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Comparing the management of ADHD in the United States and Vietnam: A Cross-Cultural Exploration

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**Comparing the management of ADHD
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A Cross-Cultural Exploration**

Nguyen Nhat Thu Le

Honors Thesis

Science, Technology and Society Program

Colby College, Waterville, ME 04901

May 18, 2019

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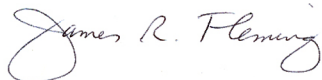
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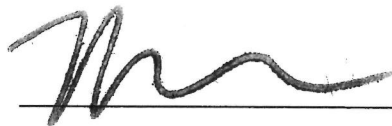
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A thesis presented to the faculty of the Science, Technology, and Society Program in partial fulfillment of the graduation requirements for the Degree of Bachelor of Arts with Honors in Science, Technology, and Society



James R. Fleming, Advisor



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Abstract

Attention-deficit/hyperactivity disorder (ADHD) is a common mental disorder characterized by inattention, hyperactivity and impulsivity. Since ADHD was formally recognized by psychiatrists in the US in 1968, knowledge about this condition has spread to many countries, including Vietnam. The US and Vietnam differ significantly in their perception and management of this disorder. ADHD is an “academic disorder” in the US because the intensifying pressure on children to succeed academically is a key factor in the emergence of ADHD, as well as its high diagnosis rates in some states. In contrast, Vietnamese people consider ADHD a developmental disorder of early childhood, apparently because health professionals and laypeople alike often confuse ADHD with autism and speech disorder. Each country also faces distinct problems with ADHD diagnosis and treatment. In the US, ADHD prevalence differs widely between states and demographic groups. In addition, the increasing availability of stimulant medications for ADHD and lack of awareness about their risk of abuse have led to widespread stimulant misuse. In Vietnam, on the contrary, ADHD is a very new condition, so it is likely underdiagnosed due to a shortage of experienced physicians and facilities for diagnosis and treatment. Stimulant supply is severely restricted, and the Vietnamese are much more averse to treating ADHD with medications than Americans, so the main treatments are behavioral therapy and acupuncture. Despite the differences, responses to ADHD have been influenced by the pharmaceutical industry, the history of medicine, and academic pressure in both countries, though with dramatically different results.

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1. Introduction

Two countries, one name, not the same disorder

Attention-deficit/hyperactivity disorder (ADHD) is a neurological and mental disorder that manifests itself through symptoms like “excessive motor activity, inattention, and impulsiveness” (Lange et al., 2010). The condition is currently classified into three subtypes: predominantly inattentive, predominantly hyperactive/impulsive, and combined (American Psychiatric Association, 2013). ADHD is the most common childhood mental disorder in the US, costing Americans \$42.5 billion annually (Pelham, Foster, & Robb, 2007). Even before the term ADHD was coined in 1987, this condition had been a source of controversies for American psychiatrists, governmental agencies, teachers, and parents alike. First, many argue that inconsistent application of diagnostic criteria have led to severe overdiagnosis of ADHD in the US, as its prevalence reached 9.4% in 2016 (Danielson et al., 2018). Even Keith Conners, prominent psychiatrist and the “Father of ADHD”, warned that his lifework had turned into a “national disaster of dangerous proportion” due to overdiagnosis (Schwarz, 2013). However, the problem with ADHD diagnosis in the US is more much complex and subtle. Some states have an ADHD prevalence of nearly 15%, while the prevalence in some other states only reaches 5%, indicating a need to find out the reason behind this wide discrepancy and remedy it, if necessary. Furthermore, ADHD diagnostic criteria has become more and more lenient over time. If the criteria are eventually loosened to the point that, for example, 15% of American children will meet those criteria, would that be an overdiagnosis? Technically not, since the portion of people meeting the diagnostic criteria represents the “true prevalence”, but we should question if it is a meaningful prevalence. Therefore, aside from making sure physicians adhere to ADHD

diagnostic procedure, health professionals and the public must also carefully examine the diagnostic criteria to make sure they are effectively identifying the people that need clinical help with ADHD.

Another debate centers on the criticism that ADHD medications are given to many children who do not need them, thus increasing the risk of unknown disturbances to the development of their brains and performance drug abuse (Bjorn & Weyandt, 2018). The controversy started in 1970, when the *Washington Post* reported on a “behavior modification program” in Nebraska that involved giving stimulant medications to thousands of disruptive elementary students (Schwarz, 2016). While such an outrageous situation is unlikely to occur nowadays, there is evidence that the soaring number of prescriptions for stimulants due to rising ADHD diagnosis rate has led to increases in stimulant diversion and abuse. The US also consumes much more ADHD medication than European countries with a similar income level (Scheffler et al., 2007). The question is, what are the costs and benefits of reducing stimulant use, and how to implement it?

The problems of rapidly increasing ADHD diagnosis and stimulant use are not only issues of science and medicine. Instead, they are strongly influenced by economic and social factors. The marketing campaigns of pharmaceutical companies, the dominance of psychopharmacology in American psychiatry, and rising pressure to succeed academically in the US all play a role in inflating ADHD diagnosis and stimulant use in the US. Academic pressure, in particular, is crucial in the establishment of ADHD as a clinical disorder. This is evidenced by the facts that academic struggle is a major motivation for referring children to ADHD specialists, and that changes in educational policies strongly impact ADHD diagnosis. Therefore, ADHD

can be considered an “academic disorder” in the US. This is not to say that ADHD is a social construct without scientific basis, however. On the contrary, many studies have demonstrated the biological differences between people with and without ADHD. It is precisely because many people are suffering impairments due to ADHD that we must minimize the influence of such social factors on ADHD diagnosis and treatment, so that people with ADHD receive the recognition they deserve and people without ADHD do not have to bear the brunt of that label.

While ADHD originated in the US, it is no longer an exclusively American disorder. By 2003, 55 countries were using stimulants to manage ADHD (Hinshaw & Scheffler, 2014). However, ADHD is generally considered a problem of industrial, economically developed countries but not developing countries, as the latter have many higher priorities such as infectious diseases and more severe mental illnesses (Hinshaw & Scheffler, 2014). This is only a partial truth. In a developing country like Vietnam, where 64.3% of the population live in rural area, ADHD is still a largely unheard-of condition and getting evaluated for this disorder is remarkably difficult (Vietnam Bureau of Statistics, 2018). However, due to globalization, this disorder was imported into Vietnam and currently receives considerable coverage in online newspaper and websites targeting educated city-dwellers. There are also special schools for children with a range of developmental and behavioral disorders including ADHD. However, ADHD diagnosis in Vietnam can be highly unreliable as health professionals have limited experience in differentiating ADHD with other childhood disorders like autism and speech disorder. This confusion may account for the fact that the Vietnamese view ADHD more as a developmental disorder of early childhood (before 4 years of age) than an “academic disorder”

(usually 6 years and above) as in the US. Therefore, although the name is unchanged, ADHD has taken on a dramatically different form in Vietnam compared to its home country, the US.

In addition, Vietnam is much more averse to ADHD medications than the US and prefers non-drug interventions such as behavioral therapy. This divergence largely resulted from the two countries' differences in philosophy of medicine, pharmaceutical industry, and educational policies. First, Western medicine was established in Vietnam less than 70 years ago, and the country has a robust and modern system of traditional medicine. The coexistence of two medical systems causes Vietnamese people to view Western medications as powerful but aggressive and have harmful side effects, leading to a reluctance to give Western medications to children for ADHD, stimulant or otherwise. Second, pharmaceutical companies in Vietnam pursue profit just like those in the US, but since these Vietnamese companies produce herbal supplements rather than synthetic medications, they promote traditional medicine while emphasizing the negative side effects of Western medications for ADHD. Finally, the pressure on Vietnamese students to do well at school is about as intense as in the US. However, this is unlikely to lead to an increase in ADHD diagnosis and medication in the near future, since Vietnam has almost no form of educational accommodation and limited treatment options for students with ADHD. By examining the similarities and differences between the responses of Vietnam and the US to ADHD, this study contributes to characterizing global variation in attitude toward ADHD and its treatments, which can inform better policies regarding ADHD management.

Defining ADHD: biological and sociopsychological manifestations

The first major debate about ADHD in the West is whether it is a real disorder. To some people, ADHD symptoms like running around, fidgeting, and making careless mistakes in schoolwork are just normal children's behaviors. The problem called ADHD only emerged because many children cannot meet parents' and teachers' expectations that they sit still and study for hours every day. In other words, ADHD is simply the inability of some children to cope with the current educational system. To other people, ADHD is a concrete mental disorder with clear biological evidence, and saying otherwise is a form of science denial. The truth is, neither of these opposing views are entirely correct. While many studies have shown that people with and without ADHD differ in terms of genetics, neurodevelopmental trajectory, and brain chemistry, ADHD diagnosis and assessment of treatments must still depend on behavioral rather than biological tests.

The first piece of evidence to support the validity of ADHD is its heritability. Research on twins, siblings and families with adopted children has found the heritability of ADHD to be 76%, which surpasses other highly heritable mental disorders like schizophrenia (Faraone et al., 2005; Hinshaw & Scheffler, 2014). No single gene has been found responsible for ADHD, however. Instead, researchers have found seven genes that show “statistically significant evidence of association with ADHD” (Faraone et al., 2005; Hinshaw & Scheffler, 2014). This is an unsurprising result, as researchers have recognized ADHD to be a multifactorial disorder (Nigg, 2006). However, the fact that ADHD depends on many genes poses an obstacle to elucidating its etiology. Another problem is that the inattentive subtype and hyperactive/impulsive subtype of ADHD are not always inherited together, suggesting that different but

overlapping sets of genes may be responsible for these two subtypes (McLoughlin et al. 2007; Nikolas & Burt, 2010). Therefore, although scientists have shown that genetic factors play a crucial role in the etiology of ADHD, a lot more work needs to be done to connect those genetic factors to ADHD risk assessment, diagnosis and treatment. Furthermore, aside from genes, other factors like prenatal exposure to some substances and low birth weight also increase the risk of developing ADHD (Nigg, 2006). Genetic studies on ADHD have thus been indispensable, but not enough to delineate the mechanism of disease in people with ADHD.

People with ADHD also generally suffer from delays in certain aspects of neurological development compared to those without ADHD. In 2011, Nakao et al. analyzed data from fourteen structural neuroimaging studies on ADHD and found that people with this condition have lower total gray matter volume compared to control. The authors also found that increasing age and usage of stimulant medication correlated with greater total volume of gray matter, suggesting that people with ADHD may catch up with non-ADHD people over time and with the use of stimulants. Similarly, Shaw et al. found that children with ADHD have delayed brain cortex development compared to control by about 3 years (2007). In sum, these studies show that people with ADHD likely go through the same neurodevelopmental process as people without this condition, only more slowly, which explains why ADHD symptoms sometimes abate or disappear in adulthood. However, these neurodevelopmental traits vary widely among people with ADHD, so they cannot serve as a basis for predicting and diagnosing ADHD. Furthermore, traits like brain cortex development can only be measured by monitoring a child over many years, so it is not a good diagnostic tool.

ADHD has also been linked to reduced activity of the dopamine neural pathway, an important signaling pathway related to reward and motivation in the brain. In 2009, Volkow et al. found that adults with ADHD who had not taken medications had lower dopamine receptor availability in the left hemisphere than control. Although the sample size was small (53 ADHD patients and 44 controls), this result may explain how stimulants can alleviate ADHD symptoms, since these substances enhance dopamine signaling in the brain. The problem is, dopamine is linked to so many neurological functions that scientists have not been able to elucidate exactly how defects in the dopamine pathway lead to ADHD symptoms like inattention and hyperactivity. Furthermore, it is unknown whether the dopamine pathway and the delayed neurodevelopment previously outlined belong to the same or separate mechanisms of ADHD pathogenesis. Overall, genetic risk factors, delayed neurodevelopment, and reduced dopamine signaling are important pieces of the puzzle, but they are far from enough to construct the full picture of ADHD.

The aforementioned biological traits are only three among the many factors that scientists have examined to find the causes of ADHD, but they are the ones that produced the most striking results. Overall, however, the etiology of ADHD is still largely unknown, and no biological factor has been found to correlate with ADHD consistently enough to serve as a diagnostic test for this condition. In fact, it seems that no single biological or environmental factor can account for all cases of ADHD (Nigg, 2006). At the moment, the only traits that are consistently associated with ADHD and easy to measure are behavioral patterns including inattention, hyperactivity and impulsivity. The DSM-V stipulates that for an ADHD diagnosis, the patient must have 6 or more traits from a list of inattentive behaviors or a list of hyperactive/impulsive

behaviors. The inattentive behavior list includes items like “often distracted by extraneous stimuli” and “often forgetful in daily activities”, while the hyperactive/impulsive behavior lists includes “often runs about or climbs in situations where it is inappropriate” and “often has difficulty awaiting turn” (Rabiner, 2013). The most obvious problem is that different observers may disagree on how “often” a child expresses those symptoms, and thus disagree on whether that child has ADHD. More importantly, behavioral patterns may change depending on the social context. This means that given the current ADHD diagnostic criteria, social norms and expectations can influence ADHD diagnosis.

One example of how social factors can affect ADHD diagnosis has to do with social norms related to hyperactive behaviors. Hyperactivity is historically the most characteristic symptoms of ADHD, evidenced by the fact that the prototype of ADHD was called “hyperkinetic reaction of childhood” in the DSM-II (1968). Basing ADHD diagnosis on hyperactivity is problematic because hyperactive behaviors are perceived as more socially acceptable in boys than in girls, and more in children than in adults. This could explain why ADHD diagnosis rate has always been higher in boys than in girls. Indeed, the male-to-female ADHD ratio was 10 : 1 in 1980 and between 9 : 1 and 4 : 1 in 1994 (Bergey & Conrad, 2018). In addition, boys are more likely to have the hyperactive subtype and aggressive behaviors as comorbidity, while girls are more likely to have the inattentive subtype and emotional troubles as comorbidity (Hinshaw & Scheffler, 2014). In other words, it could be that boys and girls have the same rate of ADHD, but this condition does not manifest as hyperactivity in girls due to social norms against hyperactive behaviors in this group, leading to a lower diagnosis rate of ADHD in girls. Since health professionals have paid more attention to ADHD in girls recently,

the male-to-female ADHD ratio has risen to 5 : 2 in 2016, but was still clearly unbalanced (Danielson et al., 2018). Similarly, health professionals recognize that as children with ADHD enter adulthood, their hyperactivity may abate while other symptoms related to inattention and impulsivity persist (Mayo Clinic, 2017). This is because in adults with ADHD, the impulse to fidget or run around is dampened by social norms. These examples are only a subset of the many ways that social factors can impact ADHD manifestation, diagnosis and treatment, as we will soon see. ADHD has a biological basis, but at the moment it cannot be reduced to biochemical pathways in the same way as tuberculosis or diabetes. Therefore, investigating how social, economic and cultural factors influence the ADHD epidemic, which is the purpose of this study, will prove essential in optimizing ADHD diagnosis and treatment.

