RESEARCH TOPICS

The rise of AI tools in educational settings, consumption of specific content on social media, the relation of distractions or attention span to the settings/surroundings, causes of mental disorders

DOMAINS

Technology Impact on Cognition, Media Consumption and distraction, Mental health and self-help content, Multilingualism and Cultural influence on social interactions, Study Environment, and Video Game usage and mental health

RESEARCH QUESTIONS

1. **How does using AI tools affect your cognitive thinking?**
   Independent variable: whether you use AI tools or not [operational definition- AI tools like ChatGPT for completing essays, assignments or cheating during online exams / Quillbot for paraphrasing]
   Dependent variable: Cognitive thinking [operational definition - lose the ability to think outside the box and generate original ideas, less motivated to learn independently]
2. **More like a hypothesis=> You are more likely to be distracted in a place where you watch Netflix or use social media than in a place where you watch educational or motivating YouTube videos.**
   Independent variable: type of content (Netflix/social media or educational/motivating YouTube videos)
   Dependent variable: Likelihood of being distracted [picking up phone constantly, rewatch the saved reels, liked videos, new reels, short-form content]
3. **How does the consumption of self-help content impact an individual's mental health and well-being?**
   Independent variable: whether an individual consumes self-help content or not
   Dependent variable: Individual's mental health and well-being
   [https://edwardmuldrew.medium.com/the-self-help-paradox-bb1f38703e45]
4. **How does being multilingual or bicultural influence social interactions?**
   Independent variable: whether an individual is multilingual/bicultural or not
   Dependent variable: individual's social interactions [being socially withdrawn due to fear of not being accepted for who they are or more outwardly and friendly towards everyone - open mind and new perspective]
5. **How does listening to Lofi music or watching study with me videos while studying for exams affect your academic performance?**
   Independent variable: mode of study aid i.e., listening to Lofi music or watching study with me videos
   Dependent variable: academic performance [scores in semester-end exams]
6. **More like a hypothesis: You are more likely to suffer from a mental disorder if you play video games at an extreme**
   Independent variable: Extent of video game playing (playing video games at an extreme level or not) [video games like PubG, Freefire, Valorant, PokemonGo]

Dependent variable: Likelihood of suffering from a mental disorder [antisocial personality disorder, ADHD, ASD, Bipolar, Depression]

I have not mentioned the confounding variables and biases yet- because my first goal is to get approved of research questions.

ABOUT THE RESEARCH QUESTION

Research question – How AI tools impact your cognitive thinking and social interactions?

AI tools are softwares that uses artificial intelligence algorithms like ChatGPT utilized by students for completing essays, assignments, sometimes cheating during online exams, Quillbot for paraphrasing to avoid plagiarism and such similar apps and sites wherein appropriate prompts will provide exactly what answer they require.

Cognitive thinking specifically refers to the creative thinking i.e., the ability to craft novel, original ideas which further increases the intrinsic motivation to learn, decision making and memory which in turn also affects the social interactions in interpersonal relationships especially teacher-student bonding. Also, memory i.e., the ability to recall information or learned memory

Social interactions refers to the ways in which individuals engage with one another within a social context, especially when people come into contact with each other, whether in person or through various forms of communication like verbal conversations, non-verbal gestures, written messages and more.

SUMMARY OF THE PREVIOUS PARTS

In the first part of the assignment, after proposing the research question, we calculated the domains, independent and dependent variables and the potential confounding variables or biases. We formed interview questions. Semi-structured interview format seemed the most appropriate one to go with compared to structured interview. Given the complexity of the topic, this approach provided flexibility , encouraging open-ended responses, allowing participants to express their experiences and perspectives freely, thus giving rich qualitative data particularly suited to understand the various ways in which AI tools influence cognitive thinking and social interactions. Various interview questions along with follow up questions were framed which would provide data for the question.

In the second part of the assignment, we conducted 3-4 interviews on unknown subjects, recorded, transcribed and also noted down specific observations and rapport building.

