.1186/1471-244x-14-136

[xxix] Crippa, J. A., Zuardi, A. W., Martín-Santos, R., Bhattacharyya, S., Atakan, Z., Mcguire, P., & Fusar-Poli, P. (2009). Cannabis and anxiety: a critical review of the evidence. *Human Psychopharmacology: Clinical and Experimental*, *24*(7), 515–523. doi: 10.1002/hup.1048

[xxx] Boden, J. M., & Fergusson, D. M. (2011). Alcohol and depression. *Addiction*, *106*(5), 906–914. doi: 10.1111/j.1360-0443.2010.03351.

[xxxi] Marijuana and Public Health. (2018, February 26). Retrieved from https://www.cdc.gov/marijuana/index.htm

[xxxii] National Institute of Health. (2020, May 12). Human Trafficking and Drugs. Retrieved May 13, 2020, from https://teens.drugabuse.gov/blog/post/human-trafficking-and-drugs

[xxxiii] Black, Carol (February 2020). "Review of drugs: phase one report". *GOV.UK*. Retrieved 28 February 2020.

[xxxiv] Idris, I. (2019). Drivers and enablers of serious organized crime in South-East Asia. K4D Helpdesk Report 655. Brighton, UK: Institute of Development Studies.

[xxxv] Ibid.

[xxxvi] Bava, S., & Tapert, S. F. (2010). Adolescent Brain Development and the Risk for Alcohol and Other Drug Problems. *Neuropsychology Review*, *20*(4), 398–413. doi: 10.1007s11065-010-9146-6.

[xxxvii] Bava, S., & Tapert, S. F. (2010). Adolescent Brain Development and the Risk for Alcohol and Other Drug Problems. Neuropsychology Review, 20(4), 398–413. doi: 10.1007s11065-010-9146-6.

[xxxviii] Ibid.

[xxxix] Ibid.

[xl] Nagel, B. J., Schweinsburg, A. D., Phan, V., & Tapert, S. F. (2005). Reduced hippocampal volume among adolescents with alcohol use disorders without psychiatric comorbidity. *Psychiatry Research, 139*(3), 181–190.

[xli] Brown, S. A., Tapert, S. F., Granholm, E., & Delis, D. C. (2000). Neurocognitive functioning of adolescents: effects of protracted alcohol use. *Alcoholism: Clinical and Experimental Research, 24*(2), 164–171.

[xlii] Medina, K. L., Nagel, B. J., Park, A., McQueeny, T., & Tapert, S. F. (2007). Depressive symptoms in adolescents: associations with white matter volume and marijuana use. *Journal of Child Psychology and Psychiatry, 48*(6), 592–600.

[xliii] Tapert, S. F., & Brown, S. A. (1999). Neuropsychological correlates of adolescent substance abuse: four-year outcomes. *Journal of the International Neuropsychological Society, 5*(6), 481–493.

[xliv] Tapert, S. F., & Brown, S. A. (2000). Substance dependence, family history of alcohol dependence and neuropsychological functioning in adolescence. *Addiction, 95*(7), 1043-1053.

[xlv] Tapert, S. F., Granholm, E., Leedy, N. G., & Brown, S. A. (2002). Substance use and withdrawal: neuropsychological functioning over 8 years in youth. *Journal of the International Neuropsychological Society, 8*(7), 873–883.

[xlvi] Schweinsburg, A. D., Nagel, B. J., Schweinsburg, B. C., Park, A., Theilmann, R. J., & Tapert, S. F. (2008). Abstinent adolescent marijuana users show altered fMRI response during spatial working memory. *Psychiatry Research: Neuroimaging*.

[xlvii] Tapert, S. F., Brown, G., Meloy, M., Dager, A., Cheung, E., & Brown, S. (2001). fMRI measurement of brain function in alcohol use disordered adolescents. *Alcoholism: Clinical and Experimental Research, 25*, 80A.

[xlviii] Tapert, S. F., Schweinsburg, A. D., Barlett, V. C., Brown, S. A., Frank, L. R., Brown, G. G., et al. (2004). Blood oxygen level dependent response and spatial working memory in adolescents with alcohol use disorders. *Alcoholism: Clinical and Experimental Research, 28*(10), 1577–1586.

[xlix] Tapert, S. F., Schweinsburg, A. D., Drummond, S. P., Paulus, M. P., Brown, S. A., Yang, T. T., et al. (2007). Functional MRI of inhibitory processing in abstinent adolescent marijuana users. *Psychopharmacology (Berl), 194*(2), 173–183.

[l] De Bellis, M. D., Narasimhan, A., Thatcher, D. L., Keshavan, M. S., Soloff, P., & Clark, D. B. (2005). Prefrontal cortex, thalamus, and cerebellar volumes in adolescents and young adults with adolescent-onset alcohol use disorders and comorbid mental disorders. *Alcoholism: Clinical and Experimental Research, 29*(9), 1590–1600.

