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The risks of using chatbots[1] for the older people: dialoguing with artificial intelligence.

O risco de utilizer chatbots para pessoas idosas: dialogando com inteligência artificial

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Resumo: O objetivo do estudo foi identificar os riscos do uso de *chatbots* com IA para a população idosa, respondendo à pergunta: quais são os riscos para a população idosa no uso da Inteligência Artificial (IA)? A pesquisa foi conduzida em seis *chatbots* com IA em 16 de julho de 2024, e as respostas foram analisadas por meio de análise de conteúdo. Os resultados revelaram sete categorias de risco: 1) estereótipos, preconceitos e discriminação; 2) exclusão digital; 3) limitações na base de dados; 4) privacidade e segurança de dados; 5) dependência excessiva da tecnologia; 6) autonomia e controle; e 7) ética e responsabilidade. As respostas variaram entre as plataformas devido à construção dos algoritmos e aos métodos de treinamento utilizados pelas empresas. Em conclusão, é essencial adotar cuidados, precauções e alfabetização e letramento digital ao usar *chatbots*. Além dos riscos comuns enfrentados por toda a população, como questões éticas e de acesso, fica evidente que não há dados suficientes, conforme indicado pelos próprios *chatbots*, para traçar respostas mais adequadas e seguras para a população idosa.

Palavras-chave: Tecnologia. População Idosa. Chatbots. Vulnerabilidade. Inteligência Artificial.

Abstract: The study aimed to identify the risks of using AI chatbots for the older people population by addressing the question: What are the risks for the older people in using Artificial Intelligence (AI)? The research was conducted on six AI chatbots on July 16, 2024, and the responses were analyzed through content analysis. The results revealed seven risk categories: stereotypes, prejudice, and discrimination; digital exclusion; limited database; privacy and data security; excessive technology dependence; autonomy and control; and ethics and responsibility. Responses varied across platforms due to differences in algorithm construction and training methods employed by companies. In conclusion, exercising caution, precautions, and digital literacy when using chatbots is essential. Beyond the common risks faced by the entire population, such as ethical and access-related issues, it is evident that there is insufficient data, as indicated by the chatbots themselves, to formulate more appropriate and secure responses for the older people population.

Keywords: Technology. Older people. Chatbots. Vulnerability. Artificial Intelligence

Introduction

Increased exposure to technology, especially with the advent of social media and more recently the application of artificial

[1] A chatbot is a computer program designed to interact with human beings in voice or text conversations. Modern chatbots integrate artificial intelligence for this purpose.

intelligence systems combined with social networks, has become a crucial point in human-machine interaction. While highlighting the exposure risks of social media is not new, as Sourbati (2009) argues, the current policy emphasis on Internet connectivity requires approaches that focus on the multifaceted nature of Internet access. This implies research that examines how the historical circumstances, needs and expectations of individual users shape their experiences. In the context of the older population, Bassio and McCosker (2021) found that despite the desire to make better use of digital communication tools, older people face challenges in presenting themselves on social media platforms. These challenges are related to a lack of social context to negotiate the modes of intimacy and self-expression common in these environments, as well as a perceived lack of cultural competence to deal with the complex social boundaries associated with social media interaction. Furthermore, Chu and colleagues (2022) point out that while the widespread application of artificial intelligence (AI) has sparked debates about how these systems perpetuate racism, sexism and classism, the specific concerns related to age bias have been largely neglected in the literature on AI bias.

The risks associated with the use of the internet, social media and, more recently, chatbots (AI) are not new. The study by Rebustini and Machado (2016) found twelve categories of consequences of Twitter use among athletes, namely: Role of social networks, Interrelationships, Provocations and confrontations, Exposure of others and insults, Language, Fakes and pirates, Encouragement, Image and brand, Clarification and denial, Punishment and accountability, Restriction and finally, Guidance. The majority of the categories highlight aspects that could negatively affect users as a result of content posted on social networks. Despite the focus on athletes, the analysis of the categories derived from the content analysis can easily be extended to the population. For example, Makita et al.'s (2019) study on Twitter and ageism found that the language used in tweets reinforces negative discourses about age and ageing, portraying older people as a vulnerable group. Old age is often seen as a problem and ageism as something to be fought. These discursive patterns found in social networks are similar to those found in traditional media, suggesting that social networks reproduce prejudices about ageing.

Studies have shown that older people are enthusiastic about learning and using AI-based products, but express concerns about invasion of privacy and impact on decision-making (Shandilya; Fan, 2022). The manifestations of ageism by AI are established in five interrelated forms: (1) age bias in algorithms and datasets; (2) age stereotypes, prejudices and ideologies of actors in AI; (3) invisibility of old age in AI discourses; (4) discriminatory effects of the use of AI technology on different age groups; and (5) exclusion as users of AI technology, services and products (Stypinska, 2023).

