 Issue Dossier: 

Drugs in Business 

The use of neuroenhancing substances to increase work performance 

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Executive Summary

In today’s competitive environment, an increasing number of employees see themselves confronted with tasks that exceed their normal capacity. Unwilling or incapable to reduce this workload, individuals seek means and ways to improve their performance. Recently, neuroenhancers have found their way into this setting. Originally developed to treat various diseases, these stimulating drugs are increasingly used in business or academic settings with the purpose of enhancing one’s performance and cognitive possibilities. Their short-term positive effects such as improved concentration and fatigue have made them already very popular among students but an intensified continuation of this trend into the business world seems to be inevitable. Thus, the purpose of this paper is to provide insight into the emerging issue of using neuroenhancers at work. We separate this problem from the one of general drug abuse in a work setting because the reasons behind the consumption of stimulants and recreational narcotics differ greatly.

Controversies arise around the issue due to the lack of a distinct legal frame to the use and distribution of neuroenhancers. These drugs are legal substances and are prescribed to patients by their physicians. However, the use of neurostimulants by people with no medical problems leads to ethical and moral clashes. These contrasts have triggered social discontent on the issue. The expectation gap is created by two different views on the values of life: utilitarian, which praises personal achievements and performance and is thus enthusiastic about the use of neuroenhancers for these purposes; and the humanitarian which supports a healthy and egalitarian lifestyle and is skeptical about the use of these substances. Causes to the consumption of the mentioned drugs are divided into internal pressure of succeeding in society, and the external pressure of work environment. The issue deepens further due to the lack of background information on the side and long-term effects of these stimulants on the human body. This is understandable considering that the issue is very recent and is only at its birth stage.

With the goal of proposing feasible solutions to the existing issue, further analysis of it was conducted in this paper. The major actors – influenced by the issue and influencing it – were identified: employees, employers, pharmaceutical companies, governmental institutions, families of users, and research institutes. Employees that perform the actual consumption of the stimulants and the employers whom they work for have the biggest stakes in the problem, thus placing the issue between the market and civil society spheres in the societal triangle.

The issue being very complex in nature, the solution to it cannot be simple. In order to effectively tackle the issue, all three spheres of the society should be involved. Firms, however, will be less prone to rapidly solving the problem due to obvious reasons – positive effects of the consumption of neuro-enhancers on companies’ performance. The civil society, on the other hand, represented by the employees, has the biggest say in the problem, like in any other issue concerning public health. The creation of a solid general moral stand on the issue is essential to an effective solution. Governmental assistance is vital as well, because like in any other issue today, a legal framework is required for control.
1. Introduction

During the last decade advances in psychopharmaceutic drugs for treatment of psychological diseases like Alzheimer and ADHD (attention-deficit hyperactivity disorder) have been impressive. Their capacity to enhance cognitive performance, delay exhaustion and avoid fatigue has not gone unnoticed by otherwise healthy people, though. Increasingly the drugs have been used by students as well as business people in their daily work life. Expectations are to boost cognitive performance and hence better cope with the high standards asked for in competitive environments. However, researchers have shown that effects on performance remain doubtful. Furthermore, the existence of hazards in the long run has not been sufficiently answered by academics. Both of these circumstances fuel the discussion related to ethical and moral aspects of this issue. The discontent is further enhanced by the lack of regulation towards the use of psychopharmaceutic drugs, both on a state and company level. To our best knowledge, a comprehensive exploration of the issue has not been conducted yet. Hence, the underlying question this paper will try to answer is: “Which role do neuroenhancing drugs play within the triad of society, state and market?” More specifically, which impact do neuroenhancers have on the three spheres, which problems do they cause and which action from within the global stakeholder triangle can impact the issue? Furthermore, with a proper understanding of the issue of neuroenhancers in a work setting which solutions can be conceivable?

The methodology used during the research for this dossier can be described as semi-structured literature review. Due to the early stage of the issue, literature on it is scattered among disciplines as well as scientific journals so that establishing a fixed set of journals to review proved to be impossible. Furthermore, again due to the newness of the topic, there is no consensus among researchers on how to name certain phenomena which yet again complicated a fully structured approach. The logical structure of this dossier heavily employs the reflective circle as proposed by van Tulder (2007). According to the cycle the issue will first be introduced and the topic of neuroenhancing drugs will be defined. The following section analyzes this category of drugs and the related issues with respect to relevant stakeholders, tensions and causes. Afterwards, a possible solution will be indicated. Subsequently the section on implementation will elaborate on possible measures to put the solution into practice. The last step in the reflective cycle will then be a conclusion which evaluates the current and prospective solution efforts and critically comments on the difficulty to resolve the issue. Finally, the limitations of this paper need to be considered and recommendations for further research on the topic of neuroenhancers in a work setting will be provided.

2. Issue definition

While the topic of “drugs in business” may immediately evoke reactions amongst business people and researchers, it is not clearly defined. To some researchers, drugs include coffee, alcohol and tobacco (Choi, Robson and Single, 1997; Parrott, Godfrey and Raw, 2000). For others the topic is more narrowly defined and consists only of illicit substances like cocaine, heroine, marijuana, hashish, amphetamine and other substances with cerebral effects (Gleason et al., 1991). Thus, the concept of drugs is quite
ambiguous and changes its meaning with the context it is used in. It can either describe a substance being used for medical treatment or a substance used to have any other than medical effect on the body and its functioning. This dual meaning of the expression is also reflected in the definition given by the US Food and Drug Administration (FDA) (Rick, 2008:2):

“An active ingredient that is intended to furnish pharmacological activity or other direct effect in the diagnosis, cure, mitigation, treatment, or prevention of a disease, or to affect the structure of any function of the human body (…)”

Abood further defines that “the critical issue in defining whether a product is a drug, is its intended use of the product” (2005:96) and clarifies that food is not included in the concept. Hence coffee, alcohol and energy drinks do not fall under the definition of a drug. Nonetheless, the word “drug” includes a wide variety of substances with an even wider variety of application. However, not all of them will be considered to be related to the issue of drugs in business.

Since drugs used for any kind of medical treatment, diagnosis or prevention are widely accepted as legal and ethical means to enhance quality and length of life, they do not pose an issue. No major societal discontent is attached to the usage and prescription of the most common medicines. While there are major controversies on the topics of drug pricing in developing countries (Shadlen, 2007) or excessive medication with antipsychotic drugs (Avron and Gurwitz, 1995), these issues are not related to the use of drugs in business.

In fact, the issue of “drugs in business” is exclusively related to the use or abuse of substances for means other than medical reasons. These include “marijuana, hashish, non-prescription amphetamines, stimulants, non-prescription barbiturates, sedatives of tranquilizers, psychedelics, cocaine, heroine, or other narcotics, and inhalants” (Gleason et al., 1991: 4). This spectrum of substances is even widening as new synthetic drugs are increasingly put on the market (Interpol, 2009). Most of these drugs are illegal and selling, possession and consumption are enforced crimes. Other substances are not prohibited by the law, however.