2. ADHD in the US: historical development and current situation

The ADHD controversy started in the 1970s, when this condition was still known by its early name of “hyperkinetic reaction of childhood”. Since then, the debates have both continued to the present and stretched into the past, as health professionals, critics and laypeople disagree over the past, present and future of ADHD. While professional opinions hold that ADHD is a medical condition with deep roots in history, critics point out how non-medical factors like corporate investment and increased social benefits for people with learning difficulties played a large role in the development of ADHD into “America’s No. 1 Psychiatric Disorder”. More recent debates center on whether ADHD is overdiagnosed and overmedicated. The problem is, there has yet to be an objective criterion on what qualifies as “overdiagnosis” and “overmedication”, so what one person interprets as overdiagnosis may mean better detection of ADHD cases for others. Furthermore, these debates detract from the most tangible issues right

now, which are divergent ADHD diagnostic rates between different states and demographic groups and the lack of a fixed ADHD prevalence due to changing diagnostic criteria. The US' prodigious consumption of stimulant medications compared to the rest of the world is also a cause of concern, as efforts to ensure proper use of these dangerous substances have not kept up with the rates of stimulant diversion and misuse.

The birth of ADHD

Critics have often questioned whether ADHD is a real disorder or just a product of mandatory education and other social factors, prompting many scientists to try to validate ADHD by elucidating its biochemical mechanism. Another way is to show that ADHD has a long history. Afterall, if ADHD is a real disorder, it must have affected people in past centuries as well, so references to ADHD or its symptoms in historical documents can show that this condition is not simply the product of pharmaceutical companies and a flawed educational system. The 2010 article “The history of attention deficit hyperactivity disorder” by Lange et al. offers a meticulous and highly cited chronology of research on ADHD and its purported prototypes, ranging from the 18th century to the time of its publication. Through this article, readers can see how isolated observations of ADHD-like symptoms by physicians, usually decades apart in time, eventually converged to define one single disorder that was officially recognized in 1980 by the APA as “attention deficit disorder” (ADD) in the DSM-III. This article is thus a powerful piece of evidence that ADHD truly exists. However, not all events in the history of ADHD support this conclusion. Alan Schwarz, author of the book *ADHD Nation* (2016), and other critics have noted that the birth of ADHD was not simply due to an accumulation of scientific research, but also factors such as the pharmaceutical industry and

policy changes. Therefore, in the US, history is also an area of contention in the ADHD debate. It is important to examine both sides' arguments to see whether ADHD is a product of biology or society, or a combination of both.

The first two references to ADHD-like conditions presented by Lange et al. occurred in Europe in the 18th and 19th centuries, long before the start of mandatory education. In 1798, the famous Scottish physician Alexander Crichton published three books on the physiology and pathology of various mental illnesses and dedicated one chapter to "Attention and its Diseases". There, he described people who are incapable of paying consistent attention to any single object, which may be innate or due to diseases. These symptoms, termed "alterations of attention" by Crichton, may appear at an early age and hamper the child's education, but they often abate with age (Crichton, 1798). Since these characteristics seem to closely align with today's definition of ADHD, Crichton's books have been taken as evidence that ADHD has existed since the late 18th century. The next reference was in an 1844 children's book by the German physician Heinrich Hoffmann. The book has a character called "Fidgety Philipp", who could not sit still, disregarded his parents' demands, and caused a mess at the dinner table. Because Hoffmann was an accomplished psychiatrist, many people have pointed to "Fidgety Philipp" as evidence that ADHD is not a modern disorder restricted to the US.

The 20th century witnessed major landmarks in the circuitous history of ADHD in the West (Lange et al., 2010). In the first few decades, several research groups described psychiatric conditions similar to ADHD in children. Since children's mental health was a scarcely studied field at the time, these reports were sporadic, and each group came up with a different name for the condition they observed. These names included "defect of moral control" (George Frederic

Still, 1902), “hyperkinetic disease of infancy” (Franz Kramer and Hans Pollnow, 1932), “minimal brain damage” (various researchers, 1930s to 1950s), “hyperkinetic impulses disorder” (Laufer et al., 1957), and “minimal brain dysfunction” or MBD (Oxford International Study Group of Child Neurology, 1963). While these terms cover a wide range of meanings, most focus on hyperactivity and the impairment of some brain capacity. Moreover, the descriptions from Crichton’s “alterations of attention” to “defect of moral control” to MBD have become increasingly based on biological abnormalities (speculated, since none had been found at the time), which reflects the increasing reliance on reductionism in Western psychiatry (Healy, 2002). In any case, this group of disorders was gaining professional interest. Too much interest in some cases, since at one point 99 symptoms were attributed to MBD, covering nearly all emotional and behavioral problems of childhood (Hinshaw & Scheffler, 2014). Professional interest in this group of disorders culminated in its recognition in the second and third editions of the DSM, the APA’s official guide for diagnosing mental disorders in the US. The DSM-II (1968) included a new condition called “hyperkinetic reaction of childhood” with symptoms such as “overactivity, restlessness, distractibility, and short attention span”, which is very similar to current understanding of ADHD. The condition was then redefined as “attention deficit disorder (with or without hyperactivity)” (ADD) in the DSM-III (1980) and finally “attention deficit-hyperactivity disorder” (ADHD) in the 1987 revision of the DSM-III.

While psychiatrists disagreed over the terminology, two major breakthroughs occurred regarding stimulants as a potential treatment for this condition (Lange et al., 2010). The first one took place in 1937 at Emma Pendleton Bradley Home (Rhodes Island), the first facility in the country built specifically to cater to “disturbed and difficult kids” (Bradley Hospital, n.d.;

Schwarz, 2016). The medical director, Charles Bradley, accidentally discovered that the amphetamine-containing stimulant Benzedrine caused a marked improvement in school performance and calmed the impulsiveness of the children. This astounding result was largely ignored by the scientific community, however, perhaps because the treatment did not correspond to a specific diagnosis (Bergey & Conrad, 2018). In addition, psychoanalysis was still the preferred treatment for mental disorders in the US at the time (Lange et al., 2010; Schwarz, 2016). However, some researchers still took notice of Bradley's discovery and continued his work, which led to the seminal study by Leon Eisenberg and Keith Conners in 1963 showing that the stimulant Ritalin improved attention and reduced the impulsiveness of "disturbed children". ADHD also became the lifework of Conners, who created the first questionnaire to diagnose this condition and was regarded the "Father of ADHD" (Schwarz, 2016). While the inclusion of "hyperkinetic reaction of childhood" in the DSM-II marked the formal birth of ADHD, Conners' work on Ritalin and the diagnostic questionnaire marked its de facto emergence as it allows physicians to handle ADHD in practice.

While Lange et al.'s account presents a natural history of ADHD, in which a previously obscure disorder slowly gained acceptance and official recognition, other authors emphasize different milestones in the road ADHD took to become America's No. 1 psychiatric disorder. For example, Allan Schwarz – a prolific critic of the overdiagnosis and overmedication of ADHD – disagreed with Lange on two points in his 2016 book *ADHD Nation*. First, Schwarz questioned the inclusion of Crichton and Hoffmann as early physicians who documented ADHD. He argued that Crichton believed distractibility was normal in kids and only a problem in adults, and that Hoffmann's story of Fidgety Philipp was merely for entertainment rather than symbolizing any

medical condition (Schwarz, 2016). Indeed, if Hoffmann had recognized fidgeting behaviors as pathological, being a famous psychiatrist, he would likely have done more to publicize this condition rather than just incorporating it into a children's book. Second, Schwarz mentioned a significant and overlooked event. Shortly after the Eisenberg and Conners reported on the effectiveness of Ritalin, a representative of its manufacturer – CIBA Pharmaceuticals – came to their office with a check for \$5,000 “for further studies”, which Eisenberg accepted.

To be clear, we can assume that Eisenberg and Conners are honest scientists who cared about the children and would continue studying Ritalin for its potential clinical benefits rather than the CIBA's money. However, we cannot overlook the fact that \$5,000 was likely a big assistance to Eisenberg and Conners in performing further trials and spreading the good news about Ritalin. Psychotropic drugs could not be marketed directly to the public at that time, so physicians were the only “consumers”, as they were responsible for prescribing medications. Therefore, investing in clinical trials was the best way to quickly promote the sale of their drugs. This event also shows that drug companies have paid very close attention to new research results about their products. If they could see the significance of Eisenberg and Conners' study before most health professionals and approach them so quickly, we can assume that CIBA and other drug companies have approached most other experts in this field as well. And while there is no evidence to suspect any of those experts with malpractice, many studies have shown that funding from pharmaceutical companies strongly correlates with favorable results for those companies (Sismondo, 2008). Therefore, since the earliest studies on the effects of stimulants on inattentive children, pharmaceutical companies' sponsorship has played a role in establishing stimulants as the first-line treatment for ADHD.

Other important events not included by Lange et al. are the implementation of the Individuals with Disability Education Act and the changes to Supplemental Security Income (SSI) eligibility in 1990-1991. These policy changes guarantee educational accommodations, services and benefits to children with ADHD and their families, so ADHD diagnosis rate rose dramatically in the 1990s throughout the country (Bergey & Conrad, 2018; Hinshaw & Scheffler, 2014). This indicates that aside from professional acceptance and corporations' influences, the push for better performance in schools and universities also helped elevate ADHD to its current prominent status in the US. The role of pharmaceutical companies and academic pressure in ADHD diagnosis and medication will reappear in more detail in Part 3. Through these diverging narratives on the development of ADHD, we can learn two lessons. On one hand, although the historical dates and names remain unchanged, by shifting our perspective a little and focusing on other events, we can arrive at a remarkably different origin story for ADHD. On the other hand, these diverging account of the birth of ADHD represent the larger divide in the ADHD discourse. This divide, which started in 1970 following report that many children are being treated with Ritalin in Nebraska, is present in all discussions pertaining to ADHD (Schwarz, 2016). Between supporters and critics of the mounting ADHD diagnosis and medication use, everything about the condition seems open to debate, including its clinical validity, its rate of diagnosis, the merits of stimulants, the forces behind increasing diagnosis rate and treatment, and so on. These debates will appear in subsequent sections, starting with a fundamental question: How many people are affected by ADHD?

Problems with ADHD diagnosis

ADHD is one of the most frequently diagnosed childhood mental disorders in the US, according to data from the Centers for Diseases Control and Prevention (CDC) (Akinbami et al. 2011). From 1998 to 2011, the diagnosis rate of ADHD among school-aged children (5 to 17 years old) have steadily risen from 6.9% to 11% (Akinbami et al., 2011; Schwarz, 2016). By 2016, 9.4% of children 2 to 17 years old had ever been diagnosed, corresponding to 6.1 million children (Danielson et al., 2018). In contrast, the latest version of the DSM (DSM-V) estimates that 5% of children have ADHD globally (APA, 2013). This discrepancy between US prevalence and suggested global prevalence has prompted many critics like Alan Schwarz to argue that ADHD is overdiagnosed in the US. One highly cited reason for this overdiagnosis is that physicians do not have enough time and resources to evaluate each child's condition (Hinshaw & Scheffler, 2014; Schwarz, 2016). Many studies have also found that a large number of physicians do not adhere to established protocols to diagnose ADHD, leading to a high probability of misdiagnosis (Sciutto & Eisenberg, 2007). This inconsistent application of standard diagnostic criteria, along with the social pressure to diagnose more cases of ADHD from the pharmaceutical industry, schools, and even parents, has led many critics to suspect that physicians throughout the US are diagnosing more ADHD cases than they should.

However, this argument is oversimplified and does not reflect the variety of problems with ADHD diagnosis in the US. First, we have no means to judge whether the current diagnosis rate of 9.4% or the APA's 5% global estimate is more accurate due to the subjective nature of ADHD diagnosis, possible cultural differences in assessing ADHD, and the variety of data collection methods in existing prevalence studies. Advocates of ADHD thus often argue that the

rising diagnosis rate of ADHD in the past 50 years is due to increased awareness about the condition, which would be partially correct. Second, despite the recognition that ADHD is easily misdiagnosed, some researchers assert that those misdiagnoses include both false positives and false negatives, and there is no evidence that the rate of ADHD is inflated overall (Sciutto & Eisenberg, 2007). Most importantly, ADHD diagnosis in the US suffers from several systematic problems that cannot be explained by inconsistent diagnosing practice alone, such as the wide discrepancies in ADHD prevalence between states and demographic groups. In addition to standardizing ADHD diagnosing practice, we must also address the causes of these problems in order to achieve a reasonable and meaningful rate of ADHD diagnosis in the US.

Compared to the popular critique that ADHD is overdiagnosed, the wide variation in ADHD prevalence among US states receives much less media coverage and presents a much clearer proof that ADHD diagnosis in the US needs improvement. At the low end of the spectrum, Nevada and New Jersey only have 4.2% and 5.5% diagnosis rates of ADHD in 2011, respectively. In contrast, the rates for Arkansas and Kentucky are 14.6% and 14.8%, nearly triple the rates in Nevada and New Jersey (Visser et al., 2014). There is little reason to believe that children in Arkansas are three times as susceptible to ADHD as children in Nevada, so the most likely explanation is that ADHD is being overdiagnosed in some states, especially in the South and the Midwest (Fig. 1). The reason for this overdiagnosis is not certain, but we will see in Part 3 that it most likely has to do with differences in educational policies among US states. Since the label of ADHD exacts a large financial and emotional toll on children, families and the states (Travell & Visser, 2006; Hinshaw & Scheffler, 2014), this issue must be resolved as soon as possible to reduce unwarranted distress and unnecessary use of stimulant medications.

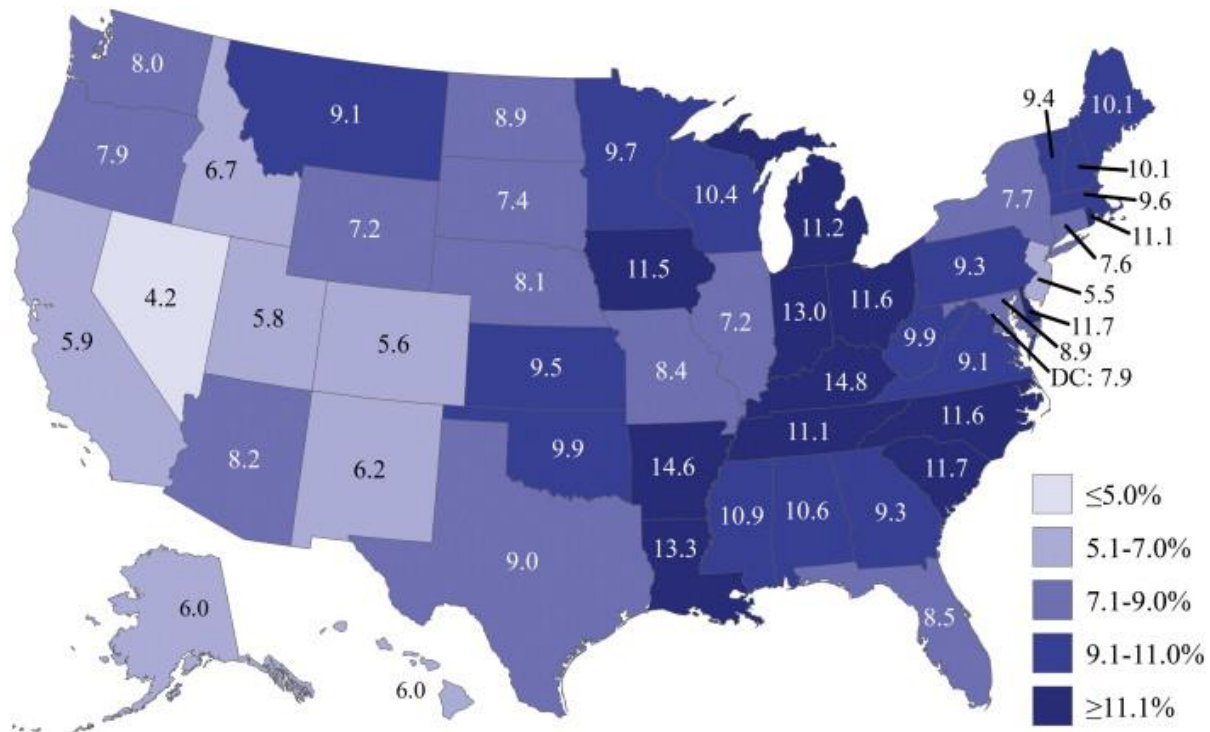


Figure 1. Variation in ADHD diagnosis rate in children 4 to 17 years of age between US states in 2011 (Visser et al., 2014)

Aside from geographic locations, many other demographic factors including race, ethnicity, household characteristics, and health insurance can influence the rate of ADHD diagnosis. For example, for children between 4 and 17 years of age, white children were most likely to receive an ADHD diagnosis (12.2%), followed by black children (11.9%), and children of other races (7.2%) (Visser et al., 2014). Furthermore, Hispanics were only half as likely to receive an ADHD diagnosis than other children (Visser et al., 2014). When household characteristics and other factors have been controlled for, Hispanic children become the group with the second-highest chance of receiving an ADHD diagnosis, although their rates are still far below those of white children (Fig. 2, data from 1998 to 2007) (Morgan et al., 2013). These disparities could reflect different levels of awareness about ADHD, access to mental health

services, psychiatrists' bias, cultural differences, and so on. While more effort must be made to ensure equal access to mental health information and services for racial and ethnic minorities, we should also be careful about imposing out cultural beliefs about ADHD on another group. For example, if a community is averse to the label of ADHD due to cultural and family values, in all but the most extreme cases, the community and families within it should decide how best to raise and educate their children.