In the pre-submission of the third part of the assignment, we formulated codes or categories based on the responses of the participants and based on that , drew central themes which will be explained further in this report.

INDIVIDUAL REPORT

ANALYSIS

1. Background and Daily Technology Usage

This theme captures information about the interviewee's background, specifically their hometown, and their daily technology usage. Understanding their background helps provide context for their responses, and their daily technology usage is a fundamental aspect of their interaction with AI tools.

2. App Preferences and Social Media Use

This theme focuses on the interviewee's preferences for specific mobile applications and their engagement with social media. It's essential for understanding their digital behavior and how it may relate to AI tool usage.

3. Educational Background and Preferences

This theme reveals the interviewee's educational background, their preference for practical subjects over theoretical ones, and their satisfaction with the education system. It provides insights into how education and learning experiences might impact their interaction with AI tools.

4. Technology in Education

The theme explores the interviewee's perspective on technology in education, including digital learning methods and the use of AI or robots as teachers. This is crucial for understanding their perception of AI's role in the educational landscape.

5. Awareness of AI Tools

This theme revolves around the interviewee's awareness of AI tools, with a specific focus on their usage of ChatGPT and other AI tools. This helps establish their familiarity with AI technology.

6. AI Impact on Learning and Creativity

This theme explores how AI tools affect the interviewee's intrinsic motivation, their propensity for cheating in online exams using AI, and the impact of AI tools on their workload. It delves into their academic and creative interactions with AI technology.

7. AI in Creative and Social Interactions

This theme delves into the interviewee's experiences with AI characters, their thoughts on AI's potential to replace human interactions and cognitive thinking, and the limitations they perceive. It offers insights into their use of AI for creative and social purposes.

DISCUSSION

Person 2 initially appeared slightly uncertain, but his substantial knowledge and experience became evident as he expressed extensive insights. He responded thoughtfully and methodically, maintaining a calm and attentive demeanor throughout the interview. His enthusiasm and curiosity were particularly notable when discussing social interactions and

the impact of AI on his learning and intrinsic motivation. In summary, Person 2 provided clear and focused responses without deviating from the interview questions.

CONCLUSION

In short, this research investigated the impact of AI tools on cognitive thinking and social interactions. It discussed concerns related to AI usage in education, challenges to academic integrity, and evolving human-AI interactions. The study also explored the potential risks of over-reliance on AI and the need for bias mitigation- the importance of ethical AI integration and emphasized the role of AI in supporting human cognitive processes without replacing them.

OVERALL REPORT

ANALYSIS

Overall central themes include:

- ***Academic background and field of study***

Academic background and field of study helps understand the individual's intellectual foundations, interests, and areas of expertise which is important because academic background can emphasize distinct thinking patterns and skills. The field of study is an important determinant of cognitive thinking. For example, individuals studying computer science may exhibit more analytical and logical thinking patterns while those in humanities may have more critical and creative thinking. So the impact of AI tools on cognitive thinking varies depending on one's field of study thus enhancing or complementing existing cognitive skills or introducing new ones. The choice of field study also affects one's social interactions. For example, individuals studying in technology related fields might have more tech-savvy social circles while those in humanities might engage in more philosophical or cultural discussions so AI tools can impact social interactions by influencing the content of discussions and the methods of communication.

Overall, this central theme contributes to my research question by shedding light on the specific educational contexts that impact cognitive thinking and social interactions and also allows me to analyze how AI tools are integrated into these contexts, like altering cognitive processes and social dynamics.

- ***Technology and phone usage / App preference and social media use***

This central theme reflects the influence of technology, particularly smartphones and AI driven apps in modern life. These technological tools have reshaped how people think and interact, making it relevant to my research question. Understanding an individual's preferred apps, such as social media or other AI based apps provides insight into their cognitive engagement as in some apps foster critical thinking and learning while some encourage passive consumption again relating to the cognitive thinking aspect of my research. Social media platforms affects how people perceive themselves and others and different apps facilitate various forms of communications from text based to multimedia sharing.