Studies indicate, that usage of drugs at the workplace has increased since the 1970s (Russell, 2008; Gleason et al., 1991). A recent study by Bywood et al. (2004) shows that up to 15 percent of the Australian workforce has made use of illicit drugs in the 12 month prior to the survey. The studies also indicate a positive linkage with young men working in “blue collar” jobs (Gleason et al., 1991). Nevertheless, “white collar” workers are also prone to abuse drugs during work.

Next to putting forth the extent of drug abuse in business, researchers have also indicated the consequences of drug abuse. While there are severe individual consequences like addiction, cerebral dysfunctions and psychotic disorder, drugs also cause problems at the company level. These include lower alertness, adverse effects on mood, poorer memory, poorer judging and decision skills and lower concentration times (Smith et al., 2004). Furthermore, absenteeism and staff turnover tend to be higher among drug users (Normand et al., 1990). These adverse effects translate into costs at the company level. Costs incurred by excessive use or abuse of drugs fall in the categories of (1) extended absenteeism, (2) loss of productivity or (3) mortality (Choi et al., 1997). Hence the use of drugs at the workplace can “have an impact on the company and its reputation” (van Tulder and van der Zwart,
Being one condition of an issue as defined by van Tulder and van der Zwart (2006), one precondition is met. However, there are three more preconditions to be met.

Clearly the use or abuse of drugs at the workplace leads to an expectational gap. There is a conformance gap (van Tulder and van der Zwart, 2006) with respect to the code of conduct some companies bring forward and the behavior of their employees. Furthermore, the usage of drugs is found to be triggered by increased pressure on employees to work long hours and perform better from the side of management (Russel, 2008). It remains doubtful here if companies neglect a certain kind of behavior with respect to drugs in putting pressure on their employees. Because illicit drugs are by definition forbidden by the law, however, there is no unambiguous regulation (Jones and Chase, quoted in van Tulder and van der Zwart, 2006). Moral consensus on the abuse of most substances has already been found, due to the severe consequences on the health of consumers. This moral consensus subsequently leads to clear regulation banning the consumption of hard drugs in virtually all developed countries (Drug Policy Alliance Network, 2009). Consequently, the abuse of hard drugs does not suffice to be an issue in terms of the definition given by van Tulder and van der Zwart (2006).

One category of substances which is not included in this group of hard drugs, however, are neuroenhancing drugs. These substances are medicines and legally sold with prescription for means of treatment. Moreover, they are increasingly consumed by otherwise healthy people for enhancement of cognitive performance. Recently a debate in the academic world has emerged on ethical and moral aspects related to them. Due to them fulfilling the definition of an issue as proposed by van Tulder and van der Zwart (2006) they will subsequently be focus of this paper. The following subsection will introduce them in more detail.

### 2.1. Neuroenhancing drugs

Interest in substances enhancing cognitive possibilities has already been recognized among the Chinese around 2700 BC (Cheshire, 2006). While they consumed natural nutrition to enhance performance, today’s neuroenhancers are artificial pharmaceutics. Extensive drug development efforts in order to effectively treat diseases such as Alzheimer (Rose, 2002), attention deficit hyperactivity disorder (ADHD) (Talbot, 2009) and other mental disorders triggered the invention of substances with effects on cognition. These medicines are useful for treating “dysfunctional attention, memory and motivation” (Cheshire, 2006: 263). Sales figures and polls indicate, however, that these drugs are not only used for treatment purposes but are increasingly used for enhancement of otherwise healthy individuals (Cheshire, 2006; Farah, Illes, Cook-Deegan, Gardner, Kandel, King, Paren, Sahakian and Wolpe, 2004; Schermer, Bolt, de Jongh and Olivier, 2009). For this reason neuroenhancement is increasingly termed “cosmetic neurology” (Chatterjee, 2004).

Illegitimate users predominantly incorporate students, academics and business people. Though the phenomenon of consuming neuroenhancing drugs has first been witnessed among students being pressured by their academic environment (Cheshire, 2006; Farah et al., 2004; Elliott, Sahakian, Matthews, Bannerjea, Rimmer and Robbins, 1997; Rose, 2002; Talbot, 2009), it increasingly spills over to the workforce (Gleason, Veum and Permit, 1991). Employees have identified recreational drugs to help
in daily work routines. Neuroenhancers are expected to prolong hours of concentration on cognitive tasks, delay exhaustion and avoid fatigue (Talbot, 2009). As opposed to hard drugs like cocaine, heroine and amphetamines, neuroenhancing drugs are mostly consumed in work situations, rather than for private use. Their enhancement functions vary widely “including memory, executive function, mood, appetite, libido and sleep” (Farah et al., 2004: 422).

The power of these drugs to truly enhance performance on cognition and memory remains doubtful. Some studies confirm their positive effect on cerebral functioning, while others reveal it as negligible (Rose, 2002). The doubtfulness of their effects only constitutes a small par of the issue, however, as can be seen by framing the issue in more detail.

2.2. Issue framing

The use or abuse of neuroenhancing drugs has evoked a wide discussion amongst researchers. The intensity of this controversy has even partly triggered the creation of the discipline of “neuroethics” (Schermer et al., 2009). While neuroethics mainly deal with the topic of applying psychopharmaceuticals in non treatment occasions, a wider debate on human enhancing in general has evolved (Cheshire, 2006; Farah et al., 2004). Standpoints reach from the utilitarian viewpoint of the “duty to enhance” to arguing for neuroenhancing drugs to be banned (Schermer et al., 2009). However, researchers quickly warned that this discussion might be expectationally inflated and suffer from a technological hype (ibid). Furthermore, they criticize its speculative manner due to the “ability of these interventions to enhance human memory [remained] speculative at present” (Rose, 2002: 978). Going as far as debating about future rather than current drugs, Nordmann proposed the term of speculative ethics (2007).

From a legal point of view no regulations have been imposed with respect to neuroenhancers, yet (Cheshire, 2006; Talbot, 2009). The FDA forbids the promotion of psychopharmaceuticals for unapproved use (Cheshire, 2006), however, does not enforce this recommendation. In fact it is found to be very easy to order these substances online or with any other kind of salesperson (Talbot, 2009). Hence the matter remains “yet to be institutionalized, regulated or settled” (van Tulder and van der Zwart, 2006: 157). Due to this fact, it will remain in public and academic discussion until clear rules have been imposed.

The reason for non existence of regulation is the newness of neuroenhancing drugs. Although innovations are already immense, many more developments are yet to come (Cheshire, 2006). Some researchers even term the 21st century the age of neuroscience (Farah et al., 2004). With the technology being a recent development, no regulations could have been imposed by regulatory authorities. Hence the issue of neuroenhancing drugs can be classified as an “agenda-setting issue” (van Tulder and van der Zwart, 2006).

The need for regulation, however, stems from the existence of an expectational gap (ibid). In the essence stakeholders hold differing views on what is morally and ethically acceptable. With a discussion ranging from utilitarian to humanitarian stand points, a factual gap is present (ibid). The debate is much broader than just about the consumption of neuroenhancing drugs. Rather it constitutes a discussion about enhancing the functioning of the human body in general. Rose elaborates more distinctly: “there
is a fine medical and ethical line between correcting deficits and enhancing performance” (2002: 978). Others back his argument by arguing for possible coercive or social effects (Schermer et al., 2009), acceptance of ones aging (Rose, 2002) or the enhancement of equality (Farah et al., 2004).