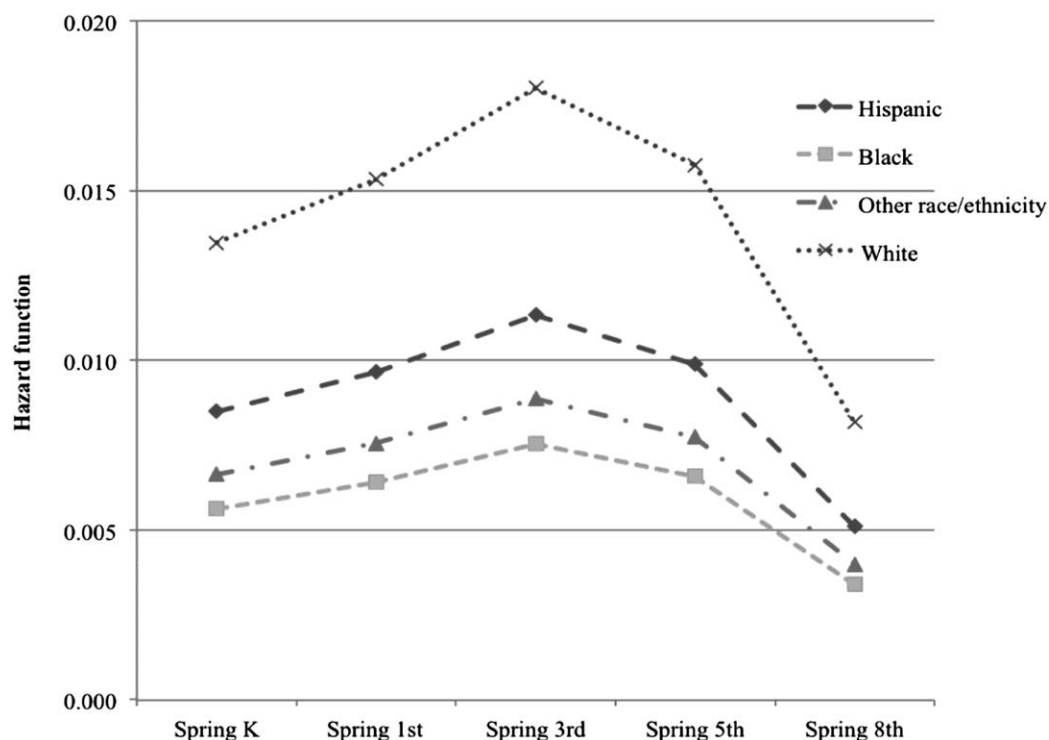


Figure 2. Racial disparity in the chances of receiving an ADHD diagnosis at pre-school, 1st grade, 3rd grade, 5th grade and 8th grade (Morgan et al., 2013)

The question of whether ADHD is overdiagnosed is further complicated by the fact that ADHD has no fixed “true prevalence”. Instead, the “true prevalence” of ADHD depends on its diagnostic criteria. At the moment, the DSM-V recommends that ADHD be diagnosed by two

checklists, one with 9 symptoms related to inattention and another with 9 symptoms related to hyperactivity/ impulsivity. The patients are diagnosed with either predominantly inattentive ADHD or predominantly hyperactive/impulsive ADHD if they have at least 6 traits in either list. If the patients have at least 6 traits in each list (which means at least 12 in total), the diagnosis is combined ADHD. In addition, an ADHD diagnosis must satisfy several other conditions, such as that symptoms must interfere with daily activities and appear before the age of 12 (Rabiner, 2013). These thresholds are rather arbitrary but necessary because there is no clear-cut boundary between a child with mild ADHD and an energetic but otherwise normal child. If any of these thresholds changes, for example if the number of symptoms required in each list increases to 7 out of 9, the “true prevalence” of ADHD will necessarily change. In fact, since the 1980, diagnostic criteria for ADHD has been gradually loosen, which contributed to the increase in ADHD prevalence (Hinshaw & Scheffler, 2014). For example, in 2011, the APA changed the lower age limit for an ADHD diagnosis from 6 to 4 years old (Goodman, 2011). In addition, while the DSM-IV stipulates that symptoms must appear before 7 years of age for an ADHD diagnosis, the DSM-V increases this upper limit to 12 years old. The latter also states that ADHD symptoms do not have to cause “clinically significant impairment” to warrant a diagnosis, as long as those symptoms reduce the quality of daily functioning (Rabiner, 2013). Clearly, these changes would lead to cases of ADHD that would not have been diagnosed under the old criteria.

Is it a wise decision to make ADHD diagnostic criteria more and more lenient? The APA likely has a good motive, since relaxing ADHD diagnostic criteria helps more children become eligible for federal support and educational accommodations. Some authors also interpret this as a good, or at least harmless, change because the old criteria might have missed some valid cases

of ADHD (Sciutto & Eisenberg, 2007). We must be careful about how far to push this ADHD label though, since a greater number of cases means more people are eligible for stimulant medications and become targets of pharmaceutical companies' marketing efforts. In addition, no matter how much we relax the ADHD diagnostic criteria, there are always people who struggle with school or work due to low ability to concentrate, but are not impaired enough to warrant an ADHD diagnosis. These people will also perform better with stimulants and educational accommodations. Then, how can we justify giving medications and accommodations to people with ADHD symptoms that start before 12 years of age, but not if they started between 12 and 13 years of age? And since the ability to sustain attention is normally distributed, as seen in Fig. 3, those people who narrowly miss the ADHD label are very difficult, if not impossible, to distinguish from those with mild ADHD (Hinshaw & Scheffler, 2014). Therefore, the benefits of relaxing ADHD diagnostic criteria and increasing the number of cases should be carefully weighed against negative consequences like increasing availability of stimulants and federal spending on ADHD.

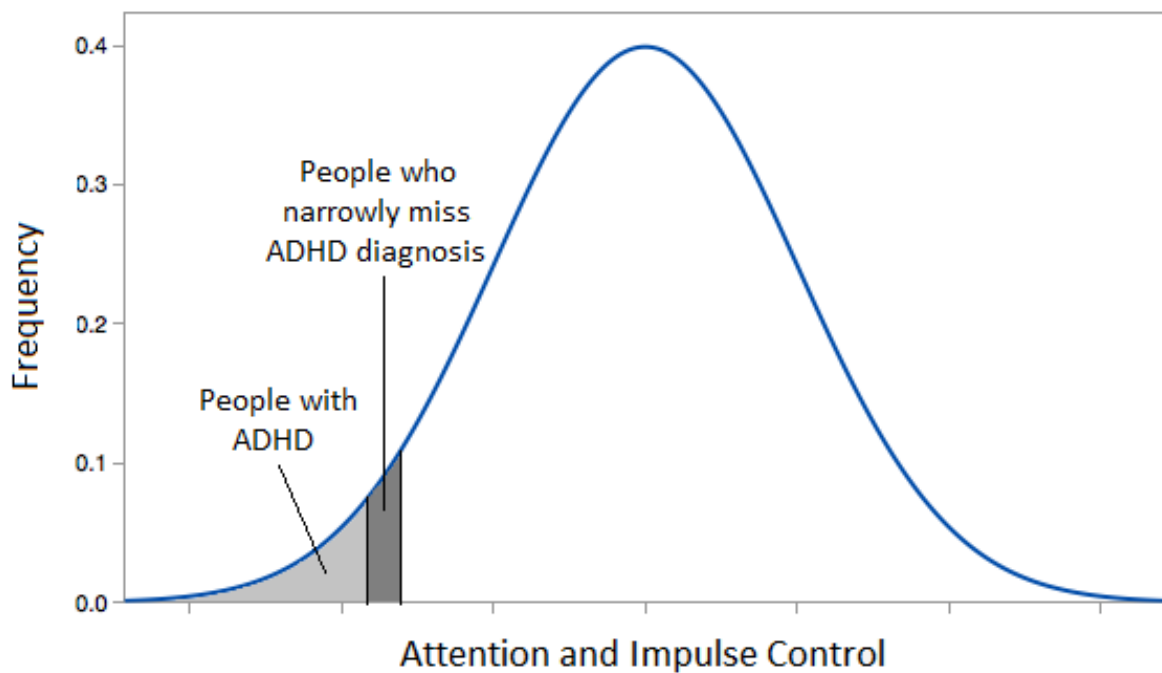


Figure 3. Ability to sustain attention and control impulses is normally distributed.

On the national level, is it hard to say whether ADHD is overdiagnosed in the US because of insufficient data on the actual ADHD prevalence and the changing diagnostic criteria. The current ADHD prevalence of 9.4% in children between 2 and 17 years of age is not an issue in itself. Rather, this statistic is only problematic if it includes people not meeting current diagnostic criteria but received the ADHD label due to substandard diagnosing practice, but there has been little evidence of this. Another problematic case is if everyone in this 9.4% group meets the current diagnostic criteria for ADHD, but some of them may only have mild symptoms that would not have satisfied previous criteria. Then, the issue is technically not “overdiagnosis” of ADHD, and people who think such cases should be excluded should advocate tightening of the diagnostic criteria. But who should decide if those mild cases count as ADHD: psychiatrists, parents, teachers, or the affected children and adults? Until all parties reach a consensus on what

ADHD diagnostic criteria, a possible solution is specifying whether each case of ADHD is mild, moderate or severe, and restrict medication use for mild cases. That way, we can reduce the risks associated with excessive diagnosis and medication use for ADHD while giving affected people the help they deserve. Finally, rather than repeat unsupported claims about ADHD under- or overdiagnosis, we should first address well-documented local problems with ADHD diagnosis like the wide discrepancy in ADHD prevalence among states and demographic groups.

Stimulant medications: use and misuse

I was diagnosed with Dyslexia when I was 6 years old but there is no medication for it. I have never had ADHD [...] However, as a kid I didn't pay attention in school because I hated it and that in turn made me have problems with teachers. I think my dislike for school made me want to start taking [ADHD] medication in high school because it simply made getting work done easier. [...] Adderall would give me a sort of tunnel vision and I wouldn't think about anything else but the homework. When I got to college, I was struggling to get work done and the medication was helping me. I also started to notice side effects around then. The bad ones were mostly anxiety and paranoia after the positive effects were done. That's when I went to the doctor and told him I had been taking [Adderall] illegally for a few years and that I needed it and on the first visit he immediately wrote a prescription. [...] I only filled the prescription a few times until I decided it wasn't a good habit because you start to rely on it. I know many people who rely on it because I think they're addicted, not because they need it. Back then I took it 5 of 7 days for about a year, now I take it a few times a semester.

R, a student of Colby College, Waterville, ME (personal communication, 2019)

Like the question of ADHD overdiagnosis, the increasing use of stimulants for ADHD has sparked a long and fierce debate. Some people argue that treating ADHD with behavioral therapy rather than medications constitutes malpractice because it was essentially withholding the most effective treatment (Schwarz, 2016). Other points to the negative and unknown side effects of stimulants on developing children and cases of stimulant misuse like the account above to caution against medicating every child with ADHD. Again, just like the debate on ADHD overdiagnosis, the debate on ADHD medication have dragged on for decades without any satisfactory conclusion partly because the two sides cannot agree on what is an “appropriate” level of stimulant use for ADHD. Some people think stimulants should not be prescribed at all for ADHD, others approve medical use of stimulants in adults but not children, while the APA states that anyone 6 years and above can take stimulants. On one hand, more research is needed to decide what level of stimulant use offers the best compromise between the clinical benefits and risks of these drugs. On the other hands, there is evidence that efforts to control stimulant use have not kept up with the soaring number of prescriptions, leading to widespread misuse of stimulants as performance-enhancing drugs and other consequences. This section thus offers an overview of what stimulants are, how they are being used to treat ADHD in the US, and the stakes involved in making them widely available to children and adolescents.

Stimulant refers to a class of synthetic chemicals that, as its name implies, increase the level of focus and energy in the user. Most of the stimulant medications in the US contain either amphetamine (Adderall, etc.) or methylphenidate (Ritalin, Concerta, etc.), which have similar structures and activities (Fig. 4). Both types of stimulant work to increase the effect of

catecholamines signaling in the brain, some of which are involved in maintaining alertness, focus and motivation (Hunt, 2006; Volkow et al., 2009). That is why everyone, with or without ADHD, experiences increased attention and focus after taking stimulants. In terms of treatment effectiveness, the potency of amphetamine is about twice that of methylphenidate (Safer, 2016). Even when used at their optimum dosages, amphetamine still seems to have slightly stronger effect (the optimum dosage of amphetamine is usually half that of methylphenidate) (Hodgkins, Shaw, Coghill, & Hechtman, 2012). However, amphetamines were widely abused in the US from the 1940s to the 1970s, so it was not a medication of choice to treat young children (Rasmussen, 2008). Consequently, even though amphetamine was the first kind of drug that proved effective in alleviating ADHD symptoms, the stimulant most prescribed for children with ADHD has always been methylphenidate (Safer, 2016).