So, the choice of apps and social media platforms affects cognitive thinking in several ways like using educational apps may enhance problem solving skills while excessive use of

social media may reduce attention span and critical thinking. The app preferences and social media use also dictates the nature of social interactions like some platforms promote meaningful conversations while others encourage superficial connections. The introduction of AI tools can influence these patterns, either enhancing or hindering social interactions. Apps that offer personalized learning experiences can adapt to individual needs and enhance cognitive skills.

Overall, this central theme helps explore the interconnection of technology, cognitive thinking and social interactions, shows how AI tools, often delivered through apps, influence the cognitive processes and social dynamics of individuals in the digital age, highlighting the modern context in which AI tools operate.

- ***Technology and AI usage / Awareness of AI tools***

Understanding individuals' awareness of AI tools is essential as it signifies their recognition of the presence and role of AI in their lives, both cognitively and socially. If individuals are aware of AI's capabilities, they might be more inclined to use AI tools for learning, problem solving or decision making. Conversely, a lack of awareness may limit their cognitive engagement with AI. If individuals are aware of AI's role in facilitating communication or mediating social experiences, it may lead to more informed and possibly different social interactions compared to those who are unaware of these tools. Awareness often leads to acceptance and integration. Individuals who are aware of AI tools may be more likely to integrate them into their daily routines, including cognitive tasks and social interactions. This theme explores how awareness shapes perceptions and attitudes towards AI tools as in those who are aware may have more informed and nuanced views while those who are less aware may have preconceived notions that can impact their cognitive thinking and social interactions. Awareness of AI tools can lead to adaptation and changes in behavior, for example, individuals who are aware of AI's impact on job markets and education may alter their cognitive thinking and social interactions to adapt to these changes. This theme touches on digital literacy and informed decision making.

Overall, this central theme of Technology and AI usage with a focus on awareness of AI tools is critical in my research as it allows to learn how knowledge about AI tools influences how individuals use them, make decisions and engage in social interactions. It also addresses the cognitive and social dimensions of AI awareness and its implications, offering insights into how informed awareness of AI tools can shape cognitive processes and social behavior.

- ***Academic preferences and learning style***

Academic preferences and learning styles reflect how individuals process information, engage with educational content and approach problem solving. It influences how they adapt to AI tools in an educational context. Those with diverse learning styles may adapt differently to AI driven educational materials thus impacting their cognitive thinking. Learning styles play a pivotal role in determining how individuals engage with technology as a learning aid. Some may embrace AI tools to complement their learning styles, while others may resist them. Preferences and learning styles determine how individuals interact with AI powered educational platforms for example students with a preference for visual learning might utilize AI tools differently than those who favor auditory learning. Learning styles and academic preferences also influence how individuals collaborate and engage with peers in educational settings, the way they use AI tools for learning can impact group dynamics and social interactions. AI tools can also be tailored to match individuals' learning styles so this theme

explores personalization and adaptation of AI tools to learning preferences can impact cognitive thinking and knowledge acquisition. For some individuals, AI tools aligned with their learning styles might enhance cognitive thinking by providing personalized learning experiences while for others, it could lead to challenges or discomfort. Also, academic preferences and learning styles indicate how individuals adapt to AI facilitated learning which is closely linked to cognitive processes. It reveals how AI tools may affect problem solving, critical thinking and knowledge retention. So, academic preferences and learning styles can indicate individuals' adaptability to AI driven educational methods, highlighting the potential for cognitive growth or challenges.

Overall, the central theme of academic preferences and learning style is integral as it provides insights into how AI can be leveraged to cater to diverse learning needs and implications for cognitive development and social interactions, understanding of how AI tools in education intersect with individual learning styles.