Controversy is triggered by the fact that weighing the risks and adverse effects of drugs is difficult with respect to the physiological and biochemical context. If it comes to cognition it is even harder (Rose, 2002) and hence positioning towards this issue is somewhat ambiguous. In general, however, these possible adverse effects can have a negative effect on workforce performance in business in virtually all sectors. More profound is the potential loss of reputation if public opinion or regulation turn against usage of neuroenhancing drugs and a company is found to make excessive use of it. The development of fierce public opinion is very likely, though, in light of the growing attention given to the topic as will be explained in the following subsection.

2.3. Trend

The issue of drug use in business is increasing, especially with respect to neuroenhancers. This could not only be proven by sales figures (Cheshire, 2006), but also by several other sources. Cheshire shows that over the counter nutritional supplements with some enhancing effects already make up a market of nearly $1 billion per annum in the US and are expected to increase (ibid). Schermer et al. report that 6.9 to 16.2 percent of all college students claim to have used psycho stimulant medication as a form of study aid (2009). They also show that usage amongst a younger group between 12 and 18 was as high as 2.4 % in the Netherlands.

With increased usage of these products in business settings, the issue will most probably also gain more attention (Rose, 2006). It has already become a topic in research, however, has not received major media or NGO attention yet. Still with more drugs being developed, researchers believe it to be put on the agenda in future (Schermer, 2009; Cheshire, 2006).

While the discussion only started, the ethical and moral complexity outlined in this section will render the discontent fiercer. The nature of this controversy is further triggered by the multiple stakeholders involved and subsequent tensions evoked.

3. Analysis

3.1. Stakeholders

In order to effectively identify the causes for the issue, analyze it and propose a possible solution a major precondition is to know the relevant stakeholders. Stakeholders are defined as parties that are involved in an issue, influence it or are influenced by it (van Tulder and van der Zwart, 2006). In the case of the use of neuroenhancers at workplaces all three corners of the societal triangle have stakes and interests in the issue. Even though it is not a fixed categorization over time, it is helpful to subdivide stakeholders in primary and secondary stakeholders (ibid).
Primary stakeholders are the ones that are immediately linked to the issue and directly affected by it. However, the definition also includes the ones in power to affect the issue themselves. Without both groups the issue’s existence would be questionable. We have identified three primary stakeholders to the issue of drug abuse at workplaces: employees that consume the enhancers, employers that these employees work for, and pharmaceutical companies that produce the enhancers.

**Employees:** Employees, ranging from blue-collar workers to top executives, are the ones that consume the drugs discussed in this paper. Regardless of the employee’s position in an organization, the consumption is made with the purpose of enhancing performance. Thus, they are the party which feels possible effects of the substances on health, mental capabilities and cognition. Furthermore do employees purchase these substances directly - usually without a medical prescription. Regularly they do not possess knowledge of the substances’ short- and long-term effects (Rose, 2002). Most of the ethical disputes concerning the issue are centered on this stakeholder. This is due to the circumstance that, just like in the case of obesity or unhealthy food, the medical condition of the consumers of neurostimulants is at stake. Currently employees are the ones with power to make the final decision whether they will make use of the stimulants. Nevertheless, they are confronted, with a tough choice. The pressure is created by civil society at large through unrealistic role models, by immediate peers that exert direct and indirect influence, as well as other stakeholders which are mainly their employers. The causes for drug abuse will be further elaborated on in section 4.5.

**Employers:** This stakeholder is a representative of the market sphere. They include shareholders of organizations but also company managers that are in charge of a group of employees. The relationship between employers and the discussed issue is inevitably performance driven. They are the ones creating the profit- and performance-oriented atmosphere in the workplace which employees are a fundamental part of. Because of the prevailing incentives and appraisal system existing in most organizations today employees willingly choose to consume stimulants. They intend to perform better and thus advance in their professional careers based on their boosted tangible personal achievements. Another reason for consumption is coping with the stress at work. This stress is also collateral to the company's strategy. Stress, however, most often is a result of many additional forces both within and outside the company. There is another reason why employers are primary stakeholders in the issue. It is that consumption is mostly done at the workplace. This is to say, on the employer’s premises. The employer is held responsible for activities taking place during working hours. Employers can also encourage the use of stimulants or refuse to take action when discovering employees are consuming them. Moreover, employers and organizations may be affected by possible adverse effects. “Unintended effects of cardiovascular or neuromuscular overstimulation, euphoria associated with the risk of recreational use and addictive behavior” (Cheshire, 2006: 264) can possibly diminish performance in the long run. Short term performance enhancement might be in the interest of the company, while long term performance can render these successes obsolete. Hence the issue will have a severe impact on the organization and its management.

**Pharmaceutical companies:** This stakeholder is also part of the market sphere. Pharmaceutical companies produce, market, and sell neuroenhancers to the wide public (Talbot, 2009). They are held responsible for the product sold, and for correctly informing the clients of its attributes and effects.
Secondary stakeholders are the ones that in an indirect manner influence the issue and are only marginally affected by it. We have identified three secondary stakeholders to the issue.

**Governmental Institutions:** Through legal acts, this secondary stakeholder can control the distribution and sale of the stimulants. Nevertheless, a foundation upon which a government could act is missing due to the lack of a moral consensus on the matter in the civil society, and a scientific base on the adverse effects of neurostimulants. This is why in the case of the discussed issue the government is only a secondary stakeholder.

**Individuals:** Individuals obviously also include all employees, but the level of representation differs. While in the course of this paper employees are usually considered as a larger group, individuals are all members of society. They can be influenced by the abuse of neuroenhancers in multiple ways. For instance, family members deal with the changed behavior of the stimulant user both during office hours and leisure time. Increased stress levels and emotional pressure could have adverse affects on the whole family. Other individuals, those who reject the abuse of neurostimulants at this point in time, are adversely affected because they might be at a performance disadvantage.

**Research institutes:** Due to the ambiguous scientific underpinning of neuroenhancers and their effect on healthy individuals, research institutes are among the major stakeholders of this issue. Due to their relative independence, the future of the use of these drugs is also influenced by their findings which will either increase or decrease the public favor for neurostimulants.

While classification of stakeholders in primary and secondary helps to understand affected parties, other categories help to further clarify them.

### 3.2. Urgent, powerful and legitimate stakeholders

In order to better understand the role of each stakeholder in the issue of consumption of neuroenhancers at workplaces, we employed the model proposed by Mitchell (1997 as cited by van Tulder and van der Zwart, 2006) The model consists of three attributes that a stakeholder can possess: urgency, power and legitimacy.