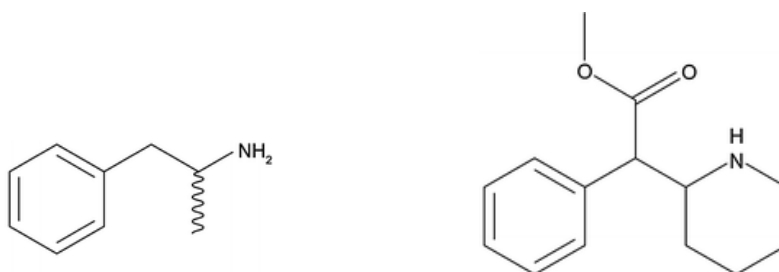


Figure 4. Structure of amphetamine (left) and methylphenidate (right)

(Hodgkins et al., 2012)

Although amphetamine has proved to be a drug with high potential for abuse, this compound and the related drug methylphenidate have been prescribed to millions of children and at an increasing rate in the US. Stimulants are the first line of treatment for ADHD in adults and children 6 years and above. In 2016, 62.0% of school-age children with ADHD were prescribed

stimulants, while only 46.7% received behavioral therapy (CDC, 2016). Along with increase in ADHD diagnosis rate, stimulant prescription and consumption have risen sharply in the last 30 years. Fig. 5 charts the global consumption of methylphenidate from 1990 to 2013, which shows a roughly 24-fold increase in this period from 3 tons to 72 tons. Most of this consumption occurred in the US (International Narcotics Control Board, 2015). Moreover, between 1996 and 2013, the US has increased its amphetamine production quota by 40 times, from 2.3 tons to 91.6 tons (Safer, 2016). This is similar to the amount produced at the peak of America's first amphetamine epidemic in 1969 (80-100 tons), raising concerns about a second outbreak of amphetamine abuse (Rasmussen, 2008). In comparison, methylphenidate production only increased by 8.2 times, from 11.8 tons to 96.8 tons (Safer, 2016). A possible reason why amphetamine has overtaken methylphenidate is that more and more adults are taking stimulants for ADHD, and adults may prefer the more potent amphetamine to methylphenidate.

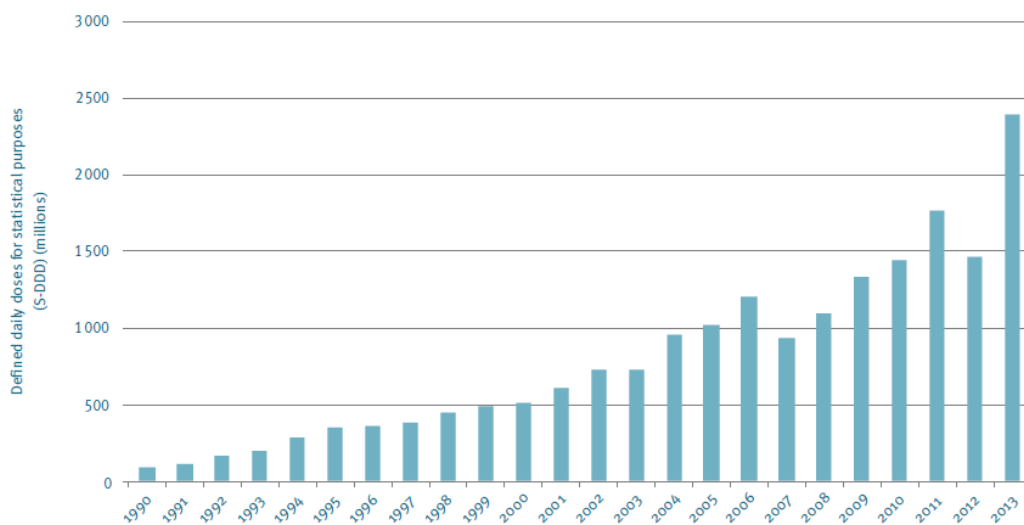


Figure 5. Amount of methylphenidate consumed globally from 1990 to 2013. One daily dose of methylphenidate equals 30 mg, as defined by the INCB, so the amount of methylphenidate consumed globally in 2013 was about 72 tons (INCB, 2015).

Compared to other countries, the US has an extraordinarily high rate of ADHD medication use. Despite the fact that 55 countries have started using ADHD medication by 2003, the US still accounts for over 80% of the global methylphenidate consumption in 2013 (Hinshaw & Scheffler, 2014; International Narcotics Control Board, 2015). In addition, while research has shown that the use of ADHD medication by a country increases with growing gross domestic product (GDP), the US's consumption is much higher than would be predicted by its GDP (Fig. 6) (Scheffler et al., 2007). Interestingly, many European countries like France and Germany have higher rates of medication use among people with ADHD (82.7% and 84.1%, respectively) than the US, but still lower ADHD medication use per child because of their lower ADHD prevalence (Hodgkins et al., 2013; Scheffler et al., 2007). This suggests that those European countries only recognize cases of ADHD with moderate to severe symptoms, but medicate most of those cases. This may be a good strategy that the US can adopt to reduce the risk of stimulant misuse while maintaining the benefits of stimulant medications for people with ADHD.

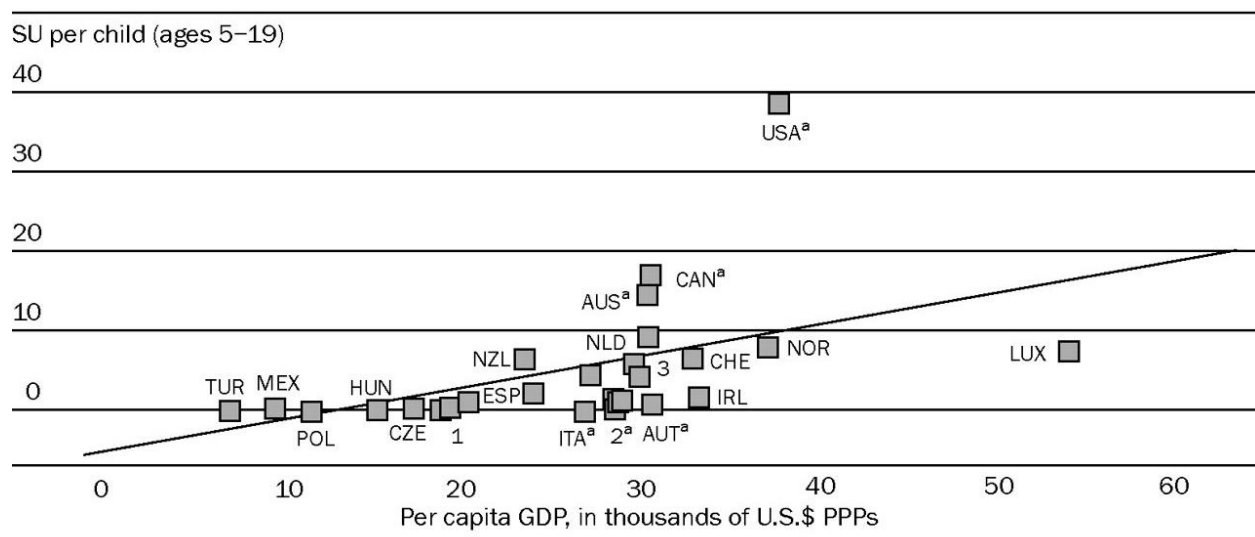


Figure 6. Correlation between ADHD medication use and per capita GDP of OECD countries in 2003 (Scheffler et al., 2007).

Stimulants are safe when used properly. However, nonmedical use of stimulants is not uncommon in the US, leading to addiction and adverse medical consequences. Both methylphenidate and amphetamine are Schedule II substances, meaning they have high potential for abuse and may lead to psychological or physical dependence. This is a major reason why the American public is anxious about giving stimulants to children and teenagers. This anxiety is not unfounded, as a 2015 survey shows that about 600 000 Americans consumed pharmaceutical stimulants (except methamphetamine) nonmedically in the previous month (Rasmussen, 2008). In particular, between 5 and 35% of college students report that they have used prescription stimulants nonmedically (Bjorn & Weyandt, 2018). The account of R, quoted at the beginning of this section, is particularly enlightening. Like many other college students, R got Adderall from his roommate, highlighting the risk of diversion of prescription stimulants by students with ADHD (R, personal communication, 2019). One reason for this diversion may be the widespread perception that stimulants are “virtually harmless” while they are anything but, causing students to have little qualm about sharing their prescription stimulants with a friend (Rasmussen, 2008). The truth is, prescription stimulants have a range of unpleasant side effects including appetite loss, weight loss, tiredness, insomnia, negative emotions, and irritability (Hodgkins et al., 2012). In rare cases and with prolonged use of stimulants, patients may experience even psychosis and suicidal thoughts (Schwarz, 2016). One may argue that the decision to use stimulant medications nonmedically and in spite of negative side effects is a personal choice, just like the decision to smoke or consume an excessive amount of alcohol. On the population level, however, the soaring availability of stimulants in the US constitutes a public health problem because it has led to an increasing number of adverse health events due to improper stimulant use. For example, the number of Emergency Department visits related to ADHD stimulants has more than doubled

from 2005 to 2010, with 39 – 50% of those visits due to nonmedical use (Fig. 7) (SAMHSA, 2013). In short, increasing prescription of stimulants and their improper use by those with and without ADHD have led to many negative health consequences, so the government and health professionals must exert a better control on prescription stimulants to curb their nonmedical use.

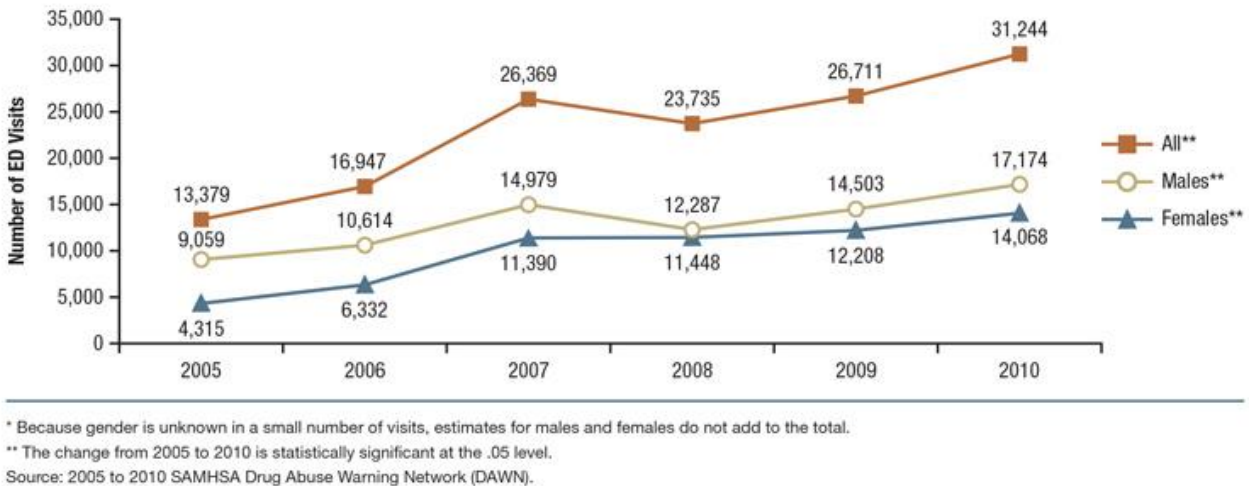


Figure 7. Emergency Department visits due to ADHD stimulant use from 2005 to 2010 (SAMHSA, 2013)

Besides the nonmedical consumption of stimulants, there are also issues with how physicians are prescribing these drugs. For instance, R’s psychologist was willing to prescribe him Adderall even though R had never been diagnosed with ADHD. This example illustrates the fact that even health professionals need to be more aware of the dangers of nonmedical use of stimulants. Another problem is the age at which children can be prescribed stimulants. Out of concerns for the unknown effects of stimulants on the developing brain of young children, the American Academy of Pediatrics (AAP) recommends that children 4 to 5 years of age with ADHD should try behavioral therapy first and only use medications if moderate or severe

symptoms persist (Brown et al., 2011). Nevertheless, in 2016, 18% of children 4 to 5 years old with ADHD were still prescribed stimulants (CDC, 2018). While it is unclear if stimulants were absolutely necessary for those children, use of these dangerous psychotropic drugs in such young children should be minimized. In addition, aside from stimulants, people with ADHD are often prescribed other psychotropic drugs to manage comorbidities like conduct problem, anxiety, depression, autism spectrum disorder, and sometimes even to cope with the side effects of stimulants (Schwarz, 2016). This polypharmacy not only burdens the children's developing bodies but also carries health risks since we do not know enough about the effects of combining multiple psychotropic drugs (Schwarz, 2016). Therefore, aside from reducing nonmedical use of stimulants by laypeople, health professionals must also reflect on their prescribing practice and work to minimize ADHD medication use in very young children as well as unnecessary cases of polypharmacy.

The future of stimulant use in the US is uncertain. On one hand, the American public has become more cautious and knowledgeable of the risks of improper stimulant use, partly thanks to a growing number of books and news articles on the topic. For instance, a 2012 review paper on public attitudes toward ADHD treatments noted that parents and teachers generally preferred behavioral interventions to medications (Bussing et al.). On the other hand, the prescription and sale of stimulants may continue to rise due to a few factors. First, behavioral therapy is more time-consuming than stimulant use. And while the cost to the family depends on the type of insurance they have, behavioral therapy typically costs more than medications (Fertig & Gutierrez, 2017). Consequently, regardless of the parents' preference, children may still be put on medications to manage their ADHD to reduce cost. Second, despite knowing about

stimulants' side effects, parents may decide that improved academic performance is a higher priority. Finally, adult ADHD diagnosis is on the rise thanks to marketing campaigns by drug companies (Safer, 2016; Schwarz, 2016). Since adults in the US outnumber children by many times and use more ADHD medications over their lifetime, stimulant use in the near future is likely to increase even though stimulant use in children is leveling off.

Overall, ADHD in the US is a moving target because we lack comprehensive data on its prevalence and a consensus on what the “appropriate” level of medication use should be. Due to the changing diagnostic criteria, it is hard to say whether the current ADHD prevalence of 9.4% is too high or not. Nevertheless, a high ADHD prevalence would lead to elevated production and consumption of stimulants, which increases the risk of adverse health effects from stimulant misuse. To solve this problem, the US may adopt the same strategy as European countries like France and Germany, which only diagnose and medicate people with severe ADHD symptoms. An alternative solution is reserving medication for people with moderate and severe ADHD, so that people with mild ADHD can still receive educational accommodations without being subjected to the risks of unnecessary stimulant use. This is also the strategy that health professionals advocate in Vietnam, though with mixed result, as we shall see in Part 4.

3. Social factors behind the American ADHD epidemic

Evidence-based practice is a hallmark of Western medicine and stipulates that medical diagnosis and treatment should be objective and grounded in empirical research. However, it would be naïve to think that medicine, which is so intertwined with culture and society, can ever be free from the influence of historical and social factors. This is especially true for mental

disorders in general and ADHD in particular. Among the historical and social forces that can inflate ADHD diagnosis and medication use are the interest of Big Pharma, the dominance of reductionism and psychopharmacology in Western psychiatry, and increasing demand for academic achievement in the US. The influence of these factors on ADHD does not mean ADHD has no scientific validity. Instead, it means the US government, health professionals and public must restrict the influence of these social factors so that ADHD diagnosis and treatment can follow best practice in medicine.

Influence of pharmaceutical companies

The pharmaceutical industry plays a direct role in shaping the extraordinary popularity of stimulant medications in the US despite their side effects and risk of abuse, especially through its extensive marketing efforts. Alan Schwarz has written extensively on this topic in his 2016 book *ADHD Nation*, which is the source of many of the facts cited below. Americans' current spending on ADHD medications is about \$10 billion dollar a year, which represents a 50-fold increase compared to the 1990s (Frances, 2017). ADHD medication is an extraordinary lucrative business, and drug companies are doing everything in their power to maintain this revenue. A central part of their marketing campaign is direct-to-consumer advertising (DTCA).

