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# Enhancing productivity and well-being: Opportunities with Artificial Intelligence

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## ABSTRACT

Artificial intelligence has been increasingly used as a powerful tool to overcome and optimize human limitations. This paper proposes an approach that leverages AI to support individuals who struggle with concentration, focus and engagement in their work and study routines. Participants in the study demonstrated two distinct profiles in how they perceive their difficulties, often expressing strong feelings of frustration and stress – mainly linked to the pressure to be productive and reach personal and professional goals.

The findings reveal a tendency to experience frustration due to the concentration-productivity issue, a growing adoption of technology and wearable devices to support the development of healthy habits and, the use of reward systems as strategy to address these challenges. Based on insights from the experiment and literature review, this study proposes an AI-based approach aimed at not only enhancing users' productivity but also improving their overall well-being in daily life.

**Keywords:** Artificial Intelligence, Wearable Devices, Cognitive Fatigue, Context awareness, Cognitive Ergonomics.

## INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative tool across various fields: education, health, entertainment, among many others. Its adoption now extends far beyond well-known applications like media recommendation, browsing assistants and audio-visual generators.

AI has also become a powerful resource to address and/or optimize human limitations, such as processing large amounts of data, including demographic information, lifestyle patterns and psychological parameters. Recent advancements in AI techniques have demonstrated considerable potential in predicting mental health risks among college students, enabling early intervention and prevention through personalized assessments and recommendations (Zhang et. al, 2024).

In the educational context, AI features have been employed to assist university students in developing healthier habits by leveraging health-tracking apps, AI-enabled scheduling tools – such as smart calendars – and motivational feedback features (Hilmi et al, 2024) . Furthermore, text-to-speech applications have proven effective in reducing mind wandering and improving reading comprehension in students with dyslexia (Cho and Talboys, 2022) while wearable devices combined with AI are increasingly being explored for managing attention-related challenges and improving classroom experiences in populations with ADHD or ASD (Bonifacci, 2022)

As industries increasingly incorporate complex technologies and possibilities, human-centered processes urge for an opportunity to reduce mental burden and prioritize human well-being alongside productivity (Bheema, 2022). This study presents a human-centered approach that leverages AI to support individuals who self-identify as having issues with concentration, focus and productivity in academic or professional contexts. The experiment took place as part of Sidia institute's scope for an initiative to use wearable devices to aid different profiles with productivity, especially those affected by the aforementioned limitations. It is important to emphasize that the objective of the experiment has never been intended to be used as a means to treat attention disorders or other medical- related deficits. The experiment consists of assessing the research participant's context behind the mentioned pain points and seeking opportunities that support them to not only be more productive but also reduce cognitive overload and stress in their routine.

Our main contributions include: 1) A qualitative assessment of how individuals experience and articulate their difficulties with focus and productivity, identifying common patterns and triggers. 2) The proposal of a preliminary framework for AI-supported interventions using wearables, designed to promote well-being and mitigate mental overload in daily routines.

## Materials and Methods

To identify opportunities in developing a use case where artificial intelligence effectively supports user concentration in study or focus contexts, we conducted a qualitative research study to understand people's perceptions, challenges, and behaviours regarding their ability to maintain focus. The research process consisted of three stages: 1) The participant recruitment form 2) The interviews and 3) The result discussions and desk research. For participant recruitment, a screening form was created to identify individuals who report such difficulties, as well as to assess their familiarity with the use of artificial intelligence as support.

The form was distributed to a group of individuals experienced with technology. A total of 46 responses were collected, with 31 identifying as male, 13 as female, and 2 preferring not to disclose their gender. Most were millennials, and 50% reported experiencing difficulties with concentration in their daily activities. Among the situations where they struggle the most to focus, studying and working emerged as the primary contexts. The main factors contributing to a lack of focus include fatigue, noise pollution, and notifications.

A total of eight participants were selected for the interview stage. The team tailored a script aimed at deeper exploration of the issues addressed in the previous form. It served as a guide for the interviews, covering topics such as: the personal profile of the participants, their general perception of their difficulties with

concentration and focus, the context in which these challenges occur – encompassing personal, professional, and academic aspects – as well as the use of digital and analogue tools, like the adoption of wearable devices and AI-based technologies and strategies used to counterbalance the impact in their performance and mental health.