- ***Digital vs Traditional Learning / Technology in education***

This central theme reflects the ongoing transformation in how education is delivered and accessed. Digital learning which often incorporates AI tools offers an interactive learning environment that challenges students to think critically, solve problems and adapt to new ways of acquiring knowledge. The theme also explores how digital learning environments, driven by AI, foster social interactions considering collaborative online activities, discussion forums and shared learning experiences, demonstrating how technology can be harnessed to connect learners. The theme also delves into how students adapt to technology driven learning, enhancing cognitive flexibility. It also increases student engagement and motivation through gamified elements, interactive content, and personalized challenges, potentially enhancing cognitive development. The theme emphasizes the role of teachers in facilitating meaningful social interactions in digital learning environments, exploring how teachers may utilize technology to create collaborative spaces and engage with students. It explores how these advancements may shape the cognitive thinking and social interactions of future learners into the evolving landscape of education where AI and digital learning tools are integral components.

Overall, the theme Technology in education: digital vs traditional learning signifies the evolving nature of education and the transformative impact of technology on learning and collaboration, the interplay between AI tools, cognitive development and social engagement.

- ***Impact of AI on learning and creativity***

AI driven learning platforms or bots provide personalized learning experiences, adaptive assessments and immediate feedback which further stimulates critical thinking, problem solving and analytical skills. AI can tailor educational content to individual learning styles and needs which impacts cognitive thinking as learners engage with material that matches their cognitive preferences and abilities. AI tools are increasingly used to inspire creativity for example AI generated content such as art, music or even creative writing can encourage individuals to explore and expand their original already established creative thinking. AI provides access to vast datasets and analytical tools that can inspire innovative problem solving approaches, learners can use AI generated insights to think critically and develop new solutions to complex issues. AI tools are also making an impact in creative industries such as content creation, marketing and design because by studying these applications, we can understand how AI affects the cognitive thinking and creative processes of professionals in these fields as mentioned by one of the interviewees. But this theme

highlights the potential challenges related to the use of AI in learning such as risk of overreliance on AI generated content which again influences cognitive thinking and dynamics of social interactions to a great extent. AI is not a replacement for teachers or human interaction but can serve as a valuable learning facilitator – understanding how AI complements traditional teaching methods is important in assessing its impact on cognitive thinking and social interactions. The central theme also delves into the psychological aspects of AI enhanced learning , how learners perceive and adapt to AI driven educational environments and at the same time the use of AI in education raises ethical questions about data privacy, AI's role in decision making and the ethical use of AI generated content which helps us envision the future of education where AI plays an increasingly significant role. Exploring the potential advancements of AI in technology and their impact on cognitive development and creativity .

Overall, the central theme of Impact of AI on learning and creativity recognizes the potential for AI to promote personalized learning, stimulate creative thinking and facilitate collaborative experiences, acknowledges the need to address challenges and ethical considerations, shaping the way AI influences the cognitive and social aspects of education.

- ***AI and human interaction***

Its essential to understand how AI is integrated into human activities and social contexts. AI tools are often used to enhance cognitive abilities for instance, AI driven educational platforms can adapt content to individual learning styles, thus improving cognitive development- ways AI supports and shapes cognitive thinking. AI tools, particularly in social media or chatbots, influence how individuals interact with each other. Understanding these AI mediated social interactions is important to assess their impact on interpersonal relationships, communication and social dynamics. The theme explores the psychological dimensions of human-AI interaction such as trust, user expectations and perceptions of AI's cognitive capabilities. Human-AI interaction at the same time raises ethical questions, like issues of transparency, accountability and privacy thus affecting user trust and decision making. It also serves as a facilitator in social contexts, helping us find information, connect with others or even engage in activities. AI tools such as language translation or chatbots influence how individuals communicate across languages and cultures, how AI aids in communication and how it may affect cognitive thinking in cross-cultural contexts, another scope for research. However, AI tools may enhance or hinder co-creative processes and the social interactions involved in creative work. So, as AI technology advances, its important to consider the future of human-AI interaction.