DTCA began in 2001 and violated the United Nations' 1971 Convention on Psychotropic Substances, which prohibits the direct advertisement of those substances to the general public (United Nations, 1971). In fact, the US is one of the only two countries that allow the direct marketing of psychotropic drugs to consumers, which could explain why the US account for over 80% of the global methylphenidate consumption (Safer, 2016). This advertising strategy must have been highly effective in increasing drug sale, given that pharmaceutical companies

dramatically increased their DTCA spending from \$55 million to \$4.2 billion dollar between 1991 and 2005 (Bergey & Conrad, 2018). In this situation, the government should have created strict regulations and closely monitored drug advertisements to make sure pharmaceutical companies cannot make unfounded claims about the efficacy of their products. The US Food and Drug Administration (FDA) did the exact opposite. According to Hinshaw & Scheffler (2014), in 1997, the FDA relaxed DTCA regulations so that advertisements would not have to list all potential side effects in detail, only major ones, which clearly benefitted pharmaceutical companies at the expense of consumers' health. In fact, lack of awareness about the potential side effects of prescription drugs has fueled many public health crises in the US, including the current opioid epidemic and amphetamine epidemic (Rasmussen, 2008). Therefore, while pharmaceutical companies are culpable for making money at the expense of public health, the US government is also an enabler in the marketing of ADHD medications.

Unsurprisingly, a major problem with drug advertisements is that they usually exaggerate the benefits of the drugs, deemphasize unpleasant side effects, and manipulate the hopes and fears of consumer to convince them to buy the product. One example is the advertisement for Adderall XR shown in Fig. 8. The image, depicting a mother embracing her son, is brimming with positivity and smiles. Meanwhile, the cursive exclamation "Finally!" conveys a sense of relief and freedom from distress – some of the implied effects of Adderall. The advertisement claims that Adderall will help the child produce "schoolwork that matches his intelligence". This is a rather insidious statement, since it tempts parents to blame all academic failures on ADHD rather than the kids or the family. After all, it is not a pleasant thing to admit that one's children deserve less than a B+ on assignments. The advertisement also implies that Adderall can

improve family relationship and friendship. Therefore, most parents seeing this advertisement would feel obliged to consider the possibility that their children have ADHD, just in case they are being held back from good grades and barred from good relationships by this disorder. In contrast to the prominent slogan, the paragraphs on safety information are written in fine print to detract attention from possible side effects. Obscuring the safety information section is a common strategy to many drug advertisements, as seen from the screenshot of an online advertisement for Vyvanse (another stimulant for ADHD) in Fig. 9. The safety information on this advertisement is legible, but it is cramped into a very small window that only displays three lines at a time. To read the information, the viewers have to scroll down very slowly, which requires a lot of skills and patience. In other words, this advertisement was designed to strongly discourage viewers from reading the safety information.

FOR PARENTS OF CHILDREN WITH ADHD

Finally!

Schoolwork that matches his intelligence

Family hours that last for hours
Friends that ask him to join the group
A trusted solution for ADHD

Important Safety Information
ADDERALL XR was generally well tolerated in clinical studies. The most common side effects in studies involving children included decreased appetite, difficulty falling asleep, stomachache, and emotional lability. The most common side effects in a study involving adults included dry mouth, loss of appetite, insomnia, headache, and weight loss.
ADDERALL XR may not be right for everyone. Patients should speak with their doctor if they have a history of high blood pressure or any heart conditions, glaucoma, thyroid problems, emotional instability, mental illness, or a known allergy to this type of medication. If you are currently taking or have recently taken a type of antidepressant called a MAO inhibitor or have a pre-existing structural heart abnormality, you should not take ADDERALL XR. There is a potential for worsening of motion or verbal tics and Tourette's syndrome.
Abuse of amphetamines may lead to dependence. Misuse of amphetamine may lead to serious cardiovascular adverse events. A patient should report any new psychological symptoms to his or her physician.
Please see brief summary of prescribing information on adjacent page. For more information, consult your physician.
©2005 Shire US Inc., Wayne, Pennsylvania 19087
Shire
an ADHD Support Company

ADDERALL XR®
• Has been evaluated for safety in over 20 clinical studies
• Shares a 65-year history of clinical research
• Works fast for the start of the school day—with or without food
• Offers all-day symptom control

Doctors trust ADDERALL XR, the most-prescribed brand of ADHD medication.*

Ask your doctor whether your child could benefit from ADDERALL XR.

ONE DOSE DAILY
ADDERALL XR®
5 mg, 10 mg, 15 mg, 20 mg, 25 mg, 30 mg CAPSULES
www.adderallxr.com
1-800-705-1513

Figure 8. Adderall XR advertisement from 2005 by Shire (Schwarz, 2013)



Figure 9. Advertisement for Vyvanse, another stimulant medication for ADHD, on the Psychology Today website (<https://www.psychologytoday.com/us>)

Another, more subtle way to promote medication sale is advertising the condition. Fig. 10 shows another advertisement by the manufacturer of Adderall XR, this time about adult ADHD and directed to health professionals. Since the audience is adults, the advertisement adopts a much darker tone, relying on fear tactics to convince physicians and psychiatrist to check for ADHD in depressed patients. The problem is, when physicians actively look for a condition with subjective diagnostic criteria like ADHD, they are more likely find it due to confirmation bias. Overall, the marketing strategies employed by pharmaceutical companies aim to convince physicians and consumers to diagnose more ADHD cases and use more medication, regardless of whether this increase is warranted.

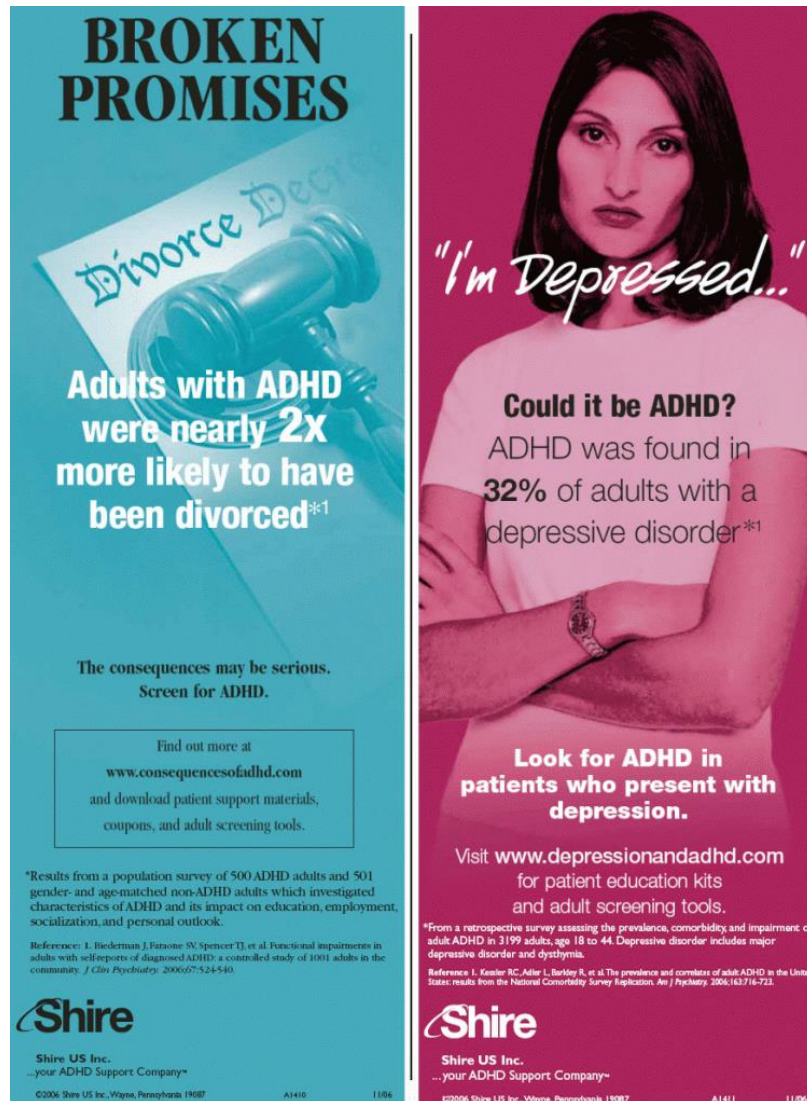


Figure 10. Flyer about adult ADHD by Shire, 2006 (Feloni, 2013)

Aside from investing in DTCA, pharmaceutical companies spend large sums of money on people and organizations that can help them promote their products. First, manufacturers of ADHD medications have funded many prominent researchers in the field of ADHD pathology and treatment, including the “Father of ADHD” Keith Conners at the nascent stage of ADHD, as noted in Part 2. Another prominent researcher with ties to pharmaceutical companies is Joseph

Biederman, a prolific scientist who published about 300 papers from 1995 to 2005, or 2.5 papers per month on average. In particular, 13 of his papers on ADHD have been cited over a thousand times. Most of his work aims to demonstrate the severity of ADHD, argue that ADHD is underdiagnosed, and affirm the effectiveness of ADHD medications. Then, in 2008, it was revealed that Biederman and two of his associates had accepted \$1.6 million from drug companies without declaring it (Schwarz, 2016). We cannot claim that scientists who receive funding from industry will modify their results to serve the sponsors' interests; however, research have shown that the results of studies and clinical trials funded by pharmaceutical companies usually align with the sponsor's interests, possibly due to overreporting of favorable results or underreporting on negative results (Sismondo, 2008). Furthermore, due to the funding from pharmaceutical companies, ADHD medications may undergo much more research than non-drug treatments, creating the impression that ADHD medications are safer and more effective than non-drug treatments while that may not be the case. Moreover, even an advocate organization like Children and Adults with Attention Deficit/Hyperactivity Disorder (CHADD) has received nearly a million dollars from the manufacturer of Ritalin (Schwarz, 2016). Scientists should be committed to discovering truths and advocate organizations are meant to prioritize the needs of people with ADHD, not corporate interests. Therefore, the fact that they may be biased toward drug companies is a warning sign that mechanisms to protect the health of people with ADHD and the general American public are being eroded by capitalist interests. It is high time that the government stepped in to regulate the ADHD medication market.

Reductionism and the rise of psychopharmacology

Big Pharma can exert a strong influence on doctors, patients and families, but this factor alone is not enough to explain the commitment of the majority of scientists, health professionals and the public to ADHD medications in the US. ADHD is not a special case in this regard. Nowadays, most mental disorders in the US are managed by pharmaceuticals, a practice that constitutes the field of psychopharmacology. An authority on this topic is David Healy, who wrote a comprehensive history of how American psychiatry came to rely on pharmaceuticals in *The Creation of Psychopharmacology* (2002). Here, I refer to several important events and ideas in this book to explain why how the historical events have made medications, rather than psychotherapy, the current first-line treatment for ADHD.

The 20th century saw a major paradigm shift in Western psychology. The primary treatment method for mental disorders in the US in the first half of the 20th century was psychoanalysis, but it was quickly replaced by pharmacotherapy (Healy, 2002; Schwarz, 2016). This was not merely a change between two treatment methods, but also the transition between two paradigms. On one hand, psychoanalysis represents the tradition of vitalism, which holds that there must be something more than chemistry and anatomy – a vital force as it was called – that differentiates humans from inorganic matters. Therefore, psychoanalysts rejected the notion that mental processes like free will, responsibilities and human thoughts completely depend on chemical reactions, and sought to heal the mind through conversations and social interactions. In contrast, psychopharmacology holds that mental processes are based on chemical reactions, so carefully designed drugs can produce desired effects in the brain and cure mental illnesses. Therefore, psychopharmacology is a reductionistic branch of science, since it describes

neurological processes in terms of nerve cells and chemicals. Before the middle of the 20th century, psychiatrists did not believe that chemical could cure mental conditions, so vitalism dominated over reductionism in psychology. However, three major events that occurred in the 20th century overturned this order: the rise of chlorpromazine, the antipsychiatry movement from 1965 to 1975, and the discovery of receptors involved in schizophrenia (Healy, 2002).

Chlorpromazine was the first effective antipsychotic drug discovered. Originally developed by a French pharmaceutical company as a sedative drug, it was given to psychotic patients in 1951 and brought about dramatic improvements. People who had been unresponsive and delirious suddenly woke up, and remember who they were, and apparently cured of their psychosis. This result was replicated with enthusiasm throughout France, offering young and ambitious psychiatrists the first glimpse into a new world where previously incurable mental illnesses could be cured by synthetic chemical compounds. Note that the effect of amphetamine on inattention as hyperactivity was discovered before chlorpromazine, but at that time inattention and hyperactivity were not considered a disorder. Nevertheless, psychoanalysts did not fell out of favor immediately, since there were not many powerfully psychotropic compounds like chlorpromazine. Indeed, most psychiatrists in the 1950s believed that both drugs and therapy were needed to cure mental illnesses (Healy, 2002).

From 1965 to 1975, however, the value of psychotherapy came under intense scrutiny due to a widespread anti-psychiatric sentiment. Inspired by the civil right movements, people started to condemn psychiatry as a repressive institute that incarcerated and punished people who did not conform to social expectations. Influential essays like *The Myth of Mental Illness* (1961) argued that disorders treated by psychoanalysts were not real since they did not have biological

causes and were treated by non-physical interventions like conversation therapy. Psychoanalysis, once the mainstay of Western psychiatry, became thus a threat to psychiatry itself. In that time of crisis, psychiatrists needed to assert the legitimacy of their profession, and they did so by distancing themselves from social matters and relying more and more on biochemical explanations. Afterall, if they could demonstrate problems of the human psyche with biochemical tests, their opponents would not be able to discredit them anymore. In that context, a previously ignored theory gained popularity: the reductionistic idea that neurological functions depended on the interactions between compounds called neurotransmitters with receptors in the brain (Healy, 2002).

The theory of receptors and neurotransmitters proved to be the perfect tool for psychiatrists to prove that mental disorders are physical entities rather than figments of their imagination. This theory arose when scientists found that a minute amount of lysergic acid diethylamide (LSD) caused dramatic effects in people, which implied that LSD acted as a “key” to open some “lock” in the brain. Therefore, they called the “lock” a “receptor”, and its key a “neurotransmitter”, implying that the binding of neurotransmitters to receptors would trigger mental processes. This theory did not receive much support from psychiatrists initially because at the time, technology had not developed enough to find concrete evidence about such receptors. Moreover, this theory evokes a disturbing idea that our brains are not much different from machines, in which the right effects can be achieved by pushing the right buttons. However, as vitalism became the weakness of psychiatry, it was abandoned in favor of reductionistic biochemical explanations of the brain’s functions. Opiate receptors were found in 1972, providing a major breakthrough in this direction. Next, psychiatrists developed the dopamine

hypothesis of schizophrenia, which signified that mental illnesses have measurable biological causes as well, just like other diseases. This was the proof they needed that psychiatry was a legitimate medical profession, even though the hypothesis was not complete at the time and had been unproven until now. Pressured by the anti-psychiatric movement, psychiatrists embraced the dopamine hypothesis of schizophrenia with enthusiasm, and have since then wielded biochemical models as proof of the legitimacy and scientific rigor of their profession (Healy, 2002). Once psychiatrists started to reconceptualize problems with the human psyche in terms of biochemicals, they came to rely on synthetic chemicals as treatments. That is the story of how Western psychiatry shifted from vitalism to reductionism, leading to the present situation where medications are the main treatment of most mental disorders. Pharmaceutical companies, as astute as ever, quickly capitalized on this shift and started to invest billions of dollars in developing and marketing psychotropic medications, giving rise to the present ADHD stimulant industry.