Stakeholders that possess power are the ones that have an influence on the discussion on neuroenhancing drugs and on the consumption of neuroenhancers itself. Clearly, this includes employees as a group, employers, and pharmaceutical companies. All three of these stakeholders have the ability to control and manipulate the use of stimulants. As a group, employees can exercise power by jointly taking a stand on the topic, act upon it and demand state and market to adjust to it. Due to the lack of consensus this power remains potential at this point in time. This also means that an individual has low power on the general issue. Only combined as a whole, do employees have power. Employers influence the consumption among workers by either stopping it through policies and drug tests or enhancing it by direct or indirect (decreased workload and stress) stimulation. Pharmaceutical companies do produce the drugs and can hence actively influence the consumption by way of marketing, sales and product design.
Legitimacy, as the second attribute of stakeholders, is held by employees, research institutes and to some degree by pharmaceutical companies. Employees possess this attribute because they are the ones that directly consume these stimulants. When the purpose is enhancing performance, the consumption is often done willingly or by means of group pressure and the initiative comes from the consumer him- or herself. Hence, society as a whole constitutes the legitimate stakeholder. Also some individual persons will earn legitimacy to bring the discussion forwards as moral leaders. Furthermore, organizations from society could be legitimate to influence the discussion. On the side of companies, only few of them would have the legitimacy to make a change. Pharmaceutical companies are legitimate for another reason. Since they provide the market with their drugs and engage in equivocal marketing, they have partly caused the issue so that it would only be consequential from them to tackle the issue. However, exactly their influence on the existence of the issue reduces their legitimacy. In fact, their economic well-being depends on the sale of neurostimulants which makes an honest involvement in reducing neuroenhancer abuse not credible. With the help of an authentic CSR campaign, this legitimacy might be partly reestablished. At the same time, independent research institutes possess legitimacy to interfere in the issue. They traditionally serve a public purpose which means they do not have any vested interests in the issue which makes them a legitimate stakeholder.

Individuals, employees as a group and employers possess the urgency attribute. Employees suffer from the consumption of neuroenhancing drugs and either willingly or forcefully consume these. Employees and employers have an immediate effect on the behavior and performance of the firm and thus their claims require immediate attention. In addition, individuals in general should be noted as urgent stakeholders. This overarching statement is made because all kinds of individuals can be directly impacted by the issue – directly and indirectly. Possible adverse social effects render the consumption of neuroenhancing drugs hazardous. Further the urgency attribute is triggered if the consumption of neuroenhancing drugs actually has the adverse physical effects expected by some researchers. Again, further research can bring more clarity.

After analyzing the attributes of the stakeholders, we have identified that employees as a group are the only immediate core stakeholders. This means that solving the issue of neuroenhancers consumption at workplaces should be done by targeting these stakeholders, their demands and needs. Out of the three spheres proposed by van Tulder and van der Zwart (2006), only market and civil society were identified in this framework. While governmental institutions usually are regarded to have power on a lot of issues, the fact that there is no consensus or even clear tendency among citizens maims the government because without moral consensus there can be no powerful regulation.
3.3. Position in the societal triangle

Use of neuroenhancing substances cannot be classified as a stretch issue because it is not caused by actors from one societal sphere only. As described earlier, stakeholders from all three corners of the societal triangle are involved in the issue. Nevertheless, mainly two spheres of the society are considered part of the problem – market and civil society. This classifies the issue as an institutional one (van Tulder and van der Zwart, 2006). Actors from the civil society and companies both bare responsibility for causing the issue. Like the majority of institutional issues, substance use at work is facing an undersupply of solutions because not enough is invested in defining and identifying the problem and because no actor wants to claim responsibility. Employees that use neuroenhancers state that the working environment is the cause, employers state that in a competitive environment performance is essential, and pharmaceutical companies are just doing their business by selling as many medical products as possible. Short-term solutions, like laying off personnel that is consuming stimulants, or ignoring the consumption of these are most commonly take actions. This solution will not diminish the scale of the issue, however.

Being an institutional issue placed between the market and civil society, the issue of use of neuroenhancers at workplaces deals with interface controversies. On the one hand, individual and social rights of employees are at stake when they claim the workload and stress are very high at workplaces. On the other hand, companies are not involved in any illegal activities. The purpose of any business is to make profit and that is what organizations are pursuing. This problem is often viewed as a result of an unsatisfactory involvement of markets and for-profit organizations. Thus there is a clash of profit and non-profit sectors, just like in the case of other health issues (van Tulder and van der Zwart, 2006). Firms are facing a decision whether to set profit as the ultimate goal with little or no regard to employees’ satisfaction; or to focus on work ethics and creating a pleasant working environment, which in turn might lead to higher performance but bears a short-term risk of underperformance and potential business failure.

The blurriness of the issue makes it also difficult to assign moral authority to one actor. After all, health through prevention is a primary responsibility of the civil society. This notion is relevant for the issue in this paper since neurostimulants are increasingly used today by healthy individuals with the sole purpose of enhancing performance. Little information about the drug’s real effects is known to this user type, however, effects on cardiovascular functioning, emotional condition and long-term performance are possible consequences (Cheshire, 2006). This way, by consuming enhancers, employees, in the case of our issue, take the risk of damaging their health. Civil society has
the moral authority in preventing this behavior. It can set moral standards on the consumption of substances with unknown effects.

On the other hand, the consumption of neuroenhancers amongst healthy individuals is done as a response to external pressures. In the case of the drug consumption at workplaces, the pressure is exercised by firms who act in a competitive marketplace. One might argue if work stress was lower so would be the use of stimulants. From this perspective, firms can take on moral authority on providing safe and harmonic workplaces for employees in such a way that the latter are not forced to enhance personal performance in order to keep up with possibly inhumane company standards.

3.4. Issue life cycle

While general drug consumption at workplaces is an issue with a long history and is being discussed and solved by actors from all three societal spheres, firms being the most active by introducing drug-free policies, use of neuroenhancers is only an appearing issue. This is mainly due to the raising stress caused by jobs and increased competition among companies on all fronts. At the same time, the issue of the abuse of neurostimulants for non-medical performance enhancement is only in its starting phase. In the academic world, different opinion groups have already formed that argue about the right attitude towards and use of neuroenhancers. However, a comparable formation has not yet taken place within civil society, where no pressure groups or NGOs have brought this topic to their agenda. Hence in these spheres the issue is in its birth state.

The trigger for the birth of the issue of neurostimulants was a major shift in societal paradigms. It is the shift from a society that acknowledged the trade-offs necessary for work-life balance towards a society that is unwilling to compromise in face of these trade-offs. In the past employees understood that combining a successful private life (e.g. marriage, children, friends, relaxation, etc.) with a successful business life (e.g. high salary, promotions, international travel, etc.) would be very difficult and needs some sacrifices in one or both of the areas. However, over time this understanding diminished and the people strived for outstanding success in both fields. Increasingly this effort can only be facilitated with the help of external assistance which brought neurostimulants into the game. As an inexpensive, hidden and easy method neuroenhancers present a quick-fix solution that suits the lifestyle of the newborn fast-paced, get-it-all society.

Governments have not yet showed great concern with the arising issue, thus allowing for regulatory gaps. However, this is only logical because without an ethical and moral consensus of civil society, putting regulation in place is basically impossible. At the same time, the percentages of employees using neuroenhancers are still relatively low. According to an article published in “The New Yorker” this year (Talbot, 2009), 4.1% of US undergrads use these drugs. If this number transfers to the work place in the near future with the graduation of this generation, the urgency of this issue will aggravate. Already today, the causes laid out in the next section as well as peer pressure tend to increase this percentage which highlights the significance of this paper.
3.5. Causes

The causes for the rise of popularity in neurostimulants are manifold. While the personal decision to take these enhancers is often influenced by multiple, contingent factors, the most prominent causes can easily be generalized. Two root causes can be identified that put pressure on the individual today, while there are four contributing factors which are regarded to support the trend towards neuroenhancers while they cannot be regarded as main drivers.