Overall, the central theme of AI and human interactions recognizes that AI is not a standalone identity but is embedded within human experiences. It delves into the cognitive, psychological and ethical aspects of human-AI interaction and the implications for social dynamics.

DISCUSSION:

In conducting the field study, several observations were made during the interviews with the participants. These observations provided valuable insights into their level of confidence, and enthusiasm towards the research topic.

Person 1 exhibited a high degree of confidence and maintained strong eye contact throughout the interview, displaying comfort and calmness. Their enthusiastic engagement with topics of personal interest and the depth of insights shared was notable. This could have lead to a potential confirmation bias, where the participant may have provided responses they believed were expected or socially desirable.

Person 2, while initially appearing somewhat confused, demonstrated a significant depth of knowledge and experience in the subject matter. Their measured and thoughtful responses indicated a cautious approach to sharing opinions. The participant's curiosity and enthusiasm when discussing social interactions and AI reflect a genuine interest. However, the possibility of social desirability bias, where responses may be influenced by a desire to present oneself positively, was seen

Person 3, in contrast, seemed less confident initially and provided shorter responses. Their cautious and contemplative approach to answering questions might be indicative of recall bias, where the participant may have had difficulty recalling specific details or experiences related to the research topic. While he displayed some interest in certain areas, it's important to acknowledge that a lack of experience may have contributed to the brevity of his response.

CONCLUSION:

The impact of AI tools on cognitive thinking and social interactions is a multifaceted and evolving area of study. AI tools, ranging from chatbots and virtual assistants to advanced machine learning algorithms, have become increasingly integrated into our daily lives. Their influence on cognitive thinking and social interactions is both evident and complex.

AI tools have the potential to enhance cognitive thinking by providing quick access to information, aiding in problem-solving, and automating tasks. They can serve as valuable aids for research, learning, and decision-making. For instance, AI-driven search engines and recommendation systems can streamline the process of accessing relevant information, thus allowing individuals to expand their knowledge more efficiently. Additionally, AI can assist in data analysis, helping individuals recognize patterns and trends, which, in turn, can improve cognitive thinking and decision-making skills.

However, the impact of AI on cognitive thinking is not entirely positive. There is a concern that excessive reliance on AI for tasks that require critical thinking and problem-solving might lead to cognitive complacency. Relying on AI to perform mental tasks may reduce the need for individuals to engage their cognitive abilities fully. It is crucial to balance the use of AI as a tool for cognitive enhancement rather than a replacement for cognitive thinking.

On the front of social interactions, AI tools have transformed the way we engage with one another. They enable communication through AI-powered chatbots, virtual companions, and social media algorithms. AI-driven systems can personalize content and recommendations, facilitating interactions that align with users' preferences and interests. This can enhance the quality of social interactions by connecting individuals with like-minded peers and relevant content.

Nonetheless, AI's impact on social interactions also raises questions. AI can sometimes create "filter bubbles" where individuals are only exposed to information and viewpoints that align with their existing beliefs, potentially reducing the diversity of social interactions. Furthermore, the use of AI in human-like communication, such as chatbots, can blur the lines between human and AI interactions, raising ethical and social concerns about deception and manipulation.

In conclusion, AI tools have a substantial influence on cognitive thinking and social interactions. They can enhance cognitive capabilities and improve social interactions by streamlining access to information and personalizing experiences. However, it is essential to be mindful of the potential drawbacks, such as overreliance on AI and the potential for reinforcing existing biases. As AI continues to advance, understanding its impact on cognitive thinking and social interactions will remain a vital area of study.

Future research should focus on the ethical, practical, and societal aspects of AI usage while exploring innovative ways to harness AI's potential for enhancing cognitive thinking and fostering meaningful social interactions. These studies will contribute to a deeper understanding of AI's role in our lives and guide the responsible development and deployment of AI technologies.