This story seems to suggest that had reductionism not replaced vitalism in psychiatry, we would not have to worry so much about psychotropic drugs flooding the US market, but that is not true. The existence of neurotransmitters and receptors is a biological fact and would be discovered sooner or later. The problem was the timing of that discovery: if it did not coincide with the anti-psychiatric movement, psychiatrists might not have abandoned psychoanalysis and switched to psychopharmacology so completely. Overall, the issue is not that vitalism is better than reductionism, but that reductionism alone is not enough. Reductionism works by simplifying the complex biochemical network in the body so that scientists can focus on a few pathways of interest at a time. This approach has worked well for many metabolic diseases like

diabetes since their mechanisms are relatively simple and the affected organs are well understood. In contrast, the biochemical pathways involved in many mental disorders like ADHD has not been elucidated, so we still do not know how to minimize the side effects of stimulant medications and how they may impact children's developing brain. Many researchers on ADHD have also noted that this disorder is incredibly complicated, so it must be analyzed at the neurobiological as well as sociocultural levels (Nigg, 2006). Therefore, one solution for the future may involve adopting a new form of vitalism – system biology – which emphasizes the interconnectedness and synergy between biochemical components (Fontecave, 2010). System biology also reminds us that pharmaceuticals are not “magic bullets” that only hit the targets we want, so a multimodal approach to complex disorders like ADHD is always better than psychopharmacology alone.

ADHD and the increasing demand for academic achievements

While the reductionistic mindset of Western psychiatry and the marketing campaigns of pharmaceutical companies fueled the US' reliance on stimulants for ADHD, the third factor – demand for academic achievements – influences ADHD by augmenting the rate of diagnosis. As asserted by Hinshaw and Scheffler in *The ADHD Explosion* (2014), ADHD is essentially an “academic disorder” in the US. In other words, the main motivation for families and individuals to seek out a diagnosis and treatment for ADHD is to improve academic performance (or work performance for adults). This brings back questions about to what extent ADHD is the medicalization of aspects of normal behaviors and how the birth of ADHD depended partly on social forces.

People with ADHD indeed differ from people without ADHD biologically, as seen in Part 1, but biological differences alone are not enough to define a new disorder. According to Nigg (2006), a disease or disorder must have “clinical validity”, defined as “the extent to which a disorder hangs together statistically (as a syndrome), is exhibited by impaired children who need help, responds to treatment, and has other meaningful external correlates”. In other words, a true clinical condition must be an impairment found in a number of people and associated with a set of biological traits or other markers. Impairment is the key here, as it can help to distinguish a pathological trait from a merely abnormal trait. For example, having gray eyes is abnormal, but since it causes no impairment, it is not a disorder. Then, does ADHD cause enough impairment to count as a disorder? Currently yes, but that has not always been the case.

One major reason why ADHD is causing a significant impairment to affected children is the rising demand for uniformed performance and academic competition. As Hinshaw and Scheffler assert, low attention span was an innocuous trait that did not significantly impact quality of life until the start of mandatory education a few decades ago (2014). Now that children are expected to sit still in class for hours, absorb a lot of knowledge five days a week, and do homework outside of class, people with hyperactivity and less-than-average capability to concentrate would have lower academic performance and struggle more to gain the same achievement as their peers. A few decades ago, when people could make a living without a high school or bachelor’s degree, the impairment caused by this low academic performance would have been small. However, since the 1970s, the US job market has been increasingly polarized, leading to the expansion of high-paying, skilled jobs as well as low-paying, unskilled jobs, while well-paying, semiskilled jobs declined (Kalleberg, 2011). High educational attainment became a

prerequisite for earning a high-paying or well-paying job, making students and their families more and more anxious about their academic performance. For the same reasons, the value of a college education, especially at elite institutions, has increased dramatically since the 1970s, while the enrollment at top colleges and universities remained virtually unchanged, as shown by Bound et al. (2009). The result has been intensifying academic competitions at all educational levels, which made the impairment caused by ADHD a lot more severe than it was a few decades ago. In addition, students are employing a variety of strategies to enhance their competitiveness, including obtaining special accommodations while taking the SAT. Bound et al. also found a correlation between academic competition and special accommodation seeking behavior, as states with higher levels of competition also have higher percentages of students taking the SAT under nonstandard conditions. Since ADHD is one of the conditions that make students eligible for special accommodation, the escalating academic competition in the US incentivizes the public to recognize ADHD as a medical condition, so that affected students can receive medications and special accommodations to boost their grades.

Schools provide another source of academic pressure and incentive for diagnosing and medicating more cases of ADHD. As academic pressure intensified on the personal level, the US as a whole also set higher expectation on students' performance at schools and in standardized tests. Hinshaw and Scheffler (2014) found that ADHD diagnosis rates significantly increased after the implementation of the No Child Left Behind Act (NCLB) in 2002. This act made schools' funding dependent on the students' academic performance, which motivated schools to seek the ADHD label for their weaker students so that their grades can be improved through medications and academic accommodations or excluded from the schools' overall performance

(Hinshaw & Scheffler, 2014). In addition, Hinshaw and Scheffler found that states with the highest ADHD diagnosis and medication rates, like Arkansas and North Carolina, are those that already had educational accountability policies similar to the NCLB before 2002. Overall, the escalating academic pressure at both personal and national levels in the US is incentivizing teachers, parents and children to accept the ADHD label so that they can enhance their competitiveness and improve the schools' overall performance. If the US did not have such a high demand for academic achievement, ADHD may still exist as a medical condition, but it would certainly not reach the prodigious scale it has today.

Even the emotional burden and negative consequences associated with ADHD, such as risky behaviors, substance abuse, and divorce, also depend at least partly on the social context. Mandatory education brought along the expectation that children sit still in class and follow instructions for hours at a time. Since children with ADHD have difficulty fulfilling those expectations and also struggle academically, they may perceive themselves as incompetent and undesirable. Academic failure, in this age of meritocracy, also reduces a child's chances to make friends and create conflicts within the family. The insecurity, frustration, stigma and conflicts that build up within the child may account for the high rate of comorbidity seen in children with ADHD. In addition, the risky behaviors, substance abuse, and divorces in people with ADHD are much more likely caused by these negative emotions than by the inattentive and hyperactive/impulsive symptoms characteristic of ADHD. Overall, most of the impairment caused by ADHD is mediated by social forces.

Since there are social forces that exacerbate the impairment caused by ADHD, would restraining those forces be a more sustainable strategy to manage this disorder than stimulants? A

social treatment for ADHD is not impossible, but will take a lot of efforts on the national level. People are born with a range of talents and aptitudes, so not everyone will thrive in the academic environment of high schools and colleges nowadays. If the government can create better job opportunities for people who do not succeed academically but have other skills and talents, then people with mild ADHD symptoms will not be pressurized into getting a diagnosis and stimulants. Another priority is considering how to respond to further pressures on the US population to increase their focus, academic performance and work productivity in the future. In *ADHD Explosion*, Hinshaw and Scheffler (2014) argue that providing proper, evidence-based treatment to all those diagnosed with ADHD because it will significantly reduce ADHD-related costs to the economy. While there is no problem with using ADHD treatments to reduce work-related injuries due to inattention and the associated public health costs, we must be cautious about using stimulants to increase work productivity, especially in people with only mild ADHD. Given the capitalist economic structure in the US, economic gain from increased productivity will benefit the employers much more than the workers. Using stimulants to enhance performance at work means the workers must bear the burden of side effects as well as the risk of abuse while receiving only a small share of the profit. More importantly, not all of the loss productivity caused by ADHD is actual loss. As seen in Part 2, humans' ability to concentrate is normally distributed, we can assume that there as many people with impaired attention as people with enhanced attention. In other words, the "loss productivity" caused by people with ADHD, which is the differential between their productivity and the average person's, is already compensated for by other people with naturally enhanced attention. Overall, the aim of ADHD treatments should be to reduce personal impairment and distress, and behavioral therapy and life coaching can be used to improve work productivity. However, using stimulants to increase work

productivity, especially in people with mild ADHD, is a slippery slope that could vastly magnify the current problems of diversion and misuse of prescription stimulants in the US.

ADHD is not a clear-cut medical condition, and treatment choice depends on many factors besides scientific findings. The US's decision to rely on stimulants for ADHD management has been a result of the rise of psychopharmacology in Western psychiatry and fueled by the marketing efforts of pharmaceutical companies. In addition, the impairment associated with ADHD, which is critical in establishing ADHD as a medical condition, originates from biological factors as well as the increasing demand for academic achievement in the US. ADHD in the US is thus an "academic disorder" because its emergence and treatment are inextricably linked to the desire to improve academic performance, both at individual and national levels. While this means ADHD is partly a social construct, it does not negate the validity of ADHD or the values of ADHD diagnosis and treatments. Whether we call ADHD a disorder or not, people with high level of inattention and hyperactivity/impulsivity still suffer a disadvantage and need help to succeed in the present American society. The job of psychiatrists is accurately identifying (diagnosing) those people and deciding what extent of help they need (special accommodation, behavioral therapy, medication, etc.). Furthermore, since social forces account for much of the emotional burden associated with ADHD, behavioral therapy and life skills development will be indispensable in maximizing treatment effectiveness and reducing ADHD-related adverse health outcomes.

While I have focused on stimulant medications so far, there are many other treatments for ADHD. They include behavioral therapy, non-stimulant medications, neurofeedback, and so on. In particular, the use of complementary and alternative medicine (CAM) to treat ADHD has been

growing in popularity recently (Hinshaw & Scheffler, 2014). Among these non-stimulant treatments, only behavioral therapy has significant clinical evidence of effectiveness, while neurofeedback is promising but not yet an established treatment for ADHD (Hinshaw & Scheffler, 2014). In Vietnam, however, non-stimulant treatments including behavioral therapy and traditional medicine are used in the majority of ADHD cases. Due to lack of research and clinical experience with ADHD, the management of this condition in Vietnam is much less standardized and evidence-based than in the US, leaving a lot of room for social and cultural factors to shape the Vietnamese's response to ADHD.

4. Vietnamese perspective on ADHD

In the past two decades, an enormous amount of information about ADHD has entered Vietnam from outside sources, successfully capturing the public's attention. However, neither Vietnamese health professionals nor laypeople had prior experience in dealing with this condition, leading to inconsistent responses. On one hand, some professional sources in Vietnam tend to regurgitate information about ADHD based on Western publications, even when some of the information is not relevant to the Vietnamese context. On the other hand, the Vietnamese public has disregarded a part of that "official information" and reinterpreted ADHD based on their social reality. A middle ground exists between these approaches as well, as some authors and physicians agree with Western sources on most details about ADHD, but also modify some part to appeal to a Vietnamese audience, especially to reduce the importance of medications compared to psychotherapy in ADHD treatment. Overall, professional and lay sources of information on ADHD in Vietnam vary widely in how much they adopt from Western sources.

ADHD is a very new concept in Vietnam, so the current prevalent is low and finding experienced physicians to diagnose this condition is difficult. The Vietnamese conceptualization of this condition also differs from the Americans' in several ways. While ADHD is an "academic disorder" in the US, Vietnamese parents often think of it as a developmental disorder of early childhood because of its similarity to autism and speech disorder. Regarding ADHD treatments, Vietnamese parents are much more wary about the serious side effects of ADHD medications than Americans, so they may choose not to use medications even when prescribed. Behavioral therapy seems to be the primary treatment for ADHD in Vietnam, followed by life skill coaching, play therapy, group therapy, counseling, and so on. Alternative treatments include acupuncture and herbal supplement, but their effectiveness is still open to question. Overall, although ADHD was imported into Vietnam from the Western world, this disorder has been reshaped by the local social context and lost many characteristic features of ADHD in the US.

Historical and current states of ADHD in Vietnam

Research into ADHD in Vietnam has a much shorter history than in the US. The first reference to ADHD that I found was in a Vietnamese translation of the Mental Health Guideline of the International Statistical Classification of Diseases and Related Health Problems (ICD-10). The ICD-10 was published by the World Health Organization (WHO) in 1992, while the Vietnamese translation was from 1999 (Nguyễn et al., 1999). Aside from the DSM-V published by the APA, the ICD-10 is the most commonly used guideline to diagnosed ADHD over the world. This Vietnamese translation was most likely created to help with systematic diagnosis of mental illnesses in Vietnam, but it cannot prove whether ADHD was studied and diagnosed in Vietnam at that time. In fact, among the few Vietnamese journal articles and graduate theses that

I have found on ADHD, the earliest Vietnamese study referenced dates to 2001 (Đặng & Hoàng, 2001). A brief Google Scholar search further reveals how little academic attention ADHD has received in Vietnam compared to the West. While the keyword "attention deficit hyperactivity disorder" yields about 559,000 results in English, its Vietnamese translation “tăng động giảm chú ý” only yields 48 results. To be sure, a large number of Vietnamese research papers and theses may not be accessible through Google Scholar. However, given the large stigma against mental disorders in Vietnam and the absence of references to Vietnamese studies on ADHD before 2001, ADHD research seems to be in its nascent stage in Vietnam. However, a graduate thesis from 2006 asserts that ADHD was mentioned in many news articles, so this condition has been known among the Vietnamese, or at least the urban educated population, for more than 10 years (V. C. Trần, 2006). This was further supported by my observation that many popular online newspapers in Vietnam have published several articles on ADHD in the past three years. Therefore, while the public seems highly interested in this condition, scholarly research has not been able to keep up. One possible reason is the large volume of research done on ADHD in other countries, which might make Vietnamese academics think there is not much left to research on this condition. The lack of Vietnamese studies on ADHD is a disadvantage because evidence-based treatment for ADHD in Vietnam will have to be adapted from foreign studies, which may not suit the local cultural and social climate.

Available data, though far from comprehensive, indicate that ADHD is diagnosed less often in Vietnam than in the US. There is no comprehensive data set in Vietnam with national ADHD prevalence, but a study on 821 students aged 8 to 11 in Ho Chi Minh City found that 2.3% of those children had significant ADHD symptoms and another 2.7% had slight ADHD

symptoms (Lê, 2013). Another study on 400 elementary school students in Ha Noi found a higher ADHD prevalence of 6.3% (Nguyễn, 2012), which would be higher than combined prevalence for children and youths since elementary students tend to have higher ADHD prevalence than older youths. Overall, the national prevalence of ADHD is likely much lower than the above estimates, since densely populated urban areas like Ho Chi Minh City and Ha Noi have higher awareness about ADHD than rural areas. In fact, 2017 data from the Institute for Health Metrics and Evaluation (Washington, US) showed that the prevalence rate of ADHD in the 5 to 14 age group in Vietnam is 1.2%. Although ADHD prevalence may vary with geographical and cultural contexts, it is likely that this low diagnosis rate is due to lack of awareness about this condition, since it has not been receiving professional attention for a long time in this country. Moreover, there are only three cities in Vietnam where one can get evaluated for ADHD from reliable professionals, which are Ha Noi, Da Nang, and Ho Chi Minh City (Fig. 11) (Lương, n.d.). Big hospitals in other provinces may offer this service as well, but people generally prefer going to Ha Noi or Ho Chi Minh City to get higher quality of care. Therefore, people who live far away from these cities will face some difficulty in getting evaluated for ADHD, which may contribute to the low prevalence of this disorder. This also means that teachers usually cannot participate in the ADHD diagnostic process in Vietnam, whereas in the US it is strongly recommended that the physician talk to the child's teachers before making an ADHD diagnosis.