The two main causes are externally exerted pressure and internally created pressure. The factor of external pressure can be further subdivided into societal pressure and a demanding work environment. Starting with the first, there is a new role model in society that promotes utmost professional success of the individual while leading a flawless, happy and harmonious private life. Furthermore, a paradox can be observed that allows for failure when trying to succeed, irrespective of the area, but shows no understanding for the admittance of personal constraints when not even trying to succeed. Individual constraints are considered a weakness while failure is often attributed to circumstances. In an effort to achieve the role model of today's society, many choose to go beyond their natural constraints because they do not want to be regarded as an underperformer in the face of society. The potential lever to achieve the aspired role model is usually the work environment. Since success in private life is often attributed to spending time with family and friends, and not being stressed or aggressive. Especially to achieve the former, people start using performance enhancing drugs or drugs that reduce the need for sleep. Most neuroenhancers fulfill both needs. However, it is not only the societal pressure which stimulates the abuse of stimulants. An increased pressure on individuals in today's work setting can also be observed. Employers demand a higher workload from their employees that often involve increasingly complex tasks. Furthermore, the work environment penetrates the private life to an unmatched degree. Employees are equipped with cell phones to be at their employer’s service almost 24/7. Resisting these demands often seems too dangerous for the individual because competition for jobs is perceived to be high – internally as well as externally. In a constant effort to succeed, employees strive for the next promotion. This is regularly also fostered through company's that follow an “up-or-out” philosophy which demands performance and results to retain employment. Another issue at the workplace that has gone out of control is the issue of “face time”. In many high profile job positions but also certain industries (e.g. banking, consulting, law firms), spending as much time as possible is regarded to be an indicator of doing a good job.

In addition to these external influences, individuals also create pressure on themselves through the unwillingness to compromise on employment questions while desiring for the perfect work-life balance. Here we can see the importance of the societal role models again which has established firmly in the individuals’ minds. A reason that is given by many stimulant abusers for their drug usage is not only the wish for personal success but for raising or at least maintaining the standard of living of their families. This would in their view not be possible without adhering to the demands of the work environment. Another personal factor is related to ageing. Many humans refuse to accept the effects age has on their body and brain. While exercise helps to maintain the body, neuroenhancers promise to do the same for the brain. In the face of increasing life expectancy stimulants promise to maintain mental sharpness. This in turn is expected to increase quality of life at a higher age. Last but not least, a reason for the
abuse of neuroenhancers is often the simple overburdening with tasks which seem to leave no alternative because of natural limitations on mental capabilities of the individual.

In addition to the described root causes, four additional factors could be found. First, a human wish can be observed to exploit its potential. Extending human mental capacity is regarded to be just another evolutionary step here. Therefore it can be considered a normal side-effect of the technological development brought about by the human race. Second, the public treatment of certain everyday phenomena like fatigue or headache as symptoms of an illness strongly fosters the trend towards using drugs – often based on independent, personal diagnosis. The media but especially the lobbyism of the pharmaceutical industry supports this trend. Third, the newest neuroenhancers are said to have almost no side-effects and no severe side-effects at all. However, this attitude is based on testing the medicine with ill individuals while the effects on healthy individuals might differ significantly. Nonetheless, this leads to a fourth factor, which is a low moral inhibition to take these drugs. As was discussed earlier, there is a lack of moral consensus as to whether taking neuroenhancers is positive or negative. With individuals already consuming a variety of nutritional additives in the form of pills, just another one would not make a difference.

As can be seen from the above discussion, the causes for the increasing interest in neuroenhancers are numerous and intertwined which makes the underlying issue a very complex one. It can be easily inferred that companies contribute to this problem by exerting undue pressure on their employees. However, the discussion also shows that blaming corporations is not sufficient because the root of the problem appears to lie in the human sense for competitiveness and it’s will to succeed. All of which leads to severe tensions as outlined in the following section.

### 3.6. Tensions

When trying to solve the issue of increasing use of neuroenhancers, one must understand which forces actually dominate this issue. Two fundamental tensions could be identified by the authors of this paper. First, there is a tension between health and performance. While neurostimulants allegedly improve performance they might well be detrimental to health when consumed by healthy individuals. As a result, joint high performance and good health seem mutually exclusive. In fact, we are confronted with a tension as a trade-off between these two factors. Between perfect performance and perfect health there is an optimal solution line which is determined for each individual by the amount of drugs he or she consumes. The lower the consumption, the better will be the individual’s health but the lower will be the potential success for him or her. However, it must be noted that the magnitude of both cannot be determined. That is, the slope of the linear relationship is unclear as it depends on the health issues as well as the performance boost a drug can achieve.
Talking about this clearly observable trade-off, the Triple E Framework (van Tulder and van der Zwart, 2006) can be easily applied. The tension between health and performance is yet again represented in this framework, namely in the form of efficiency and equity orientation. An effort to combine these two would be the popular term of “responsible use” which means that abuse would be limited to exceptional need for a drug. Such a solution would not be sustainable because people would see no need to reduce their consumption. However, with an orientation toward effectiveness, the solution of an informed choice could be thinkable. Here, on the basis of intensified research on neuro-enhancers and their effects on healthy individuals, these individuals would be able to critically assess the possible outcomes of their drug abuse and ultimately take a decision that they are fully accountable for their consumption.

Second, another tension can be found in the field of morale. Since there is no consensus on the moral opinion on neuroenhancers, two opposing views can be discovered. The first view is that drugs by definition are bad and should only be used for treatment purposes. Fiddling about the human body and especially brain is frowned upon by the followers of this attitude who strongly promote to abstain from using neuroenhancers. We call this view the “skeptics” because they are suspicious about new technological developments and follow a very conservative attitude towards the concept of life. On the contrary, there is a large group that embraces the advances in the field of neuroscience, or science and technology in general, which is strongly interested in using stimulants or is already doing so. As explained earlier, for this group neuroenhancers are part of human-led evolution and therefore inevitable in the long run. We call this group the “enthusiasts” because they do not question the developments and adapt to trends before maturity which in the case of stimulants bears maybe performance advantages or maybe health risks. Fitting these attitudes into the tension frameworks by van Tulder (2009) leaves multiple options. The tension can be classified as a dilemma which is most likely the most accurate assessment because both views are based on fundamental beliefs which will not be altered easily. Finding a compromise is
therefore not possible. However, this might not hold true for society at large or parts of the two groups. Here, the tension can be perceived as a puzzle where over time an optimal solution can emerge. In the case of neurostimulants this solution could for instance be coined responsible use of stimulants which means that when side-effects and actual effects are known, a more accurate position towards the consumption can be taken. Nevertheless, at the current status of research and societal development such a puzzle-compromise is not in sight which supports the call for a better understanding of neuroenhancers.