The interview model chosen was a semi-structured interview (Gil, 2008) for collecting the participants' accounts, as it allows for a deeper exploration of responses and offers flexibility to delve into relevant topics that arise during the conversation.

After the interview process was completed, the team gathered the data, cross-checked the findings with the desk research realized and reported the findings as addressed in this paper.

## Research Findings

The research mapped the ways in which people tell their stories about when and how they realized they had focus problems. Participants recounted how, throughout their lives, they tried to deal with these difficulties by seeking tools to mitigate or solve them. The analysis of data collected during interviews allowed us to develop findings in two directions. In this section we present these findings consolidated into two categories of findings, which express general and specific scales of the use experience used to feed the definition phase of our design thinking process. The first set of findings is aimed at general understanding of the use experience and formed by the common points experienced by the interviewees, while, the second is consolidated in the construction of two profiles of users and differences in the ways of these perceive their difficulties related to focus and concentration and history of use of tools.

The interviews presented some points of saturation of important data, which reveal common characteristics of the experiences lived by the interviewees around their continuous search and adoption of tools to increase focus and attention in their work and study activities. These findings founded the elaboration of the general concept of the user experience, which seeks to structure the interaction between user and AI in order to help him in the construction of new habits and routines, unlike interfaces focused on excessive offer of information, reminders and notifications.

The experience of use proposed through this research has as a principle the elaboration of a non-invasive support tool to users, in response to the findings of the survey that point to persistent frustration of respondents with the adoption and abandonment of the tools used. This vision of the product underlies the proposal forms of interaction with artificial intelligence agents, which seeks to overcome this cycle of adoption of tools, increased self-collection and self-blame of the user and, finally, abandonment of the tool through the development of a that accompanies the users in the formation and consolidation of new productive routines.

During the first stage of the research, it was mapped how participants reported their personal routines and how they developed strategies to deal with situations they consider related to their concentration problems.

After all the interviews were realized, the participants' profiles could be observed as a differentiating factor among them, but three elements were identified to be common to all:

- Constant Frustration: For the interviewees, the experience of maintaining focus and attention involves a state of frustration. Multiple parallel cognitive demands with deadlines, reports and decision-making seemed to generate cognitive overload, creating a need for maintenance of this mental load, since higher mental demand leads to increased muscle activity, hence longer completion times (Hilmi et al, 2024)

- Nevertheless, participants affirmed that often the strategies used did not work to achieve the expected goal, leading to the internalization of guilt. They mention that they continuously try to improve their focus, however, the difficulty in having successful attempts ultimately frustrates them even more.

- Secondly, the use of different tools to enhance concentration Exercises. Aware of the high demand coming from both professional and personal settings, the participants demonstrated a variety of strategies to counterbalance their focus and concentration limitations and build healthier task-tackling habits. The interviewees report that both digital and analogue tools can be used to help them exercise and develop habits aimed at increasing focus and concentration. Hopko et. al (2021) confirm the assumption and affirm that use of assistance technology can not only impact individuals by reducing cognitive fatigue but increase performance with lower efforts (S. K. Hopko, 2022).

- Reward system: Many of the participants, mostly part of the controlling profile group, made use of reward systems as a gratification means for accomplishing a task or group of tasks. Rewards such as short naps, allocated time for social media use, consumption of candies, a coffee break, e.g. stood out as the most used. The use of marginal gains can be an important tool in forming habits, as pleasurable or intrinsically motivating behaviours are more likely to become habitual after fewer repetitions rather than those that are not (Judah, 2008). When successful, constructive alternatives can overshadow the complexities of developing new habits  (Maksudul Shadat Akash, 2025).

After analysing the results, two distinct profiles were noticed based on how they combine strategies for addressing focus issues with the emotions that arise from the success or failure of these solutions. In the specific plan, the analysis of the interviews allowed us to identify two user profiles and the mapping of values and pain attributed to their experience with tools to increase focus for work and study activities. Among the interviewees there are two ways to formulate perceptions about problems of focus and concentration and different journeys of users, with sets of opportunities and features to be proposed by future technological solutions.

Part of the participants perceived their issue with focus as an inherent trait, and very commonly demonstrated frustration, stress, and other negative feelings as a result of not being able to maintain focus. To this first profile we labelled them the self-conscious group, as they have shown a particularly emotion-related response to their issues with attention.

