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Is GPT Use Associated with Addiction? A Brief Research Report

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Abstract: This study explores the relationship between GPT usage and addiction-related traits through a questionnaire survey. The research participants included 22 graduate students (master's and doctoral candidates) who have been using GPT extensively for academic research. The results suggest that GPT usage correlates with certain characteristics of addiction, particularly in terms of *mood modification*, *tolerance*, and *withdrawal symptoms* (according to the biopsychosocial framework of addiction). Many participants considered GPT essential for their research work, with usage frequency increasing over time, indicating a trend towards greater adaptability. Mood modification was primarily influenced by the purpose of use: when GPT served as a conversational partner, it was seen as relaxing, while its use as a tool elicited emotional responses dependent on its performance. Additionally, some participants reported mild anxiety or discomfort when unable to access GPT, especially when practical needs were unmet. A few participants expressed concern that over-reliance on GPT could negatively impact independent thinking and learning abilities, and they also raised concerns about potential academic integrity issues arising from its use. Overall, while GPT use exhibited some addictive traits, its role as a tool differentiates these traits from those associated with traditional substance addictions. Future research should further investigate the potential harms and addictive potential of GPT use across various user groups.

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1. Introduction

The concept of addiction has historically been used to describe dependence on certain substances, such as alcohol (Rosenthal & Faris, 2019). Nowadays, the definition of addiction has gradually expanded from substance dependence to behavioral addiction (Zou et al., 2017), encompassing a range of disciplines, including behavioral neuroscience, epidemiology, genetics, molecular biology, psychology, psychiatry, and sociology (Kranzler & Li, 2008). Although there is no unified definition of addiction, particularly for behavioral addiction, research generally implies that loss of control and negative consequences are central characteristics of addiction (Goodman, 1990; Sussman & Sussman, 2011), which may distinguish it from mere dependence (Horowitz & Taylor, 2023; O'Brien et al., 2006).

In recent years, AI-powered chatbot tools based on Generative Pre-trained Transformers (short for GPT) technology have garnered significant attention and have had a profound impact across various industries. This has sparked discussions about their potential for dependency and problematic use (Yu et al., 2024; Zhang et al., 2024). Some research cases even highlight the possibility of individuals forming abnormal attachments to the virtual roles played by GPT, leading to excessive use and interpersonal relationship issues (Lin & Chien, 2024). Although such cases are extreme, and most users view GPT primarily as a tool rather than a companion, the question remains: does the extensive use of GPT correlate with addiction? This issue remains unresolved. Some scholars argue that AI-induced issues could become a key aspect of future technological addictions (Levounis, 2024).

In response to this question, we designed a questionnaire to preliminarily explore addiction-related features in GPT usage. The questionnaire was based on Griffiths (2005) addiction model and

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included six items related to addiction components (salience, mood modification, tolerance, withdrawal, conflict, and relapse). In addition, drawing on definitions of technology addiction (Almourad et al., 2020; Panova & Carbonell, 2018), we incorporated items on perceived harm and deception. We invited 22 graduate students (9 female; average age 27) who had been using GPT extensively for academic research to complete the questionnaire. These participants, primarily master's and doctoral students, were recruited through our academic network. The goal was to provide preliminary data to support further exploration of this emerging issue.

2. Results and Discussion

2.1. Salience

Seven participants indicated that GPT was crucial to their work, with some describing it as a "real mentor" or "an indispensable tool for research." However, no participant reported frequently thinking about GPT's presence. Some noted, "I don't think about it often, but if I can't use it, I feel a bit uncomfortable." This phenomenon differs from Griffiths (2005) definition of "salience," which refers to an individual's thoughts about a substance or activity when not using it. In this study, participants seemed to only think about GPT when they had a practical need for it.

Panova and Carbonell (2018) noted in their study on mobile phone addiction that tools like smartphones, which are tightly integrated into modern life, often occupy the forefront of people's minds. However, this does not necessarily indicate addiction. Therefore, while some participants highly valued GPT's role, this importance did not necessarily reflect a negative psychological dependency.

2.2. Mood Modification

The impact of GPT on emotions seemed to depend on its intended use. When GPT was used as a conversational partner, it helped participants relax and regulate their mood. Some participants mentioned, "When used as a chat partner, the interaction brings a sense of ease and enjoyment," "There is no pressure when talking to it; it feels very relaxing," and "I can customize character roles for entertainment, which is very fun."