[li] Lev-Ran, S., Roerecke, M., Foll, B. L., George, T., Mckenzie, K., & Rehm, J. (2013). The association between cannabis use and depression: a systematic review and meta-analysis of longitudinal studies. *European Psychiatry*, *28*, 1. doi: 10.1016/s0924-9338(13)76057-7

[lii] Tapert, S. F., Granholm, E., Leedy, N. G., & Brown, S. A. (2002). Substance use and withdrawal: neuropsychological functioning over 8 years in youth. *Journal of the International Neuropsychological Society, 8*(7), 873–883.

[liii] Hansen, H. H., Krutz, B., Sifringer, M., Stefovska, V., Bittigau, P., Pragst, F., et al. (2008). Cannabinoids enhance susceptibility of immature brain to ethanol neurotoxicity. *Annals of Neurology, 64*(1), 42–52.

[liv] Delisi, L. E., Bertisch, H. C., Szulc, K. U., Majcher, M., Brown, K., Bappal, A., et al. (2006). A preliminary DTI study showing no brain structural change associated with adolescent cannabis use. *Harm Reduction Journal, 3*, 17.

[lv] Levine, M. (2008). *The price of privilege: How parental pressure and material advantage are creating a generation of disconnected and unhappy kids.* New York: HarperCollins Publishers.

[lvi] Gladwell, M. (2012). *Outliers: The story of success*. Boston, Massachusetts: Little, Brown and Company.

[lvii] Luthar, Suniya & Small, Phillip & Ciciolla, Lucia. (2017). Adolescents from upper middle class communities: Substance misuse and addiction across early adulthood. *Development and Psychopathology*. 30. 1-21. 10.1017/S0954579417000645.

[lviii] The definition of affluent describes families with a joint income of between $120,000USD and $163,000 annually.

[lix] Koplewicz, H. S., Gurian, A., & Williams, K. (2009). The era of affluence and its discontents [Editorial]. *Journal of the American Academy of Child & Adolescent Psychiatry*, 48(11), 1053–1055. https://doi.org/10.1097/CHI.0b013e3181b8be5c

[lx] Luthar, S. S., & Goldstein, A. S. (2008). Substance use and related behaviors among suburban late adolescents: the importance of perceived parent containment. *Development and psychopathology*, *20*(2), 591–614. https://doi.org/10.1017/S0954579408000291

[lxi] Racz, S. J., McMahon, R. J., & Luthar, S. S. (2011). Risky Behavior in Affluent Youth: Examining the Co-occurrence and Consequences of Multiple Problem Behaviors. *Journal of child and family studies*, *20*(1), 120–128. https://doi.org/10.1007/s10826-010-9385-4

[lxii] Koplewicz, H. S., Gurian, A., & Williams, K. (2009). The era of affluence and its discontents [Editorial]. *Journal of the American Academy of Child & Adolescent Psychiatry*, 48(11), 1053–1055. https://doi.org/10.1097/CHI.0b013e3181b8be5c)

[lxiii] Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2009). *Monitoring the future national results on adolescent drug use: Overview of key findings, 2008*. Bethesda: National Institute on Drug Abuse.

[lxiv] SAMSHA. (2009). *Results from the 2008 national survey on drug use and health: national findings.* Rockville: Office of Applied Studies, DHHS.

[lxv] Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2009). *Monitoring the future national results on adolescent drug use: Overview of key findings, 2008*. Bethesda: National Institute on Drug Abuse.

[lxvi] Buckner, J. D., Keough, M. E., & Schmidt, N. B. (2007). Problematic alcohol and cannabis use among young adults: The roles of depression and discomfort and distress tolerance. *Addictive Behaviors*, *32*(9), 1957–1963. doi: 10.1016/j.addbeh.2006.12.019.

[lxvii] Wagner, E. F., Myers, M. G., & Mcininch, J. L. (1999). Stress-coping and temptation-coping as predictors of adolescent substance use. *Addictive Behaviors*, *24*(6), 769–779. doi: 10.1016/s0306-4603(99)00058-1

[lxviii] Wills, T. A., Sandy, J. M., Yaeger, A. M., Cleary, S. D., & Shinar, O. (2001). Coping dimensions, life stress, and adolescent substance use: A latent growth analysis. *Journal of Abnormal Psychology*, *110*(2), 309–323. doi: 10.1037/0021-843x.110.2.309

[lxix] Holmes, T. & Rahe, R. (1967). Holmes-Rahe Social Readjustment Rating Scale, *Journal of Psychosomatic Research*, Vol.II.

[lxx] Lickona, T. (2004). *Character matters: How to help our children develop good judgement, integrity and other essential virtues*. New York: Atria Books.