Third, a tension can be seen within the pharmaceuticals industry. When looking at the companies that produce neuroenhancers, a conflict of interest can be observed. On the one hand, these companies are for-profit corporations with the interest to sell as many of their products as possible. On the other hand, in principle, they serve a humanitarian purpose which is to cure illnesses. However, the abuse of neuroenhancers through healthy individuals in a work setting does not comply with the latter raison d’être of a pharmaceutical firm. At a point when the illegal abuse of a drug prevails even though it is a prescription drug, like it is the case for neurostimulants, a firm has to fundamental choices. Either it stops selling the product and forgo profits, or market the product and accumulate as much rent as possible. This situation would be a dilemma because there is no middle course that can be chosen. However, the availability of the drug is key in this question. Limiting access to the drug turns the tension into a paradox. For instance, a different mode of administration of neuroenhancers (e.g. nanotechnology supported drug injections) or an improved distribution system with stronger control over producers of generics would present two alternative solution points to this paradox. However, it must be noted that while this tension might be resolvable through these initiatives, it will not necessarily resolve the overall issue of neuroenhancers in a business setting. Furthermore, the practicality of the proposed solutions is questionable.

Fourth, there is a tension considering the user base and the pressure to consume neuroenhancers. A prime example for this competitive anxiety was presented in an informal poll by Nature magazine among its readers. While 86% of readers voted that “children under the age of 16 should be restricted from taking these drugs [Ritalin, Provigil, and beta-blockers]” (Nature, 2008: 675), one third acknowledged that they would feel pressured to administer these drugs to their children if they knew that other children would receive them as performance enhancers. The same holds true for adults. In a work setting, when employees are aware that their colleagues abuse neuroenhancers to obtain a competitive edge, they feel pressured to do the same even though their values and principles speak against such behavior. Thus, there is peer pressure in favor of neuroenhancers versus a dislike of these drugs. In the framework of van Tulder (2009), the described tension would qualify as a dilemma for the involved individuals. Depending on the individual attitude, the reaction will differ from person to person with some people rejecting stimulants, others embracing them, and maybe others finding an intermediate solution.

With the discussion about the issue of neuroenhancers lined out, its complexity is apparent. Solving the conflict is not easily achieved, however, a solution is proposed in the following section.
4. Solution

The advent of neuroenhancing drugs has triggered a large debate. Ethical and moral concerns arise using psychopharmaceutical drugs for clinical and neuroprotective means, and are even more severe for enhancement (Rose, 2002). The complexity of the issue and the newness of neurostimulating medicine render a societal consensus difficult. Many different viewpoints have been developed which are very controversial. Furthermore, the high amount of dependencies owing to this issue does not facilitate a solution seeking exercise. Still we believe that finding a solution is possible.

The issue in essence might be similar to athletes abusing steroids and even resemble the same arms race of usage and enforcement (Rose, 2002; Cheshire, 2006). Hence a solution might be found in the same area. While there are some good starting point like the constitution of the “International Anti Doping Agency”, enforcement still lacks behind the written and agreed upon treaties (O’Leary, 2001). Partly, this is due to the international agency not being able to enforce their standards on national levels. Primarily, however, background research on effects and side-effects of drugs that stimulate cognitive enhancement is lacking which would disentitle all forms of regulation or standard setting in the moment that new findings are presented.

An international, interorganizational institution conquering the use of neuroenhancing drugs is one part of the solution to the issue of increased usage of medication in business. The “astonishing complexity and delicate fragility of the human nervous system” (Cheshire, 2006: 264) renders the potential of risks and its impact very high. Companies cannot hazard their human capital to incur such uncertainties. Hence they should actively try to tackle the problem by means of corporate citizenship. Creating a global initiative with major shareholding organizations from the market will first of all stress the urgency of the matter. Also it will help to gain support of other companies. Achieving this they will be able to effectively manage the strategic interfaces of efficiency, equity and effectiveness (van Tulder and van der Zwart, 2006) for the first time.

With individuals comprising the primary and urgent stakeholders of the issue, societal solution elements are pivotal. The public needs to be reminded that “growing old is not a disease, but a condition of life” (Rose, 2002: 978). With the help of a campaign society could be reminded of the fact that “too much emphasis on cognitive productivity might damage our appreciation of the creative and sensitive natures of ourselves and others” (Cheshire, 2006: 265). Furthermore, the attitude of civil society towards what comprises a good citizen should be questioned. While the will to perform is basic to the human needs, an overemphasis on achievement is observable which calls for adaptation. Although in essence the consumption of drugs is an individual choice, more and more people feel obliged to ‘keep up with the Joneses’ which often seems feasible only through the use of stimulants or other doubtful practices.

Another institutional setting responsible for a possible solution is to be found in the academic world. Universities should leverage their coercive power and convince students of a more positive attitude towards their own deficiencies. After all the issues started in university settings (Talbot, 2009) and hence academic institutions could become a solution leader in helping to find moral consensus towards
neuroenhancing drugs. This, however, also necessitates a more narrowly controlled teaching body since professors also have been found to use stimulating drugs (Sahakian and Morein-Zamir, 2007).

Furthermore, the third sphere should also be involved in the solution. Since neuroenhancing substances are drugs, “some forms of regulation will be needed” (Rose, 2002: 978). However, this is by no means intended to prohibit the research on neurostimulating drugs. Rather, improvements in this area should be triggered, since “neuroscience has an ethical obligation to pursue research (…)” (Cheshire, 2006: 264). The regulatory gap could be closed by allowing this kind of drugs by prescription only. After all they have been developed for medical treatment and should still be applied for this area. Only by way of doing this can governmental actors avoid negative impacts on individuals and adverse effects on society. This would mean a stricter procedures for doctors, who often are tempted to prescribe a quick fix to “patients” that only simulate a disease to obtain neuroenhancers. In addition, the international pharmaceuticals market, namely the commerce of online pharmacies and other shops, needs to be monitored and restricted more firmly. However, unrelated examples regarding the trade of goods over the internet, ranging from r-rated movies to endangered species, have shown that controlling this market is extremely difficult.

In essence, a solution to the issue of “drugs in business” can only be reached by way of involvement of the triad of social spheres. While civil society, being the root cause of the issue, is the moral authority on this issue and needs to initiate a more critical attitude towards neurostimulants, all sectors pertain some responsibility for the underlying dynamics causing the rise of neuroenhancing medicines. While a solution incorporating all three actors is not easily implemented, the following section will elaborate on how an effective solution could still be achieved. Specific attention will be given to the role of businesses and academic institutions here, the latter often being at the interface of state, market and civil society.

5. Implementation

In an effort to find out about initiatives that are currently taken to limit the use of neuroenhancers in a non medical context, the logical first step is to consider the field where most of the abuse takes place. In the given case, this is the academic environment. Especially when considering the effects on the work environment that could arise from the spill-over from the academic setting in the coming year, a call for action to prevent stimulant abuse among students seems obvious. In addition, especially US universities should be proactive players since the trend is biggest in this area. However, when screening US educational institutions, it becomes apparent that the universities’ stance toward neurostimulants is practically non-existent. Judging from their online information provided, none of the larger and renowned US universities actively engages in preventing the use of neuroenhancers. At best, a university provides an overview of the drugs used to enhance performance and the side-effects associated with it (e.g. University of Colorado at Boulder, 2009; University of Notre Dame, 2009). Compared to numerous anti-substance abuse programs that almost exclusively focus on alcohol abuse, the action against stimulants is barely an effort to change the status quo. Enlarging our research to corporations, the lack of initiatives becomes even more obvious. While a trend is observable among companies of educating their employees toward a more healthy way of living, neuroenhancers have not moved into the
corporate spotlight. The reasons for this might be that right now, the abuse of stimulants is not nearly as widespread as alcohol abuse and often more prominent in the upper echelons of the firm where the willingness to initiate programs for their own problems is not a very popular idea.