The second profile, on the other hand, stands for participants who are moved by goal-achievement and feeling in control of their processes. For their control-oriented behaviour, they have been called the goal-oriented group.

## Participants' Profile 1: The Self-Conscious

These participants perceive their difficulty with focus as an inherently mental and individual characteristic. The lack of focus and difficulty in maintaining concentration are seen as traits of their mental condition, which creates obstacles in performing basic tasks and daily activities. One participant, for example, expressed the belief that they will never achieve certain levels of quality in their academic or professional pursuits due to this condition.

Feelings of constant frustration are prevalent, accompanied by repeated-yet only partially successful-efforts to build routines and use focus tools. Participants also report a strong discomfort with information overload and excessive notifications, which they identify as frequent source of distraction.

Their predominant emotional responses in this context involve frustration for not being able to complete tasks, guilt related to poor time management, and a frequent sense of mental drift.

> *"At work, I'm overwhelmed with a huge workload, and I feel pressured. I'm fully aware that I need to deliver it within a tight deadline, but I just can't seem to focus. So, I push myself harder, and it ends up taking a toll on my mental health."* (Participant A)

To cope, they frequently search for new apps that promise to help maintain focus and halt reduce distractions. Their strategies include mentally summarize content, simulating attentiveness in conversations, distancing themselves from mobile devices, and selectively filtering notifications.

The tools they adopt range from AI-based task organizers and step-by-step suggestion systems to traditional supports such as notebooks to list activities, post- its for urgent reminders, alarms to recall important appointments and calendars to organize personal events. They also use environmental strategies like listening to music, using noise-cancelling headphones to block out environmental noise, changing their desk settings, adapting their work times so to avoid noisier shifts and, with this, practice focus and habit creation by replacing negative settings and rewarding themselves by avoiding frustration.

## Participants' Profile 2: The goal-oriented

This group of participants perceives that the issues related to lack of focus and difficulty in concentration are linked to their need to achieve personal and professional productivity goals. They see these problems as coming from the pressure to meet high expectations in both their personal and work lives. This pressure can cause stress and distractions, making it more difficult to stay focused and concentrate.

Therefore, focus and concentration are subjects of strict control for these participants. They use short, reserved moments in the day as a reward system for achieving the proposed goals.

Maintaining states of focus and concentration depends on a rigorous system of self-control and surveillance. Failing to maintain the organizational method or not achieving the strict goals set fuels a sense of self-pressure and guilt among the participants.

*"I developed a method to meet tighter deadlines than required for work and school. I set deadlines to avoid missing the deadlines for my activities."* (Participant B)

What they feel involves frustration when they miss a deadline or when their control system fails, and satisfaction when they achieve their goals, usually with a sense of mental fatigue after a day of work.

What they do includes setting strict goals, seeking to divide their activities into distinct contexts, such as work and home, listing their daily tasks, keeping a calendar nearby, and signalling to people around them that they are in their focus moment.

What they use includes boards at home and at work, such as Kanban, a digital calendar for personal tasks and a physical calendar for work, productivity techniques, like the Pomodoro method to time work activities, alarms for important reminders, and a Smart Watch to filter information by context. The findings highlight that frustration stems from missed deadlines and system failures, while satisfaction comes from achieving goals, and mental fatigue follows a day of work. Individuals manage this by setting strict goals, dividing
activities into work and home contexts, listing tasks, using calendars, and signalling focus moments. Tools like Kanban boards, digital and physical calendars, the Pomodoro technique, noise-cancelling headphones, alarms, and smart watches aid in organization and focus. These insights emphasize the importance of system reliability, goal alignment, work-life balance, effective tools, environmental control, and contextual awareness for productivity and well-being.

## Opportunities with AI

The more advanced technology, techniques and interfaces are widely adopted by industry, the more there is a need to optimize human performance, as well as manage cognitive load (Hilmi et al, 2024). The experiment conducted in this study indicated that participants who considered themselves to have concentration, focus and/ or productivity issues demonstrated the impact of cognitive fatigue and how it affects both their productivity in work and study environments and their well- being.