Figure 11. Map of Vietnam; the cities where one can get evaluated for ADHD by skilled professionals are marked by red dots (retrieved at https://upload.wikimedia.org/wikipedia/commons/thumb/3/3f/Vietnam_location_map.svg/1024px-Vietnam_location_map.svg)

Furthermore, mental illness is still considered shameful in Vietnam, especially in more traditional and rural settings, which discourage people from seeking diagnosis for mental issues

(Shillabeer, 2016). Due to lack of awareness about mental disorders, many Vietnamese people still think exclusively of insanity or intellectual disabilities when they hear about mental conditions. People with insanity and intellectual disabilities are ostracized because they cannot provide for their families nor fulfill filial duty to their parents, which are frowned upon in a society that values contributions to family and society like in Vietnam. Therefore, people who do not know about many forms of mental health other than these severe conditions will have a prejudice against people with mental issues in general. That means even if a family knows of ADHD and suspects that their child has it, they may try to convince themselves that their child was only hyperactive rather than accepting the ADHD label, which may mark the child as “abnormal” or a “burden”. The same kind of stigma exists in the US as well, but it is mostly felt by the children who saw themselves as “less than normal” when other kids at school see them getting medication from the nurse office at lunchtime, for example (Bussing et al., 2012). Overall, psychiatry is an underdeveloped area of medicine in Vietnam. Since ADHD seems very mild compared to other mental illnesses, Vietnam has not been investing a lot into research and management of ADHD.

Case Studies: ADHD as a developmental disorder

To learn more about first-hand experience of families and children with ADHD in Vietnam, I interviewed Ms. D, whose son P was diagnosed with ADHD at 18 months of age. An informal interview was conducted through email with the mother, who also provided her son’s medical record. P was born in 2014, and when he was 18 months old, Ms. D noticed that he had difficulty learning how to speak. He also had a high level of activity, often running, jumping and climbing on furniture. After consulting some sources online, Ms. D took her son to a doctor, who concluded that P had a developmental disorder after a 30-minute session. Ms. D arranged for her

son to undergo three therapy sessions at the National Hospital in Ha Noi, each lasting 2-3 weeks. At the first therapy session, the doctor said P was "hyperactive". The medical record also included other diagnostics notes before P started therapy. For example, P apparently rarely made eye contact, did not respond when called, liked to play alone and rarely imitate the instructor during play activities. Most notably, the record shows that P was diagnosed with the CARS and Denver tests, which are meant for diagnosing autism and developmental disorders, not ADHD specifically. The child was prescribed Risperdal (an antipsychotic used to manage autism), Trausan (to improve general brain functions) and Magnum Junior (a magnesium supplement to help with neurodevelopment). However, Ms. D was afraid of the possible side effects of the medications, so she decided only to use therapeutic activities such as massage, walking bare-foot on sand, exercising, swimming, drawing, and so on. Ms. D also shared the documents where she learned about these therapeutic methods, and these are indicated for autism. Finally, P's medical record only notes that he has a developmental disorder, without specifying if autism or ADHD are present (personal communication, 2019).

Another parent interviewed was Ms. X, whose son L was diagnosed with ADHD at 26 months of age. L was also "naughty", kept running up and down stairs, did not pay attention to what his parents said, and slow to learn how to speak. The boy was taken to hospitals in Ho Chi Minh City as well as Ha Noi and got diagnosed with ADHD every time. The doctor prescribed some medicines, but Ms. X did not remember which brands. In any case, Ms. X decided not to give medications to L because she read from online sources that medications could not cure the condition completely and had many side effects. After finding further information from the

Internet, acquaintances, and other parents with ADHD children, Ms. X chose behavioral therapy and sought out specialized tutors for L (personal communication, 2019).

These case studies share many common elements and are clearly different from a typical child with ADHD in the US. First, children are often diagnosed with ADHD in the US once they started school, since symptoms of inattention and hyperactivity are clearest in an academic setting (Hinshaw & Scheffler, 2014). Moreover, the earliest age that a child can be evaluated for ADHD, according to the APA, is 4 years old. In contrast, P was evaluated at 1.5 years old and L at 2 years old, mostly due to slow speech development and hyperactive behaviors. Since many young boys are also hyperactive, the chief concern of the mothers in these cases was likely their sons' slow speech development, which is not considered a characteristic symptom of ADHD in the West. Did P and L really have ADHD? It is hard to tell. Even though P's medical record shows some signs of inattention, a US physician would probably say that ADHD cannot be reliably diagnosed at his age. A source of confusion is that while ADHD is translated as “tăng động giảm chú ý” in Vietnamese, it is often shortened to “tăng động”, which literally means “excessive movement” or “hyperactivity”. When the doctor says that P is “tăng động”, it could mean that the child has ADHD, or that he just has hyperactive symptoms. In addition, “tăng động” is often listed as a symptom or comorbidity of autism in Vietnamese documents, which explains why P received an ADHD diagnosis while the test used was indicated for autism. Recently, this confusion between ADHD and autism has garnered more attention, and some news articles are emphasizing the need to distinguish between these two conditions (T. V. T. Nguyễn, n.d.; P. Trần, 2018). Therefore, Vietnamese health professionals can hopefully make more precise diagnoses in the near future.

As seen from the case studies, Vietnamese parents frequently suspect ADHD in pre-school children. This is evidenced by online conversations on ViCare, a popular Vietnamese website about health issues that allows people to send questions to health professionals. Among the 30 questions about ADHD on this site, 40% mention that the child is under 4 years old, 33% mention involves children 4 years of age or older (only 1 child was older than 6 years), and 27% do not specify the child's age. While a few doctors answer that children below 4 years old are too young to tell if they have ADHD, some other health professionals – usually non-psychiatrist – did not object to the ideas that children under 4 years old can be diagnosed with ADHD. In addition, a news article notes that for children with autism, ADHD, cognitive deficiency, speech disorder, etc., 3 years old is the best time for intervention (Thanh Vy, 2017). Therefore, the motivation for an ADHD diagnosis in Vietnam are often not academic struggles like in the US, but abnormal development in toddlers, especially slow speech development. In a conversation with the representative of an herbal supplement for ADHD (Egaruta), I was told that slow speech development was a symptom of ADHD since inattention made it hard for children to learn how to speak (Egaruta Health Advisor, personal communication, 2019).

The case studies and my conversation with the Egaruta representative indicate that in practice, ADHD is not distinguished from other childhood disorders in Vietnam. Instead, it is often confounded with autism, speech disorder, and so on. While this kind of confusion is rare in the US, American researchers also recognize that ADHD has a lot of similarities and a high rate of overlap with autism and other developmental disorders (CDC, 2018). The reason why American researchers are less likely to confuse ADHD with autism is probably that these disorders were discovered in different contexts: ADHD is often diagnosed in school-aged children due to

academic struggles, while autism is often diagnosed in younger children due to communication issues (Baio et al., 2018; Healthline, n.d.). In Vietnam, however, the ADHD and autism were both imported into Vietnam as a result of globalization, most likely in the form of a guideline for health professionals like the WHO's ICD-10. Before that, nobody had seen, diagnosed or treat any case of ADHD or autism in the country. Therefore, even though Vietnamese physicians have the diagnostic criteria, they lack experience in diagnosing and distinguishing between these highly similar disorders. Just as it took over 50 years for Western scientists to agree on a name, list of symptoms and diagnostic procedure for ADHD, it will take many years for Vietnamese physicians to standardize their ADHD diagnosis procedure. At the moment, however, many children in Vietnam may be misdiagnosed with ADHD while they in fact have some other condition. Luckily, the negative impact from this potential misdiagnosis is currently small because Vietnamese people rarely use medications for childhood disorders, as seen in the case studies, but instead prefer behavioral interventions that are useful for ADHD as well as others developmental disorders. Therefore, while ADHD is an “academic disorder” in the US and medicated mostly to improve performance and social relationships, ADHD is a developmental disorder of early childhood in Vietnam, characterized by parents' concerns that their children are not reaching the developmental milestones of their age.

ADHD treatment in Vietnam

Supplies of stimulant medications for ADHD in Vietnam is severely restricted. While there are at least 27 distinct ADHD medications in the US market, the only ADHD medication in Vietnam is Concerta, which has only been available since 2016 (Trinh, 2016). In addition, this medication can be very costly in certain pharmacies. For example, in 2017, a foreigner living in

Vietnam posted on Reddit that Concerta cost \$16 per pill (OhHolyOpals). In comparison, a pill of Concerta costs about \$3.6 in the US (Scheffler et al., 2007). People who responded to the above Reddit thread also mention that they asked various pharmacies in Ho Chi Minh City, but none carried Concerta. Although I cannot find documents about the legal status of amphetamine in Vietnam, people mentioned in similar forums that it is a banned substance. When I inquired about this at a pharmacy in 2019, it seems the drug is still rare, but the price at some pharmacies was only about \$2 per pill. In any case, supplies of stimulants for ADHD in Vietnam is very unreliable, and likely absent outside of big cities like Ha Noi and Ho Chi Minh City.

In addition, unlike in the US, Vietnamese publications almost unanimously indicate a reluctance toward managing ADHD with medications. In a short interview broadcast on the government's official television channel, the Head of Psychiatry at the Central Children's Hospital (a prominent hospital in Ha Noi) stated that medication was only used for extreme cases of ADHD as it was not a disease, just a disorder (Thành, 2014). In addition, to get a more representative sample of the Vietnamese view on this topic, I analyzed 22 websites and news articles on ADHD from various sources, including the Vietnamese Ministry of Health's official website, five popular online newspapers, two health websites dedicated to children's disorders and one psychology website. Among them, six texts mention non-drug treatments but no ADHD medication (27.3%), nine texts downplay the role of medications compared to non-drug treatments or put them on equal footing (40.9%), four texts highlight the negative side effects and risks of medications (18.2%), and only two talk about ADHD medications positively and recommend their use. Among these two, one is specifically about managing adult ADHD, and the other one is based on WebMD. Among the texts that downplay the role of ADHD

medications, most of them state that medications are only required for severe cases and must be used with care due to possible side effects. Most notably, one of the articles examined was sponsored by the pharmaceutical company Janssen Cilag – the manufacturer of the only ADHD medication in Vietnam. Surprisingly, the article does not mention any medication or other treatments for ADHD at all, and instead offers only a detailed list of symptoms. It seems that Vietnam has effectively enforced the UN’s convention against marketing psychotropic drugs to consumers. Overall, if the site is based on an English source, it is more likely to mention ADHD medications. Details about the articles and websites analyzed are in the Appendix.

Rather than stimulants, behavioral therapy and acupuncture seem to be the most popular treatments for ADHD. In the aforementioned interview, the Head of Psychiatry at the Central Children’s Hospital also stated that their interventions mostly consist of counseling parents of children with ADHD on how to improve the children’s attention and control their behaviors. In addition, a guideline published in 2015 by the Vietnamese Ministry of Health listed cognitive behavioral therapy, life skill coaching, play therapy, group therapy and family counseling as interventions for ADHD, which are similar to treatment choices in the US (Nguyễn, Lê, & Luong, 2015). The same guideline also notes that psychological therapy, including cognitive behavioral therapy, play therapy, drawing, and relaxation, can be used for many childhood disorders including ADHD, providing further evidence that ADHD is not separated from other childhood disorders in Vietnam.

While behavioral therapy is a well-known treatment for ADHD over the world, Vietnam also has a more obscure treatment for this condition, which is acupuncture (Hương Anh, 2014). Before being applied to ADHD, acupuncture has been a popular treatment for autism in children

in Vietnam. ADHD shares many symptoms with autisms, so some health professionals have tried treating ADHD with acupuncture as well (Bach Duong, 2017). Nevertheless, studies carried out in other countries have found no significant proof that acupuncture is beneficial for children with autism or ADHD (Cheuk, Wong, & Chen, 2011; Lee, Choi, Kim, Kim, & Ernst, 2011). Only anecdotal evidence is available, as some Vietnamese magazine articles report that acupuncture helps with continence, sleep disorder, attention problem, and other symptoms in autistic children (Thanh Vy, 2017; Thúy Quỳnh, 2018). Like neurofeedback in the West, acupuncture has the potential to be a new treatment for ADHD, but more clinical trials are needed to assess its effectiveness.

5. Cultural and economic drives behind Vietnam's aversion to ADHD medications

The Vietnamese's preference for non-drug treatments in managing ADHD was shaped by many factors. One of them is the coexistence of traditional medicine and Western medicine in Vietnam. Since the end of the French colonialism, traditional medicine has been promoted by the new Vietnamese state as a means of self-sufficiency in times of shortage and a source of nationalist pride. Therefore, Vietnamese traditional remedies are seen as indigenous and benign whereas Western medications are seen as efficacious but aggressive in the public imagination, leading to heightened wariness about the side effects of Western ADHD medications. This situation also allows Vietnamese herbal supplements to compete effectively with Western ADHD medications, and the manufacturers of those supplements have their own tactics to promote their products. Therefore, just as reductionistic biomedicine and the pharmaceutical

industry promote ADHD medication use in the US, traditional medicine and local herbal supplement industry encourage non-drug treatments in Vietnam. Lastly, while students in both countries experience enormous academic pressure, educational policies in the US make ADHD diagnosis a solution to relieve this stress while policies in Vietnam do not.

Influence from Vietnamese traditional medicine

Besides China and Korea, Vietnam is one of the few countries whose traditional medicine is highly integrated into the modern network of health services (Wahlberg, 2006). Vietnamese traditional medicine, often called “Đông Y” or Eastern medicine to differentiate it from Western medicine, was heavily influenced by Chinese traditional medicine, but also adapted to the unique pathology and medicinal plants of Vietnam (Wahlberg, 2006). In the 2002 book *Familiar Medicine: Everyday Health Knowledge and Practice in Today's Vietnam*, David Craig offers a brief but informative history of different medical traditions in Vietnam, including Eastern and Western medicines. Like in feudal China, the majority of educated men in feudal Vietnam took exams to become government officials, and when they failed, often turned to the field of traditional medicine instead. Traditional healers often kept formulas for herbal remedies in their families, except for a few famous healers who wrote comprehensive books about diagnosis, medicinal herbs and remedies. Traditional Vietnamese medicine was completely unregulated before the 20th century, except when a patient died and the healer might face a charge (Craig, 2002). Therefore, the skills of traditional healers and the people’s confidence in them varied. In any case, before the 20th century, traditional medicine was the only source of remedies that Vietnamese people had access to. “When you are sick, try all possible remedies”, so says a Vietnamese proverb, since even the most established treatment may fail. Consequently, aside

from traditional medicine, sick people often turned to religious and superstitious ceremonies to pray for recuperation, which is still common in some areas.