However, more participants viewed GPT as a tool, and their emotional responses depended on its performance. One participant stated, "If it answers my question correctly, I feel happy; otherwise, I may feel frustrated." Another mentioned, "When it helps effectively, I feel relieved and less stressed, but sometimes when it cannot resolve my issues, I feel troubled."

Additionally, some rational users reported that their emotions were not influenced by GPT (e.g., "I don't experience emotional changes because I only see it as a research aid").

In summary, GPT's emotional impact appears to be mediated by its use. When used for entertainment or as a conversational partner, GPT provides an interaction experience similar to human interaction, but without the complexity and pressure of human relationships, possibly leading to some relaxation.

2.3. Tolerance

Twelve participants stated that their use of GPT had deepened over time, particularly in terms of increased frequency and duration. For example, one participant remarked, "The frequency and duration of use have increased unconsciously," and another stated, "The frequency and duration of utilization has increased, especially when I need to deal with large volumes of information and need quick access to knowledge." This increase in usage frequency mirrors phenomena seen in both substance and behavioral addiction.

In addition, some participants are trying to obtaining the newer and more advanced GPT models. One noted, "I keep track of new AI models and try them out," while another commented, "I started exploring higher versions and features to improve work efficiency and precision." This

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behavior mirrors some behaviors smartphone addiction, where users continuously pursue newer models for a better experience (ChÓLiz, 2010).

2.4. Withdrawal

Fourteen participants indicated that they experienced negative emotions when unable to use GPT or when they stopped using it. Typical feedback included, "I feel mildly anxious, but it's not severe," and "I feel uncomfortable." However, most participants emphasized that discomfort only occurred when they could not use GPT during a practical need. For instance, "If I need it and cannot access it, I feel anxious," and "When facing significant problems, not finding suitable guidance makes me worried." These negative emotions stem from unmet practical needs.

Panova and Carbonell (2018) suggested that the loss of important tools like smartphones can lead to stress responses, though this is not necessarily abnormal. A similar situation might apply to AI tools like GPT, where users feel anxious when their needs are unmet, but this does not necessarily signify addiction.

2.5. Conflict

No participants reported internal conflicts or contradictions between using GPT and their personal or professional lives. On the contrary, some participants noted that "Sometimes, GPT facilitates relationships with others. For example, when my friends know I can use GPT, they often ask me to help find information or write summaries for work." This suggests that, in certain contexts, GPT may serve as an auxiliary tool that actually promotes social interaction.

2.6. Relapse

No participants stated that they had experienced issues of relapse. Seven participants mentioned that they had never tried to stop or reduce their usage. This result is not surprising, as GPT is considered an advanced tool, meaning participants had no motivation to stop using it. One participant stated, "I've never tried to stop using it—why would I?"

2.7. Perceived Harm

Nine participants expressed concerns that excessive use of GPT might lead to potential harms, with eight of them worried that reliance on GPT could impair their thinking and learning abilities, making them lazy. For example, one participant remarked, "Over-reliance on GPT may weaken one's ability to independently solve problems and engage in critical thinking, leading to lazy thinking and a reduced motivation for active learning and exploration," and "GPT might offer ideas for you, and you could lose your own thinking process." These concerns align with ongoing debates in the education field about the use of GPT, especially the fear that students' thinking and learning abilities may be negatively impacted by over-reliance. Despite these concerns, the use of GPT in research is becoming increasingly common, even encouraged. Thus, how to assess these potential harms remains unclear.

2.8. Deception

Only four participants admitted that they had concealed their use of GPT in academic work, fearing bias from others. One participant noted, "When my advisor asks, I avoid discussing it," and another said, "In formal settings, like defense or presentations, I hide the fact that I use GPT, mainly due to concerns about academic dishonesty." This phenomenon may be related to the relatively low adoption of AI tools in China, where some still hold biases against AI usage, considering it a form of cheating.

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3. Conclusions

This study, through an informal qualitative survey, preliminarily explored several common factors related to addiction in GPT usage. The findings suggest that GPT usage is associated with components of addiction models, including mood modification, tolerance, and withdrawal phenomena. However, given GPT's role as a tool, its usage does not fully align with the symptoms of traditional substance addiction. Additionally, participants generally expressed concerns that excessive use of GPT could limit their ability to think independently and learn effectively, highlighting the potential negative consequences of its use. Given that the participants in this study were limited to graduate students engaged in research, future studies should expand the participant base to explore additional dimensions of GPT-related addiction across different user groups.

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