Influence of Speed and Effort on Moral Judgment of Cognitive Enhancement

Prarthana Suresh, FLAME University, India
Abhishek Sahai, FLAME University, India

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Abstract
Previous research suggests that pharmacological cognitive enhancement (PCE) is viewed negatively due to perceived medical uncertainty, coercion, and unfairness and hollowness of the outcome. With the increasing advancement in and use of technology, along with a shift towards machines and gadgets, there seems to exist a need for humans to improve their mental functioning in order to keep up with the developing changes. The unfairness-undeservingness model suggests that the achievements (outcome) gained due to PCEs is considered unfair and therefore morally unacceptable. However, the influence of certain factors such as speed of effect of drug (slow/fast), and amount of effort put in (more/less) on the moral judgment of an outcome, remains unexplored. The purpose of this study is to understand the effect of such factors. We hypothesize that slow/fast (speed of drug) and more/less (effort) will lead to fair/unfair moral judgment of the outcome. This research will help in a fundamental understanding of why people judge outcomes as unfair and how that is modulated by speed of drug (slow/fast) and effort (more/less) required to achieve the desired outcome.

Keywords: Cognitive Enhancement, Moral Judgment, Unfairness, Speed, Effort

Introduction

Cognitive enhancement is a novel concept that has come up in recent years. Cognitive enhancement is widely characterized as interventions aimed at enhancing mental functioning in people beyond what is required to maintain or regain good health (Dresler et al., 2019). Humans are constantly wanting to improve their mental functioning and evolve, in order to keep up with the rising competition posed by technology as well as others around them. This can be explained by even the most basic example at the level of college students who wish to perform the best at examinations, assignments, etc. Research on the moral judgment of cognitive enhancement is essential to understand how people perceive the use of pharmacological cognitive enhancers. This study aims at investigating the effect of various factors that can explain the moral judgment of the use of such cognitive enhancers.

Literature Review

Moral judgment of pharmacological cognitive enhancers (PCE) is influenced by medical uncertainty (Scheske and Schnall, 2012), coercion (Forlini and Racine, 2009), and unfairness and hollowness of the outcome (Faber et. al., 2016). People are concerned about the harm-benefit ratio with the usage of PCEs. They believe that such prescription drugs might have short-term enhancement benefits but will eventually in the long-term produce greater harms for the agent taking such enhancement drugs (Schermer et al., 2009). On the other hand agents who take PCEs might do so because they feel compelled and coerced by the pressures and social situations they find themselves in. Due to the mere availability of PCE's, followed by explicit and implicit pressures, an individual can be forced to use these substances in order to match up to their peers, or participate in competitive environments (for example - workplace, exams at school or college, etc.) (Warren et al., 2009).

Besides the effect of PCEs on agents, the third-party judgments by others is also important. Thus, perceived effort put in by the user and their achievements is related to the judged deservingness or undeservingness of the outcome. One such paper (Faber et al., 2015) compares the judgment between cognitive and motivation enhancement based on the effort put in by the user and the deservingness/undeservingness of their achievements. It was found that the participants generally perceived effort as a huge factor in the deservingness of an achievement, but this was uniform between both groups of participants (cognitive vs motivation enhancement). The more that they viewed effort to be necessary, the more morally wrong they perceived enhancers to be as well as less deserving of achievements. Moreover, it was found that lay persons generally deem users of cognitive enhancement to be slightly more undeserving of their achievements than motivation enhancement. A possible reason they found for this, was that the more advantages that a particular user got, the less deserving their achievement was. Thus, the participants viewed there to be more advantages gained through cognitive enhancement than motivation enhancement.

Apart from PCEs that we have talked about so far, there are also other non-pharmacological cognitive enhancers (NPCE) such as yoga, meditation, etc. Looking at the difference in attitudes towards PCEs and NPCEs would be useful in understanding the reasons that underlie a judgment. This can be seen by a study done by Caviola and Faber (2015). They looked at different PCEs such as methylphenidate, caffeine and modafinil and NPCEs such as physical exercise, computer training and sleep and found that there is no significant difference in the effectiveness between both yet, there tends to be negative attitudes towards PCEs. Most of these concerns arise from the novelty, "unnaturalness" and perceived

unfairness of PCEs. The most important difference between PCEs and NPCEs is that the NPCEs require effort and time for their enhancing effects. The purpose of this study is to understand the effect of these two factors (effort and time). We hypothesize that slow/fast (speed of drug) and more/less (effort) will lead to fair/unfair moral judgment of the outcome. This research will help in a fundamental understanding of why people judge outcomes as unfair and how that is modulated by speed of drug (slow/fast) and effort (more/less) required to achieve the desired outcome.