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RESEARCH TOPIC/RESEARCH QUESTION

How does using AI tools affect your cognitive thinking and social interactions?

VARIABLES AND THEIR OPERATIONAL DEFINITIONS

Independent variable [the experimental factor that is being manipulated i.e., the variable whose effect is being studied] : Whether the individual uses AI tools or not

[by the term AI tools , I refer to the softwares that uses artificial intelligence algorithms like ChatGPT utilised by students for completing essays, assignments , sometimes cheating during online exams, Quillbot for paraphrasing to avoid plagiarism and such similar apps and sites wherein appropriate prompts will provide exactly what answer they require]

Dependent variable [the outcome factor i.e., the variable that may change in response to the manipulations of the independent variable] : Cognitive thinking [here the term cognitive thinking specifically refers to the loss of creative thinking i.e., the ability to craft novel, original ideas- reduces the intrinsic motivation to learn, decision making and memory which in turn also affects the social interactions in interpersonal relationships especially teacher-student bonding] [also memory? - loss of ability to recall information or learned memory]

CONFOUNDING VARIABLES

[hidden variables that can influence/distort the relationship between independent and dependent variable]

- **Age** [younger individuals may be more resilient or adaptive to changes brought about by technology while older participants may experience more resistance]
- Gender [gender roles and societal expectations influence how each engage with technology] to control age and gender, we can analyse the data separately for different age and gender groups and then identify any significant variation in the impact of AI tools
- **Prior experience with AI tools** and their attitude towards technology [level of familiarity and comfort they experience with using AI tools]
- Cultural differences [both researcher and interviewee might be influenced by their own cultural backgrounds]
- Accounts for the experience with ChatGPT specifically and not their real experiences with other forms of AI tools which varies
- Moreover with more and more new technologies coming up, the experiences and perceptions may change over time so it might affect the responses gathered at different points of the study

BIASES

- Response bias [provide answers that align with the researcher's expectations and hypotheses or might believe their responses are not accurate leading to biased responses]
- Confirmation bias [researcher might have preconceived notions or beliefs about the impact of AI tools affecting the way they interpret and analyse the data]
- Recall bias [difficulty recalling their experiences with AI tools thus leading to inaccuracies in their responses]

- Social desirability bias [give only those answers that they think are socially acceptable and expected rather than their true experiences or opinions]

[that might affect the research as a whole - both the interviewee and interviewer]

To reduce these, we could include a diverse participant pool, promote anonymity and confidentiality so that participants can freely express their opinions and thoughts, the researcher should be open to unexpected findings and clearly define the stud's objectives

LITERATURE REVIEW

OpenAI's ChatGPT, launched in November, has faced bans in New York's public schools due to concerns about its negative impact on student learning and potential plagiarism risks. In London, an academic found that ChatGPT provided coherent and comprehensive responses to a 2022 exam question, posing a challenge for exam design and internet access control. The Group of Eight leading Australian universities has adjusted assessment approaches to address this emerging technology, focusing on student education, staff training, assessment redesign, and detection strategies. Institutions like the Australian National University are shifting assessments toward practical activities, timed exams, and oral presentations. Despite concerns, experts like Toby Walsh emphasise that banning AI is unrealistic, calling for technical solutions such as digital watermarking but acknowledging an ongoing arms race. While AI has educational potential, maintaining academic integrity remains a challenge, with institutions seeking ways to support responsible use of digital tools rather than outright bans.

The dark forest theory of the web depicts the online environment as increasingly lifelike but lacking genuine human presence. Public spaces on the web are overrun by bots, advertisers, trolls, and algorithm-driven content, making it feel like a desolate forest where true human interaction is scarce, as humans who reveal themselves risk being targeted by automated threats. To engage in authentic, unoptimized interactions, people must hide in invite-only Slack channels, Discord groups, email newsletters, small-scale blogs, or digital gardens, or obscure themselves algorithmically in public spaces. Image generators like Midjourney, DALL-E, and Stable Diffusion have rapidly evolved, blurring the line between human and AI-generated content. This proliferation of optimised content has led to scepticism about the authenticity of online personas.