Participants exhibiting the self-conscious profile expressed their desire to create custom filter modes to minimize distraction. Additionally, these users were specific in their preference for tools that could summarize and organize topics, as well as provide a daily summary of completed and pending activities. Context aware technology presents an opportunity to significantly enhance user customization by tailoring information and functionalities to their habits. Context aware technology may anticipate user needs and address their daily challenges while processing data real-time (Mouhim, 2025), aiming at more responsive interactions in which users may take more directed actions taking a lighter cognitive toll on users' decision making.

Participants exhibiting the goal-oriented perspective profile expressed a desire for features that would help achieve their daily task goals and/ or feeling productive. Goal-oriented participants tended to use more time-management techniques and tools, like the pomodoro timer technique, applications with calendar, clock and reminder features or even the adoption of AI-based planners. In combination with that, the use of reward systems contributes for gaining automatic and generating the feeling of gratification and accomplishment [8], important factor for this profile.

Considering these profile particularities, it is essential to avoid providing users with generic suggestions. Successful adoption of AI tools, features and recommendations rely strongly on how relevant and individualized they are for the user (Lopez-Barriero, 2024), providing them with real-time insights and enhancing decision-making capabilities. That is, adaptive decision support models, which monitor user preferences and behaviours and tailor suggestions targeted at their individual cognitive profile  (Bheema Shanker Neyigapula, 2023).

Moreover, a less invasive and more friendly approach to AI is crucial because it enhances efficiency, well-being, and trust by respecting users' workflows and reducing distractions.

"Interface design emerged as a critical determinant of decision-making efficiency, with clear visualizations and real-time uncertainty estimation significantly enhancing outcomes." (Bheema, 2023)

It aligns with users' habits and emotional needs, promoting focus and motivation without overwhelming them (Judah, 2018). This approach fosters trust and encourages reliance on AI as a helpful tool, ensuring it becomes an integral part of users' routines without compromising autonomy or comfort.

Finally, the intersection with the field of cognitive ergonomics is essential for providing a human-centered approach to productivity, and it presents large potential developing further with the use of wearable devices (Hilmi et al, 2024).

## Conclusion

The rise of AI as a main factor in contemporary industry and productivity has also raised opportunities to integrate high performance with human well-being (Hilmi, 2024, S. K. Hopko, 2021).

After interviewing and analysing thoroughly 8 individuals who considered themselves to have issues with focus, concentration and productivity at work, the understanding that there are different profiles among them was reached: a self- conscious profile, who believes the limitation are conditions of who they are, and the goal-oriented profile, who are moved by the sensation of goal achievement. With this, emerges the need for decision-making and suggestions that take their particularities into consideration and are able to provide them with real time insights (Zhang et al. 2024)

Participants showed 3 common factors: 1) The experience of frustration with failing in engaging and being as productive as expected, 2) The adoption of tools to support them achieve their goals – including AI tools, and 3) The creation of a reward system, which facilitates their engagement and productivity.

The experiment alongside the available data have demonstrated that AI can offer real-time decision-making support, individually tailored suggestions and, therefore, reducing the feeling of cognitive fatigue. A tool for both task-efficiency and well-being.

Further study in the field of context aware technology, cognitive ergonomics and its integration with AI and wearable devices present strong market valuable human-centered opportunities (Hilmi, 2024,Bheema Shanker Neyigapula, 2021, S. K. Hopko, 2021, S. Mouhim,, 2025).

## Ethical Considerations

The study was realized based on participants' information gathered in two separate moments: a form in digital format, which was used for shortlisting the candidates who considered to have problems with focus and concentration at work. Those respondents were interviewed individually and in person for the study. Regarding the collection and processing of personal data of those who participated in the experiment, the ethical and privacy recommendations that comply with the General Data Protection Regulation (GDPR) were followed. Highlights among these recommendations within SIDIA Institute:

- All those human subjects involved are employees of the Institute.

- There were not collected biometric or other user data, that would allow future identifications. The data collected was deleted after the consolidation of all study results.

- Raise user awareness about data collection, storage, and processing processes.

- Only necessary data will be collected and saved while necessary.

- Provide users with clear and transparent consent forms explaining data collection, usage, and retention policies.

- Provide the user with the possibility of revoking consent to data capture and informing them of the moment in which they are collected.

- Give the user control over which applications will use their data.

- Provide explicit and detailed user agreements explaining what data will be collected and what the research is about.

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