Methods

Participants

Participant recruitment was conducted online through a call for participants posted on different social media platforms. The sample size of the study included 138 participants totally, split between the 4 conditions (4 groups); speed (fast and slow) and effort (more and less). The speed questionnaire had 36 participants each for fast and slow conditions, while the effort questionnaire had 33 participants each for more and less effort conditions. The age group for the study was 18-60 years of age with an equal number of males and females to see gender differences. There was no other exclusion criteria.

Material

Materials used included an online survey made on google forms. There were 4 surveys sent out to different participants, for each of the conditions - fast speed, slow speed, more effort and less effort. The survey included moral dilemmas in each form, followed by questions (on rating scale). Email ID's of participants were collected to maintain originality and uniqueness of data and to prevent multiple responses. However, once data collection was complete, this information was scrubbed prior to any analysis.

Procedure

All the participants started by giving written consent. This was followed by a moral dilemma based on the condition (speed-fast/slow; effort-more/less) and then answered 3 questions where they rated the morality/immorality of the PCE use, fairness/unfairness of the outcome and deservingness/undeservingness of the outcome on a 7 point rating scale.

Results

In order to test the judged morality, unfairness and undeservingness an independent sample t-test was run to compare the data between each group. One test was run to compare fast speed vs slow speed conditions and another t test was used to compare more effort vs less effort conditions, separately.

For the speed condition, both the independent samples had 36 participants each. The t-test indicated that the participants did not find it more immoral when the speed of the drug was fast (M = 4, SD = 2), compared to when it was slow (M = 4.52, SD = 1.93); $t(70) = -1.138$, $p = 0.259$. The participants did not find it unfair when the speed of the drug was fast (M = 3.8, SD = 1.92) compared to when it was slow (M = 4.38, SD = 1.93); $t(70) = -1.100$, $p = 0.275$. And the participants did not find the achievements as undeserving when the speed of the drug was fast (M = 4.4, SD = 1.81), compared to when it was slow (M = 5, SD = 1.72); $t(70) = -1.33$, $p = 0.187$.

Given the small sample size it is important to look at trends in the averages regardless of the non-significant statistical test results. The average ratings of Group 1 (fast speed) for judged immorality (M = 4), unfairness (M = 3.88) and undeservingness (M = 4.44) was lower than the average ratings of of Group 2 (slow speed) for the judged immorality (M = 4.53), unfairness (M = 4.38) and undeservingness. Thus, indicating that the participants found the actions more immoral, unfair and undeserving when the effects of the drug could be seen much faster than slower (Figure 1).

Figure 1: Showing average moral, fairness and deservingness rating when the effect of drug (PCE) is fast vs slow.

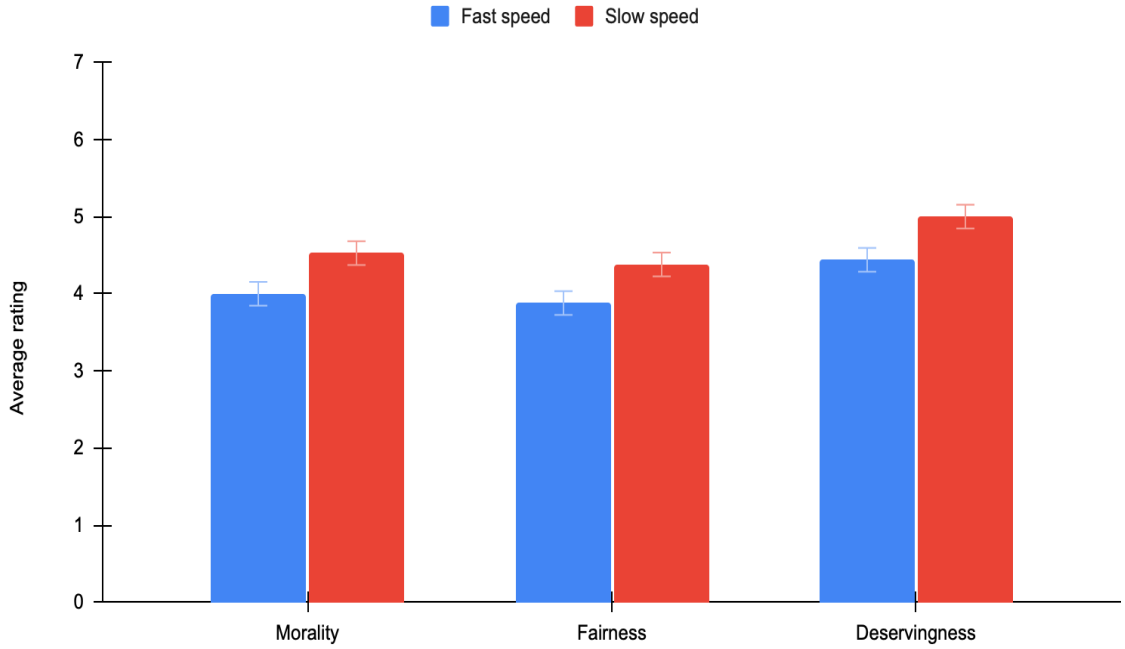

Figure 1: Showing average moral, fairness and deservingness rating when the effect of the drug (PCE) is fast vs slow.