Alok Gupta and colleagues from the University of Minnesota and the University of Cologne conducted behavioural experiments in 2021, highlighting the dangers of excessive reliance on AI in business and creative decision-making. Their research found that humans struggle to determine when to delegate decisions to AI, often relying on AI recommendations even when they are incorrect. Gupta emphasised the importance of using AI for tasks it can handle efficiently but cautioned against excessive reliance on AI advice, which can reinforce bad decisions over time. Additionally, the study revealed that over-reliance on AI can reduce the diversity of thinking among humans, leading to suboptimal collective performance. This decline in diversity resembles the "wisdom of crowds," where different minds with access to

various data sources come together to solve problems. Gupta noted that humans might mimic AI, resulting in similar decision-making patterns and likening them to "borgs." Furthermore, if AI algorithms consistently produce personalised content for a group, it can create echo chambers within that group. This situation prevents individuals from encountering diverse perspectives, potentially leading to the formation of alternative realities as different groups become increasingly isolated in their collective thinking.

In the face of challenging questions, people tend to rely on computers for answers and consider the internet as a primary external memory source. The ease of looking up information online has become so ingrained in our lives that it can be disconcerting when we can't access immediate answers. Search engines like Google and databases like IMDB have transformed into external memory stores that we can access whenever needed. Our research indicates that once information is accessed, we tend to prioritise remembering where to find it rather than the information itself. When individuals don't anticipate needing information later, their recall rates decrease. This suggests that the constant availability of search engines discourages internal encoding of information. Our memory processes are adapting to new technology, with transactive memory extending to our relationship with computers. Losing an internet connection now feels akin to losing a friend, emphasising our dependency on being connected to access the knowledge we seek.

There is a growing body of research in this area, sparking a debate about the true capabilities of LLMs. Some argue that LLMs' impressive performance on challenging reasoning tasks suggests early stages of general artificial intelligence, while others contend that LLMs lack genuine understanding and often rely on spurious correlations rather than reasoning. Investigating biases in LLMs is crucial as they act as mirrors reflecting human and societal biases. Affective bias, prioritising negative emotions over positive ones, is one such bias that researchers should address to ensure LLMs adopt neutral perspectives on historically stigmatized or misrepresented concepts. Detecting and addressing persistent biases, such as anti-Muslim bias and math related anxiety, is crucial. Moreover, researchers are delving into machine psychology, exploring whether LLMs can manifest negative personalities and traits when responding to statements. ChatGPT, in particular, emphasises positive aspects of teachers, portraying them as nurturing and supportive, but negative perceptions also persist.

Lee et al. (2006) suggest that people subconsciously apply behavioural standards from human relationships to their interactions with machines, implying that individuals perceive computers as social actors and respond to them similarly to human actors. The introduction of ChatGPT has blurred the line between these two independent systems. ChatGPT, a generative AI solution, combines functional and social features to cater to individuals seeking fast answers and personalised interactive support. Despite ongoing debates about whether using ChatGPT for tasks like essay writing constitutes plagiarism, it's undeniable that ChatGPT leverages natural language training to fulfil various domain-specific demands. Students, for instance, can use ChatGPT to request information, summarise articles, revise writing, or create logical outlines via multiple questions. ChatGPT's integration features provide a flexible and efficient search channel compared to traditional methods. Kim et al. (2021)

studied human attitudes toward two AI types, functional and social, with participants showing a more positive attitude toward AI in the "functional" group. The Relationships Motivation Theory highlights autonomy and motivation as crucial for human development (Deci et al., 2014). ChatGPT, as an AI-based system, can contribute to emotional, dignity, and self-actualization needs satisfaction through its 24-hour instant service, fostering social camaraderie and offering privacy. Customised content aids users in finding solutions swiftly, enhancing productivity and dignity. ChatGPT's multifaceted assistance contributes to self-worth, promoting feelings of productivity and purpose.