Scrutinizing the issue, the reasons for the lack of initiatives seems to be quite clear. As long as no substantial negative effects of neuroenhancers are proven and popularized, why should a firm discourage its employees to enhance their performance? Until no adverse affects on the company are apparent, the business sphere benefits from the trend. Implementing steps to reduce the abuse of stimulants would mean that in the medium or long run companies as well as universities would need to reduce their expectations of the ability of their employees and students. The result would be a decrease in the firms performance and maybe reputation as the standards delivered will not hold up to those of earlier years. Hence, we can conclude that the need for scientific evidence on the functioning of stimulants among healthy individuals is eminent.

However, the current inhibition of all stakeholders to reduce the consumption of neuroenhancers could be circumvented by another method. A joint effort by a major part of society could make the need for proof obsolete. Strong advocates against the use of such stimulants could lobby and exert influence on governmental institutions. Parallels can be drawn to the issue of drug abuse in sports, commonly termed doping (O’Leary, 2001). Alternatively, a more fundamental change within society could make any operative solutions unnecessary. Early on, today’s performance driven culture was identified as the root cause of the stimulant’s issue. Would civil society reduce its ambitions and expectations of citizens, companies would not need to strive for outlandish performance goals which in turn would reduce the pressure on employees. Through such a fundamental shift, a natural equilibrium could be reestablished.

5.1. A possible corporate story

Assuming a continuation of the current trends in conjunction with existing health adverse side effect of neuroenhancers, corporate action will become inevitable. For this reason, we would already now like to outline how an affected firm should go about the issue. The companies and industries that will be most impacted are those in which employees are the key assets of a firm. For instance, currently, the abuse of stimulants is allegedly most widespread among consultants and bankers who traditionally have to work long hours in a highly competitive environment and rely on their cognitive performance.

A company that wants to build a sustainable corporate story would need to take a multi-faceted approach. We identify three steps that would ensure proper corporate conduct regarding the abuse of neurostimulants: (1) adjust workload of employees, (2) adapt an anti-neuroenhancers corporate policy and (3) fund research.

In order to reduce the employee’s perceived need for stimulants, the expectations toward them need to be adjusted to their capabilities. One possibility would be to reduce the workload in general. A more advanced method would be to assess the capabilities of employees through elaborate testing and feedback. The latter element would require a more tolerant culture that tries to leverage the strengths of its employees while acknowledging their weaknesses. Regular and honest feedback by supervisors as
well as employees themselves would help to establish the natural limitations of each employee. Thus, performance could be optimized within natural constraints.

In addition to a more performance-tolerant corporate culture, the incorporation of an anti-neuroenhancers policy would be the second step. According to the United States Department of Health and Human Services (2009), a good anti-drug policy consists of the following:

- a written policy
- employee education
- supervisor training
- access to assistance
- drug testing

The last building block of a sustainable corporate story would be to support further research on neuroenhancers. Since knowledge about these drugs is limited, a better understanding of their functioning is necessary to properly educate employees and supervisors. Knowing the effects stimulants can have on individuals helps to warn employees and teach supervisors how to detect substance abusers. In addition, while fundamental research first leads to the proper understanding of a substance, further research helps to develop testing methods. As a final comment, it should also be noted that further research could also disprove the assumption that neuroenhancers have bad effects on healthy individuals. This would of course lead to a completely different approach toward these drugs. The consequence would be a heated debate about ethical values and morals about whether neurostimulants should be consumed or not. Thus, a verdict of society would decide about the future of neuroenhancers.

With missing information and the following problems of implementation lined out, it could be shown that the issue is not easily be settled. The following section of evaluation will elaborate on possible future prospects of the measures proposed.

6. Evaluation

Up until now, there are no clear and distinct solutions in place to the issue of neuroenhancers use at work. The main reason for this situation are the actors being involved in the issue, and stakeholders showing very little or no initiative with respect to tackling the problem. The lack of initiatives is not difficult to understand. Representatives of the civil society and the market currently see benefits of using these stimulants outweighing the drawbacks and side effects. The perceived increase in performance and cognitive abilities in humans is viewed as a way of improving societal status and self-confidence, thus leading to a more fulfilling lifestyle. However, both benefits and side effects are only potential or even assumed due to a very small amount of research conducted on the issue. Nevertheless, this would be needed to provide further information on the matter. In the case of governments, the issue is seen as a miniscule one because of a relatively small percentage of consumers of neuroenhancers registered. Furthermore, it is rather difficult to identify employees using these substances, and little effort is put into undertaking these actions.
General drug use at work such as cocaine, heroin and other substances, although seemingly a very similar issue, has many crucial differences with the issue of use of neuroenhancers. The main difference is deeply rooted in the underlying motivation of consumption. While neurostimulants are used to improve performance, other drugs can be consumed at workplaces as a result of a “spill-over effect” that started as use in personal life. This is usually the case of cannabis consumption. With the causes being different, solutions to these issue should differ as well. Use of general drugs at workplaces is declining, mostly due to actions undertaken by firms. Companies are active in solving this issue for a clear reason – the drugs usually have a negative effect on employee performance. Thus companies are pursuing their own interests when tackling the problem. Exactly this circumstance is another important dissimilarity between the use of illicit drugs and neuroenhancers. Hence, although there are many examples of companies introducing measures for diminishing drug use at workplaces, these practices cannot be transferred to the issue of neurostimulants. It was highly unlikely that firms engaged in solving the problem out of their own initiative due to the benefits these stimulants add to employees’ performance. Only if serious drawbacks will be discovered, would companies actively change their attitude.

A line can be drawn, however, between the discussed issue and the one of doping in sports. The two issue share much more similarities, the most significant being: the purpose of use is performance-enhancement and unclear effects on consumers’ health. Due to the longer history of doping in sports, the issue is being tackled rather seriously, unlike the issue discussed in this paper. Doping was proclaimed unethical by most international sports organizations, such as national sports associations and Olympic committees. These organizations are fighting against doping by setting regulations in sports and punishments for consumption of performance-enhancing drugs. Institutions such as the World Anti-Doping Agency (WADA) have been created to control and fight the use of these drugs. Nevertheless, recent researches show that no decline in doping cases is seen (O’Leary, 2001). Rather, the prevailing current trend is discovery of ways to enhance the performance of athletes by methods and substances prone to anti-doping controls. A lot of improvement is noticed in this area, recent trends being the discovery of enhancing performance through blood transfusion and erythropoietin (Robinson, Saugy and Mangin, 2003). Concluding from the case of doping, it is clear that governmental measures alone has not been effective in doping and would most probably not be effective in fighting the issue of neuroenhancer use. If the governments were to control the sale and distribution of these stimulants, most probably black markets would appear where the legal substances would be illegally acquired.