For the effort condition, both the independent samples have around 33 participants each. The results of the t test were not significant. The t-test indicated that the participants did not find it more immoral when the individual put in less effort into their work after the drug was taken; $t(64) = 0.519$, $p = 0.605$). The participants did not find it unfair as well when the individual put in less effort into their work after the drug was taken; $t(64) = 0.684$, $p = 0.496$. And the participants did not find the achievements as undeserving when the individual put in less effort into their work after the drug was taken; $t(64) = 0.675$, $p = 0.502$.

Again given the small sample size it is important to look at trends in the averages regardless of the non-significant statistical test results. The average ratings of Group 1 (more effort) for judged immorality (M = 3.33), unfairness (M = 3.60) and undeservingness (M = 3.87) was higher than the average ratings of Group 4 (less effort) for judged immorality (M = 3.09), unfairness (M = 3.27) and undeservingness (M = 3.54). Thus, indicating that the participants found the actions more immoral, unfair and undeserving when the individual put in less effort in their work after the drug was taken (Figure 2).

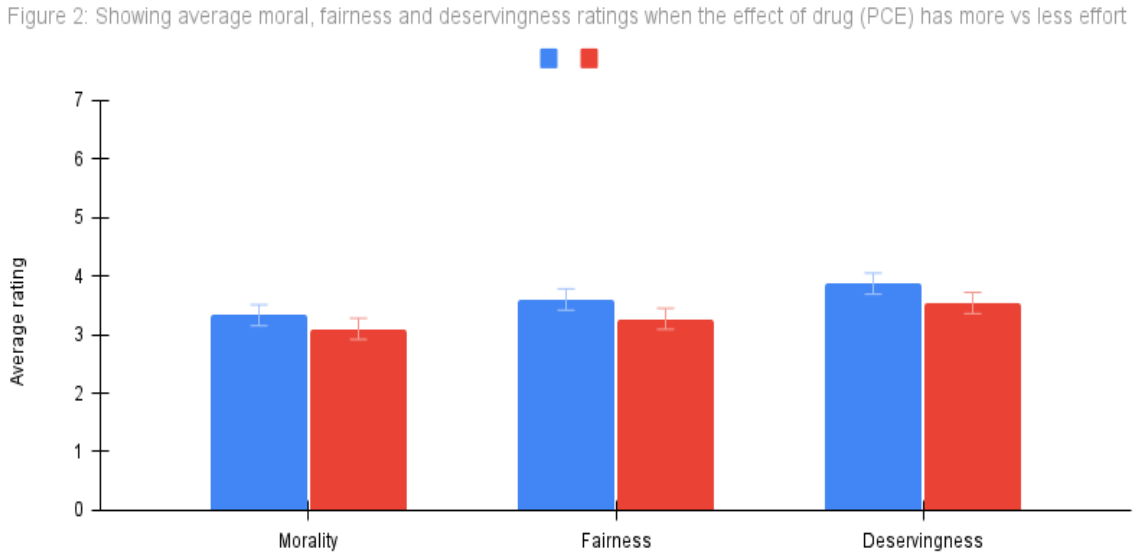

Figure 2: Showing average moral, fairness and deservingness ratings when the effect of the drug (PCE) has more vs less effort.

Conclusion

The trends in the averages are in line with our hypotheses. We found that when the effect of PCE was 'fast' people considered the use of PCE as more immoral, undeserving and unfair. Similarly, when the effort put in by the agent using PCE was 'less' people considered the use of PCE as more immoral, undeserving and unfair. This is in line with previous suggestions that perceived effort plays a huge role in influencing the public's negative attitudes towards Pharmacological Cognitive Enhancement (Faber et. al, 2016; Schelle et. al., 2014).

Apart from the small number of participants another limitation that might have played a role in the non-significant results is the fact that our participant pool was undergraduate University students. There is a high intake of drug usage among teenagers at undergraduate universities, which was the participant pool for this study (Goel et. al, 2015). Hence, asking the opinions/attitudes of individuals towards pharmacological cognitive enhancers, when the sample themselves could be partaking in said drugs or have a general positive attitude towards drugs would affect their judgment of morality, unfairness and undeservingness. We will take care of these two limitations in order to understand third-party judgments of use of PCEs. Thus, we expect the observed trends in averages to become clearer and statistically significant as well.

This study addresses a key question as to how certain factors influence the moral judgment of PCEs and why they are considered immoral and unfair, and the agents who use them as undeserving of the outcome.

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Contact email: abhishek.sahai@flame.edu.in