Social Cognitive Theory, proposed by Bandura (1986), suggests that interactions with others and media shape our beliefs, attitudes, and values, impacting our behaviour and emotions. This theory is relevant because it highlights how people's perceptions of ChatGPT can affect their well-being. Trust in ChatGPT, based on its accuracy and reliability, is crucial and influenced by users' perception of its competence and usefulness. Social Comparison Theory, by Festinger (1957), explains that individuals often compare themselves to assess abilities and opinions. In the context of ChatGPT, users may compare its responses to their beliefs, affecting their perception of its potential to perpetuate stereotypes. Findings indicate that participants didn't see ChatGPT perpetuate harmful stereotypes, aligning with its design to be unbiased. The absence of stereotypes related to better psychological well-being and self-esteem. A positive perception of ChatGPT boosts self-esteem and feelings of control.

As AI usage grows, there's a concern that it could diminish human cognitive capacity and foster dependency, affecting various aspects of life. While AI has undeniably improved convenience and living standards, it has also led to impatience and laziness among humans. Over-reliance on AI can erode professional skills and create stress when physical or mental effort is required. This trend extends to education, where AI is increasingly involved in tasks from admissions to tutoring, raising questions about ethical decision-making by AI systems, particularly regarding biases. As people lean more on AI, they risk losing their ability to think critically and make autonomous choices. To mitigate these concerns, it's essential to minimize AI bias, address the loss of human decision-making capacity, interactions in interpersonal relationships, and reduce dependency through training in educational institutions.

INTERVIEW QUESTIONS

INTERVIEW FORMAT: STRUCTURED [they provide standardised, quantifiable, and replicable data while minimising bias and enabling objective cross-participant comparisons, aligning well with my goal of examining the impact of AI tools on cognitive thinking and social interactions, keeping in mind not to ask follow up questions so as to record different answers to the same questions and staying true to format]

1. What’s your name, age, preferred pronoun, and where do you come from {native place}- why [because knowing about the place of upbringing of the interviewee whether from a rural town area or a high tech city like Mumbai or Bangalore reveals how updated you are with the world affairs , new technology and your ability to adapt to the upcoming era]

2. What's your daily phone usage, more specifically internet usage? Tell me specifically how much time you spend on each app.
3. Are you satisfied with the current education system? In universities, there is a rising trend of no physical books and there are certain schools which has incorporated digital devices and introduced AI and robots to teach the students. What are your thoughts on the same?
4. Can you describe your experience with using AI tools like Quillbot, ChatGPT, MIdjourney, etc. in your daily life whether at work, school or in personal activities?
5. Do you prefer asking Chat Gpt than the teacher for any query because chatgpt doesn't judge you for your questions, gives you 24/7 assistance and personalised feedback ? If so, provide a reason.
6. Have you noticed any changes in your ability to generate novel ideas since using these tools? Has it made you lazy or increased your intrinsic motivation or enthusiasm for learning? Why?
7. Do you think AI tools have improved or hindered teacher-student bonding? Or has it impacted the quality of conversations and discussions you have with others- like for example, have you become more sensitive to criticism or your interactions have become monotonous lacking depth and emotional connection?
8. How do you think the convenience of AI tools such as generation of content quickly, affects your ability to deeply engage with and understand course materials?
9. Have you ever encountered situations where overreliance on AI tools made you feel overwhelmed or anxious about its potential consequences on your morality, academic honesty?
10. Do you think the use of AI tools has increased or decreased your workload and academic pressure? How has it affected your overall stress levels?
11. Do you believe that the use of AI tools for academic tasks has affected your self-esteem or confidence in your own abilities? If so, how?
12. Lastly, what steps do you think educational institutions and policymakers should take to ensure that the integration of AI tools and updated LLMs in education fosters positive cognitive development and psychological well-being for teens and adults?

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