Although a feasible solution has not been implemented to date, evaluation of its progress in future is crucial. Successes and failures have to be tracked and documented in order to enhance efficient and effective appliance of the measures proposed. While evaluation is subject to further research, also bodies from the social, market and state spheres should assess progress of implementation. In doing this, a constructive dialogue between all three institutions would be feasible and most effective in promoting the efficacy of implementation. Only with these evaluative methods in place, gaps on the expectational and regulatory level could be closed and the issue solved.
7. Conclusion

Concluding this issue dossier, the question on how to deal with the issue of neuroenhancers still remains largely unanswered. While the influence and interest of the most important stakeholders could be identified, the early stage of the issue still leaves some unclear but yet vital determinants open. The current, limited knowledge about neurostimulants nevertheless allows for some decisive insights. At first, the abuse of stimulants increases rapidly and originates from its popularity among students, particularly in the USA. A natural consequence of this trend is that with a new generation of graduates neuroenhancers will soon find their way into the work environment where their use so far is not very widespread. However, an analysis of the causes of this issue showed that the reasons for this development are more deep-rooted in society and the human nature than one would think. Societal as well as individual expectations regarding a person’s success in private and work life are ever-increasing. Torn between the will to succeed in both spheres, and conflicted by the unwillingness (or incapacity) to prioritize, today’s students and employees resort to the use of neuroenhancers. While in the past, due to a different work environment, the abuse of tranquilizing drugs (“downers”) like alcohol or marihuana was more popular, stimulating drugs (“uppers”) like cocaine, beta-blockers or ecstasy took the scene in accordance with the societal shift described above. The occurrence of neuroenhancers, however, might change the rules of the game. Most of the other drugs used in a business setting, with the exception of alcohol, were illegal. Neuroenhancers open a grey area that provides legal safety for their users. Originally developed for the treatment of Attention Deficit Hyperactivity Disorder or other diseases, these drugs have found their way into the life of healthy individuals. While the knowledge on side-effects of this user group is very limited, the benefits prevail. Increased focus and eliminated fatigue provide employees with the opportunity to cope with their task overload. However, this does not mean that the use of neuroenhancers is supported by all stakeholders. A moral consensus on the acceptance of these drugs is still to be found. This also highlights the problem of leadership in this issue. While employees as a collective were identified to be the only core stakeholder on the issue, it seems that this stakeholder is still pondering which means that no leader exists on the issue at hand. Hence, it is apparent that the unclear moral stance towards the issue is of decisive importance. Without a moral authority, governmental regulation is not feasible and businesses will have no motivation to change the status quo. In line with this, individuals will be left with no moral guidelines to their behavior which leaves the decision for or against neuroenhancers a strictly private one. Nevertheless, the current use of neurostimulants opposes its origin so that it has to be described as an abuse which again highlights that despite the confusion and complexity of the topic of neuroenhancers, it remains an issue that is still awaiting a verdict from the three stakeholder spheres.

With regard to the underlying questions of this dossier, the role of neuroenhancing drugs within society, state and market is not of major influence yet, but has large potential with regard to society and market, where it also surfaces already as an institutional issue. In fact, depending on the moral verdict that still needs to be taken, neuroenhancers could represent a next step in the man-made evolution of humankind in the effort to enhance human capacities to unreached heights.
8. Limitations further research

One of the most interesting properties of the issue of “neuroenhancing drugs in business” is its relative newness. However, this condition also renders the topic difficult to elaborate upon. Large amounts of research on the issue are currently not available which leaves many questions unanswered and therefore renders the exercise difficult. To our best knowledge, the actual spread of neuroenhancing drugs in the business world has not been assessed so far. Hence, the pace of growth in the phenomenon can at best be estimated. Studies are needed here to clarify the actual scope of the issue.

Due to the lack of specific research on the topic of neuroenhancers in a business environment, the academic world often serves as a proxy – in general research but also in this report. As our analysis has shown, the abuse of these drugs most likely originated among students and now slowly but steadily spills over into the work environment. However, this perceived trend is an assumption which could prove to be wrong. For many issues or phenomena of daily life, the study environment served as an incubator before reaching civil society at large (e.g. social networking), but that this will also hold true for neurostimulants abuse cannot be reliably proven.

Also effectiveness and side-effects of neuroenhancers on healthy individuals remain unclear to date. Without having a clear indication on consequences of consumption, highlighting ethical and moral consequences is difficult. The major goal here is to avoid falling prey of speculative ethics. With a clear overview on consequences on consumption, an outlook on ethics and moral could have been much more focused. The authors of this paper are confident that future research will provide answers to the question of short- and long-term consequences.

Furthermore, due to the restricted time scope of this paper, the research team was limited to be selective in the research of relevant literature. The exercise was further hindered by the interdisciplinarity of the issue incorporating medicine, ethics, philosophy, psychology and business administration. Any further study could dig deeper here and possibly even include researchers from different disciplines in the research group.

Aside from having very little available secondary data about the issue, the information that does exist is rather ambiguous. This is also a result of the newness of the problem, which is characterized by not even having a clear interpretation of the issue. Interpretations that are given by different institutes, magazines and journals can differ in terms of the definition of neuroenhancers. The reason for this is the recent appearance of these chemical stimulants on the market. The knowledge about the drugs is thus limited, even in the sphere of academic society. There are many cases of studies and researches having a bias caused by this lack of knowledge and awareness about neurostimulants. These studies accordingly lead to biased or incorrect findings.

A drawback created by the strict focus of the paper is the very narrow definition of the issue itself. Drugs in business, as mentioned many times in the paper, is an issue well known to the public, firms and the state; and many studies were conducted around it. However, only in very few of these researches neurostimulants were included. Due to the very specific definition of the issue discussed in this paper, such studies could not be used for the purpose of our research.
Another consequence of the newness of the issue and a limitation to this paper is the inexistence of a corporate story in which the problem would be tackled in any manner. Thus there is no real-life solution, or attempt to solve the issue, practiced by a firm. Due to this circumstance the solutions provided in this paper are rather theoretical.

As a consequence of the lack of studies and information regarding the issue, and the ambiguity of the existing information; several conclusions and statements in this paper were made based on a thought-through assumption that side-effects to the consumption of neuroenhancers do exist. Unfortunately no study till today has proven or dismissed this. This is a drawback of the research. The assumption was used in the sections where tensions are discussed and solutions presented. The nature of the side-effects was not stated, rather only their existence. Thus, they can be negative, but also positive for the condition of the human body. This way, the uncertainty, which is the main problem of the issue, is preserved.

The last limitation of the paper is that most of the data collected and used was provided by academic institutions, mostly universities. This is to say that few firms, governmental or research institutions have conducted research on the matter. Thus, consumption of stimulants was tested mostly in an academic environment rather than a workplace. The reasons for such a situation in which can only be assumed, and since that is not the objective of the paper, will not be mentioned. The findings of these studies were considered valid and relative to this paper because students are facing the very similar internal and external pressures in the university atmosphere as employees are at job. These include the desire to prove oneself in the society, the desire to be better, the desire to achieve high results, external competition, and stress due to high workload and time pressures.

In response to the above mentioned limitation to the paper, we believe it is of high importance to the discussed issue to discover the opinion and awareness of firms on the use of neuroenhancers among employees. Their view on the matter has a great influence on possible solutions to the problem.
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