Western medicine, first brought to Vietnam by the French colonizers, was a means of governing rather than caring for the local populace. First, it represented the export of French culture and civilization, a way to legitimize French rule over the “unenlightened” Vietnamese people since the French were supposedly helping to develop the country. Second, Western medical facilities were built to support French troops and maintain the economic productivity of plantations and mines. Civilian medical service was available to urban elites between 1905 and 1945, when Vietnamese independence was first established from the French, but benefited only about 3% of population in 1937, most of them colonizers. The French also opened the Hanoi Medical School in 1905, the first modern university in Vietnam. However, overall only 4% of colonial budget was spent on health services, 60% of which used for salaries of French officials. Public health in rural areas changed little, except for declining food security and nutritional status due to exploitation, culminating in famine and epidemics during WWII. Overall, the French did little to change health system, leaving most of the traditional medical practices untouched, and even took back the resources from medical facilities in Northern Vietnam before their final departure in 1954 (Craig, 2002). Therefore, despite the century-long French occupation, reductionistic ideas associated with Western medicine had not really taken root in Vietnam by 1954, which most likely played a role in the prominence of Vietnamese traditional medicine today and the Vietnamese’ lukewarm attitude toward Western medications.

The new Vietnamese government, the Democratic Republic of Vietnam (DRV), capitalized on the failure of the French to build a public health system and created a nationalist

movement based on traditional medicine. The DRV emphasized community health work as proof of their commitment to the wellbeing of the people, a central socialist tenet, and contrasted this with the French colonizers' selfish agenda. Since Western medicines were scarce since the Vietnamese revolution against the French until the lifting of American embargoes on Vietnam in the 1980s, the new "people's medicine" heavily relied on traditional healers and remedies. At the time, there were about 18,000 traditional healers compared to about 200 Western doctors and assistant physicians (Craig, 2002). That was how traditional Vietnamese medicine became a nationalist banner and an anticolonialist weapon.

Traditional medicine became stagnant for a few years when Western medicines became available in Vietnam following the economic reform of 1986, but was revived in 1992 by the state to create a "scientific, national and popular" traditional medicine that can stand as counterpart to Western medicine (Wahlberg, 2006). Important initiatives included taxonomizing many medicinal herbs and industrializing them. Traditional medicine was further standardized through the government's efforts to integrate it into medical colleges' curriculum, create professional associations for traditional health practitioners and license their practice. The Vietnamese Association of Traditional Practitioners was estimated to have about 20,000 members in 2003 (Wahlberg, 2006). In other words, traditional Vietnamese medicine is being subjected to similar regulations and quality control measures as Western biomedicine in Vietnam in terms of safety, efficacy, and professionalism.

As a result, although traditional medicine still has less funding and prestige than Western medicine in Vietnam nowadays, traditional medicine is developed enough to offer a viable alternative to Western medicine. Vietnamese people thus have choices and have to choose

between these antithetical systems when seeking treatment for various illnesses, including ADHD. Like most traditions of alternative medicines around the world, traditional Vietnamese medicine aims to enhance the body's resilience and re-establish its balance (Wahlberg, 2006). Consequently, tonics like ginseng play the central role in traditional Vietnamese medicine. They are not indicated for a specific disease but meant to enhance strength of the whole body, and account for more than half of all Vietnamese traditional ingredients. In contrast, Western biomedicine is reductionistic, so it focuses on attacking a single pathogen or molecular cause of disease rather than considering the whole organism (Craig, 2002; Wahlberg, 2006). Overall, Vietnamese people prefer Western medicine for diseases with established Western treatments, including infections and most acute conditions. Meanwhile, diseases commonly dealt with by traditional medicines are those without effective Western treatments like certain chronic diseases and minor injuries like a sprained ankle. ADHD belongs to the second category. Some people, especially the urban elites, look down on traditional medicine as obsolete and inferior to Western rational medicine; however, they only make up a small portion of the population as 64.3% of the population live in rural areas (Craig, 2002; Vietnam Bureau of Statistics, 2018). It is much more common for the patient to combine traditional remedies and Western medications, oftentimes without informing the doctor since traditional products often take the form of herbal supplements and thus viewed as safe to take concurrently with other drugs.

In this process of deciding between traditional and Western treatments, the Vietnamese public has formed several ideas about both medical systems, which play a key role in the Vietnamese preference for traditional remedies over Western medication for ADHD. For example, traditional medications are considered familiar, benign, natural, slow-acting cooling,

and restorative for the body's humoral balance. In contrast, Western medications are seen as alien, powerful, aggressive, synthetic, fast, hot, and will harm the body's integrity in order to eliminate a specific cause of disease. This view seems largely informed by the Vietnamese' perspective on antibiotics (the first Western medicine that were widely available in Vietnam), which kill good as well as bad bacteria and cause heat-related problems like mouth ulcers (Craig, 2002). Children are seen as weaker than adult, so their use of Western medications must be restricted so that their long-term health is not damaged by the powerful medications. Similarly, if the condition is mild, people often think that traditional medications would suffice and aggressive Western medications are unnecessary. This applies to not only psychotropic medications but also medications for diarrhea, for example (Craig, 2002).

ADHD has both of the aforementioned characteristics: the patients are usually children, and it seems much milder than other diseases like diarrhea or dengue fever. Behavioral therapy, albeit Western in origin, does not count as it introduces no new substance into the body. That is why Vietnamese texts and the two interviewed mothers – Ms. D and Ms. X – were so concerned about the side effects of ADHD medications and prefer behavioral or traditional treatments. Furthermore, this explains why several Vietnamese texts advise that Western ADHD medications be used only for adult or to manage severe symptoms. This reasoning may seem odd and irrational from a Western perspective, but parallel trends exist in the US as well. For instance, adult usage of ADHD medication, especially the more powerful amphetamine, is overtaking youth usage of ADHD medication in the US (Safer, 2016). In addition, a 2012 study found that American teachers thought behavioral therapy was more suitable for girls, possibly because their symptoms usually appear milder than boys' (Bussing et al.). Therefore, despite large differences

between the American and Vietnamese medical systems, they still share some common ideas about ADHD medication.

The herbal supplement industry in Vietnam

Parallel to the US, corporate interest plays a role in shaping the Vietnamese's treatment choice for ADHD. The difference is that while US corporations make money from synthetic medicines, Vietnamese companies rely mostly on traditional herbal products. One reason for this is that Vietnam does not have enough resources to invest in rational drug design like the US. Compared to new synthetic drugs, herbal supplements are easier and cheaper to make since the ingredients are abundant locally and the medical effect of many herbs are known. Development of traditional remedies into industrial products is also encouraged by the government as a way to take advantage of the country's rich traditional medicine and wide range of medicinal herbs (Vietnam Ministry of Health, 2015). In 2014, 2000 out of 10,000 medicines on VN market are classified as herbal medicines. The government also passed laws requiring herbal ingredients and products to meet quality, safety, efficacy standards, as tested by the Vietnamese Institute of Drug Quality Control (Wahlberg, 2006). Governmental policies supporting herbal supplements extend to universities as well, since students in programs like Pharmacy must learn the identification and benefits of 90 Vietnamese medicinal herbs (Đỗ, T. M. N., personal communication, 2016). A lot of medical research in Vietnam centers on developing new herbal cures to diseases as well (Đỗ, H. Đ., personal communication, 2015). Overall, the herbal supplement industry in Vietnam is highly regulated and promises to keep expanding in the future.

Like pharmaceutical corporations in the West, Vietnamese producers of herbal supplements for ADHD employ a range of strategies, from normal to misleading ones, to promote their product. While psychotropic medication cannot be advertised directly to Vietnamese consumers, herbal supplements apparently can. Therefore, many companies create websites with articles written by health professionals on ADHD, autism, and related developmental disorders while highlighting the benefits of their supplements and the negative side effects of pharmaceuticals. Examples include <https://benhtangdong.com.vn> and <http://roiloanphattrien.vn> (site names say “hyperactive disease” and “developmental disorder”, respectively), which promotes two different supplements for ADHD by the same company: Egaruta and Vương Não Khang. Each website has a chat window that allows visitors to ask questions to company representatives, including some health professionals, about the conditions and products. Consequently, exposure to these websites and interactions with the representatives likely makes Vietnamese parents prefer ADHD supplements to medications. Another strategy that the company uses to increase sale is claiming that ADHD diagnosis and treatment is most effective when the child is 3 years old (Egaruta Health Asvisor, personal communication, 2019). Given that the two websites draw a lot of information from American sources like WebMD, they must have deliberately lowered the youngest age for ADHD diagnosis from 4 to 3 years old to increase ADHD prevalence and product sale. Although Vietnamese corporations have much less influence on researchers, advocate organizations, and consumers than Western corporations, the Vietnamese government should still beware of the way they are misrepresent facts to gain more profits.

Academic pressure and ADHD in Vietnam

The social factors we have seen so far have different effects on ADHD diagnosis and treatment in Vietnam. The lack of awareness about ADHD and facilities for ADHD diagnosis are keeping ADHD prevalent low in Vietnam, but they are not likely to have a big impact on treatment choice. The status of Vietnamese traditional medicine and the marketing efforts of herbal supplement manufacturers both restrict the use of Western medication to treat ADHD, but Vietnamese traditional medicine does not affect ADHD diagnosis rate, while herbal supplement manufacturers actively encourage ADHD diagnosis. Another social factor that likely promotes ADHD diagnosis is academic pressure, which is also a key factor in the emergence of ADHD in the US. East Asian countries like China and Korea are notorious for putting tremendous pressure on children to succeed academically, and Vietnam is quite similar. For many Vietnamese people, good academic result is a source of pride and honor for the family and the only way out of poverty. While Vietnamese parents are not watching out for ADHD in school-age children at the moment, as awareness about ADHD increases, will they start to demand more ADHD diagnosis and treatment to give their children an advantage at school?

There is a good chance that once the link between ADHD and academic struggle is more well-known in Vietnam, ADHD diagnosis rate will increase. However, ADHD prevalence and treatment will not reach the same magnitude in Vietnam as in the US, at least in the near future, for three reasons. First, while American students can obtain educational accommodations if they have ADHD, students in Vietnamese public schools have no such service. To receive an education tailored to their individual needs, students with ADHD must enroll in special education schools, which are more expensive and have much lower capacities than traditional

public and private schools. In addition, just like facilities for ADHD diagnosis, special education school for ADHD may not be available in small cities and rural areas. Second, stimulant medications are very rare in Vietnam. If students cannot receive educational accommodations or medications, then being diagnosed with ADHD has no immediate benefit. While students with ADHD can still be treated with behavioral therapy, this requires coming to a big city like Ha Noi, Da Nang or Ho Chi Minh City for weeks at a time. Even if this can be arranged during the summer vacation, it is still inconvenient for people living outside these three cities because most Vietnamese students aged 10 and above take supplemental classes in the summer as well. Consequently, arranging behavioral therapy for a pre-school child is much easier than an adolescent. The most accessible type of help for adolescents with ADHD is private tutor, which can be obtained without an ADHD diagnosis. Finally, unskilled and manufacturing jobs are abundant in Vietnam, so students who do not succeed academically can still make a living. Vietnam takes vocational education seriously and requires most students in public schools to take a vocational class during high school. Therefore, although students and parents in Vietnam face tremendous academic pressure, its effect on ADHD diagnosis and treatment will be small because the country lacks the infrastructure to offer academic help to students with ADHD.

6. Conclusion

As noted by Bergey and Conrad (2018), the US could be considered the “epicenter” of ADHD. This country has witnessed the first clinical trials showing the effects of stimulants on inattentive and uncontrollable children, the birth of the name “ADHD”, and fierce debates on whether ADHD is being overdiagnosed and overmedicated. The problem is, due to lack of data on the true prevalence and lack of a consensus on the appropriate level of stimulant use for

ADHD, we have no basis to judge whether ADHD is being overdiagnosed and overmedicated. Therefore, the government should compile a comprehensive data set on ADHD prevalence and diagnostic practices across the country to check whether ADHD diagnosis is being inflated. The US is also facing many local problems that must be quickly addressed, including the wide variation in ADHD prevalence in different states and demographic groups, stimulant diversion, and stimulant misuse to enhance performance. There are two possible solutions for this problem. One solution is diagnosing only moderate and severe cases of ADHD, like in some European countries, so that people with only mild ADHD symptoms are not exposed to the risks of stimulants. However, many Americans will find this solution unsatisfactory, since children and adults with mild ADHD symptoms still face disadvantages at school and at work. The alternative is classifying ADHD cases into mild, moderate and severe cases, with restricted medication use for mild cases. This method requires more time and efforts, but it can ensure that people with mild ADHD still benefit from educational accommodations and other services.

The US has built an impressive infrastructure to support people with ADHD, including accessible diagnosis and treatments for the majority of the population, health insurance coverage, and special educational programs. Advertisement campaigns and advocacy organizations have also increased awareness, reduced the stigma and promoted scientific research into this condition. However, underneath these advances are social structures that encourage people to take on the label of ADHD for their children or themselves, so that they are eligible for medications, educational accommodations, and other services. These structures include Big Pharma's profit-driven marketing campaigns, American psychiatry's habit of relying on medications, and the increasing demand for academic success in the US. These factors do not

invalidate ADHD as a legitimate behavioral disorder: many people with this condition do need medications and other treatments. However, when the major forces driving ADHD diagnosis and treatment forward are corporate interest and academic competition rather than simply curing a medical disorder, we face the danger of emotionally burdening children with the ADHD label, giving psychotropic drugs to people who do not need them, and saturating the market with substances with high potential for abuse. In other words, the rise of ADHD will not cease when we have identified and treated everyone with ADHD, but rather when Big Pharma no longer wants more profit and society stop raising the bar on academic success. Given the alarming increase in amphetamine and methylphenidate production in the US in the past few decades, it is high time we take back control of the ADHD engine and make sure children and adults with the condition take the highest priority in ADHD diagnosis and treatment.

The situation in Vietnam is the opposite. The concept of ADHD was imported into the country not too long ago, so the demand for diagnosing and treating these conditions is still low in general, but slowly rising as a result of globalization. At the moment, though, not much research has been done on ADHD in Vietnam. Medical facilities for diagnostic and treatment of ADHD are also severely lacking, so people living in small cities and rural areas must travel to big cities just for a diagnosis, if they have heard about ADHD at all. In addition, Vietnamese health professionals likely learned about ADHD at the same time as numerous other childhood disorders such as autism, oppositional disorders, speech disorders, without any prior experience in distinguishing these conditions. ADHD is thus often confused with conditions like autism and speech disorders in Vietnam. Therefore, a priority for Vietnam in the future would be systematizing the diagnosis and treatment of ADHD so that people affected by this condition

may receive the precise treatments that they need. In addition, as more and more students are diagnosed with ADHD and other learning differences, the Vietnamese government and schools should start providing education accommodations or other forms of academic assistance for those students.

Since ADHD diagnosis and treatment in Vietnam lacks a refined structure, the opportunity exists to create a more balanced system that is not as strongly influenced by pharmaceutical companies and academic pressure as in the US. Currently, traditional Vietnamese medicine provides products and ideas that serve as counterpoints to Western medications and perspectives. Influenced by traditional Vietnamese medicine, people in Vietnam often view Western medications as highly effective, but also harmful for the body if used for a long time. This leads to an unwillingness to medicate children with ADHD, especially since the symptoms are not very severe compared to infectious diseases and other conditions. While this perspective is very conservative and seems unscientific to a Western audience, it may be warranted given the high potential for abuse of stimulants and the widespread stimulant misuse in the US. In the end, each country has to make its own decision on how to balance the risks and benefits of stimulant medications for ADHD. Future research on ADHD in Vietnam should aim to test the effectiveness of traditional remedies like herbal supplements and acupuncture in treating ADHD. In addition, it will be interesting to see if ADHD will evolve into an “academic disorder” like in the US over time, although there is little motivation for this change at the moment.

7. Reference

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8. Appendix

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