English 1010 Final Exam
Fall 2012

This exam is based on Margaret Talbot's *Brain Gain* and Barbara Sahakian and Sharon Moein-Zamir's *Professor's Little Helper*. Both essays offer a perspective on recent debates about cognitive-enhancing drugs.

Please write a unified essay that explains what you think each writer is saying, comparing and/or contrasting the perspectives on drugs used to enhance cognitive abilities and the effects of these drugs on such concepts as character, competition, fairness. You should focus mainly on the two texts. Be sure your thesis statement includes the main similarity or difference between the two texts. What conclusions do the authors draw about the role and availability of cognitive-enhancing drugs in society today?

Please be specific in your answer, drawing on the texts to support your assertions. You should use relevant quotes from the text to strengthen your arguments. Remember to take a few minutes at the end of the second hour to proofread your work.

You may, if you wish, consider your own experiences and the experiences of the people around you as additional support. However, the main focus of your essay must be the two texts.

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Today there are several drugs on the market that improve memory, concentration, planning and reduce impulsive behavior and risky decision-making, and many more are being developed. Doctors already prescribe these drugs to treat cognitive disabilities and improve quality of life for patients with neuropsychiatric disorders and brain injury. The prescription use of such drugs is being extended to other conditions, including shift-workers. Meanwhile, off-label and non-prescription use by the general public is becoming increasingly commonplace.

Although the appeal of pharmaceutical cognitive enhancers — to help one study longer, work more effectively or better manage everyday stresses — is understandable, potential users, both healthy and diseased, must consider the pros and cons of their choices. To enable this, scientists, doctors and policy-makers should provide easy access to information about the advantages and dangers of using cognitive enhancing drugs and set out clear guidelines for their future use. To trigger broader discussion of these issues we offer the following questions:

Would you boost your own brain power?

Cognitive-enhancing drugs are increasingly being used in non-medical situations such as shift work and by active military personnel. This is where the debate about their use begins in earnest. How should the use of cognitive enhancing drugs be regulated in healthy people? Should their use always be monitored by healthcare professionals?

If offered by a friend or colleague, would you, the reader, take a pill that would help you to better focus, plan or remember? Under what conditions would you feel comfortable taking a pill, and under what conditions would you decline?

The answers to such questions hinge on many factors, including the exact drug being discussed, its short-term and long-term benefits and risks, and the purpose for which it is used. There are instances in which most people would agree that the use of cognitive-enhancing drugs should be prevented or at least regulated and monitored, such as by healthy children or in competitive settings (including entrance exams to university).

There are also situations in which many would agree that the use of drugs to improve concentration or planning may be tolerated, if not encouraged, such as by air-traffic controllers, surgeons and nurses who work long shifts. One can even imagine situations where such enhancing-drug-taking would be recommended, such as for airport-security screeners, or by soldiers in active combat. But there are no straightforward answers and any fruitful debate must address each situation in turn.

How would you react if you knew your colleagues — or your students — were taking cognitive enhancers?

In academia, we know that a number of our scientific colleagues in the United States and the United Kingdom already use modafinil to counteract the effects of jetlag, to enhance productivity or mental energy, or to deal with demanding and important intellectual challenges (see graphic opposite). Modafinil and other drugs are available online, but their nonprescription and long-term use has not been monitored in healthy individuals.

For many, it seems that the immediate and tangible benefits of taking these drugs are more persuasive than concerns about legal status and adverse effects. There are clear trends suggesting that the use of stimulants such as methylphenidate on college campuses is on the rise, and is becoming more commonplace in ever younger students. Universities may have to decide whether to ban drug use altogether, or to tolerate it in some situations (whether to enable all night study sessions or to boost alertness during lectures).

The debate over cognitive-enhancing drugs must also consider the expected magnitude of the benefits and weigh them against the risks and side effects of each drug. Most readers would not consider that having a double shot of espresso or a soft drink containing caffeine would confer an unfair advantage at work. The use
of caffeine to enhance concentration is commonplace, despite having side effects in at least some individuals. Often overlooked in media reports on cognitive enhancers is the fact that many of the effects in healthy individuals are transient and small-to-moderate in size. Just as one would hardly propose that a strong cup of coffee could be the secret of academic achievement or faster career advancement, the use of such drugs does not necessarily entail cheating.

Cognitive enhancers with small or no side effects but with moderate enhancing effects that alleviate forgetfulness or enable one to focus better on the task at hand during a tiring day at work would be unlikely to meet much objection. And does it matter if it is delivered as a pill or a drink? Would you, the reader, welcome a cognitive enhancer delivered in a beverage that is readily obtainable and affordable, and has a moderate yet noticeable effect?

**How should society react?**

When imagining the possible influences of efficient cognitive enhancers on society as a whole, there can be many positive effects. Such drugs may enable individuals to perform better and enjoy more achievements and success. However, cognitive enhancers may have a darker side. Fears have been raised of an overworked 24/7 society pushed to the limits of human endurance, or of direct and indirect coercion into taking such drugs. If other children at school or colleagues at work are taking cognitive-enhancing drugs, will you feel pressure to give them to your children or take them yourself? What if a perfectly safe and reliable cognitive enhancer existed, could society deny it to healthy individuals who may benefit from it?

At present, relatively safe cognitive enhancers with clear effects in healthy individuals are available. Today, in healthy individuals, most cognitive-enhancing drugs yield only moderate effects, and enhance only a subset of cognitive abilities. In the case of some drugs, such as methylphenidate, there are improvements in some domains such as attention, but there may be impairments in others, such as previously learned spatial tasks. Consequently, we believe that current debates must focus on the risks and harms at the level of the individual.

In future, drug treatment may be better tailored to individuals through a better understanding of how genes influence the body’s response to drugs. Because domain-specific effects vary between individuals depending on their genetic make-up, drug efficacy may ultimately be enhanced and side effects reduced. Many believe that with increasingly sophisticated and targeted treatments, truly smart drugs with moderate-to-large effects on cognition, will become feasible in the future. With the advent of such cognitive enhancers, the discussion must turn to the effects on society as a whole.

There have been debates over the potential of such drugs to decrease or increase disparity in society. Even today many people benefit from their financial status to obtain a better education and nutrition that in turn can enhance brain power. Thus, the potential for cognitive enhancers to increase disparity in society would seem unavoidable.

We believe it would be difficult to stop the spread in use of cognitive enhancers given a global market in pharmaceuticals with increasingly easy online access. The drive for self-enhancement of cognition is likely to be as strong if not stronger than in the realms of ‘enhancement’ of beauty and sexual function.

Ultimately, our drug use is a reflection of our society and should never be considered without the broader context of why healthy people choose to use the drugs in the first place. There are other options available for coping with everyday stresses, such as improving the work–life balance or relaxation. Sleep, psychological and behavioral problems can be addressed through alternative methods including psychological treatments, and enhanced cognition can be obtained through education and other means.

Nevertheless, we believe that as we move into the twenty-first century, a key challenge for the pharmaceutical industry will be the development of more effective cognitive-enhancing drugs, so desperately needed by those who have impairments in cognitive and behavioral functioning due to neuropsychiatric disorders or brain injury.