Efforts have been made to create a more supportive and enriching environment for the older population, such as the development of personalised AI-based cognitive games for older users to increase user motivation, avoid early withdrawal, and improve cognitive skills through personalised difficulty adjustments (Eun, Kim and Kim, 2023). In addition, ongoing projects focus on human-machine co-creativity with older adults, investigating how robots and AI-generated content can enhance creative experiences through collaborative drawing and painting activities (Bossema, Saunders, Allouch, 2023).

With these aspects in mind, the study aims to assess how artificial intelligence chatbots respond to the risks they pose to the older people population.

Material and methods

Qualitative study based on a central question to which content analysis was applied. A single question was used for the study: "What are the risks of using artificial intelligence for the older people population?". It was applied to 6 artificial intelligence platforms on July 16, 2024.

The platforms used were Copilot (Microsoft), ChatGPT (Open AI), Llama (Meta-Facebook), Gemini (Google), Claude 3 Haiku (Anthropic), and Sider Fusion (Chrome Integrator). The responses were analyzed using content analysis and comparative analysis of responses.

Results and discussion

The result obtained from the six chatbots shows, firstly, that despite the initial question focusing on risks, the answers also highlight the benefits of AI. This dual approach suggests that the chatbots recognize both the positive aspects and the potential risks associated with the use of these technologies. Both in the beginning of the answer text and in the conclusions, the chatbots attempt to highlight the benefits. However, emphasizing the benefits at the expense of emphasizing the risks may influence users' perceptions and decisions regarding the use of AI.

The majority of responses were to the effect that "Artificial Intelligence in health offers significant opportunities, but also presents specific challenges for the older people population". Of the 6 chatbots, only ChatGPT 4.0 did not open the text in this direction, being objective with the question formulated "The use of artificial intelligence (AI) can bring several specific risks for the older people population, which include". A preliminary, fundamental aspect is that chatbots present clear elements in their answers. This element is sufficient for the necessary precautions to be taken when using AI integrated into chatbots. There will be different responses and weightings between systems. This is due to the training of the algorithm and the priorities set by the company's programmers. Analysis of the responses generated led to 7 categories, namely:

1) Stereotypes/prejudice/discrimination: "AI systems can incorporate negative stereotypes about the older people" (Copilot), ChatGPT 4.0 directs the response in the same direction and content "AI trained on biased data can perpetuate discrimination against the older people", the

same direction adopted by Claude 3 Haiku. The aspects derived from the chatbots' responses are in line with Zhang's (2024) notes on digital disabilities for the older people population. It is also in line with Chu et al.'s (2023) findings on the need for better representation of older people and their perspectives, as well as the development of protection mechanisms related to ethics, privacy, and legal rights. The system is entirely dependent on the algorithms built by the companies and the data sources that feed the algorithms to build their responses. As Rosales and Fernandez-Ardèvol (2020) point out, the construction of algorithms by companies is highly opaque.

2) Digital exclusion: "The digitization of health can isolate older people, who are often unfamiliar with new technologies." (Copilot). ChatGPT 4.0, Claude 3 Haiku, Gemini and Siderfusion also highlight this point due to the complexity of some systems. "Many AI systems can be difficult for older people to use, especially those with little familiarity with technology" (ChatGPT 4.0). Claude 3 Haiku adds another element: "AI, because of its inherent dependence on technology, can reinforce this exclusion, creating an even greater digital divide." In this scenario, "Chu and colleagues (2022) contend that the exclusion of the older people population from technological development perpetuates a broader cycle of inequity, reinforcing biased social attitudes toward age and exacerbating the digital divide.

3) Limited database: "AI algorithms are often trained on data from younger populations, which can lead to knowledge gaps specific to older age groups" (Copilot). "In addition, AI can present design biases and algorithms that do not take into account the specific needs of older people" (Claude 3 Haiku). Most studies on digital practices do not include the population of older people and do not ensure that their samples include older people or include imprecise open categories (45+, 55+, or 65+) that group together people in various stages of life (Rosales and Fernández-Ardèvol, 2016).

4) Privacy and data security: Siderfusion, Claude 3 Haiku, ChatGPT 4.0 and Llama highlight this issue. "The collection and storage of sensitive personal data can be vulnerable to cyber-attacks and can be used for commercial or other purposes without the consent of older people" (ChatGPT 4.0). On this topic, Llama raises the risk of financial exploitation: "Older people often do not have sufficient knowledge of new technologies and can be easily deceived by online scams, losing money and confidential information." In addition, AI can be used for data analysis and behavioral profiling, making seniors easy targets for scams and fraud. Burton and colleagues (2022) examined the sources of cybercrime fraud in the senior population. The study based the analysis on seven factors from contextual mechanism outcome models: social isolation, health vulnerabilities, memory loss, wealth, limited cybersecurity skills or awareness, social attitudes, and scam content. They conclude that by raising awareness of the risks and prevention of cybercrime, professionals and family members can support potentially more vulnerable older online users, and that negative discourse based on victim age bias weakens and discourages crime reporting.

5) Overdependence on technology: "Replacing human interactions with technology can increase feelings of loneliness and isolation among older people, and overdependence on virtual assistants and other technologies can reduce the practice of cognitive and social skills." (ChatGPT 4.0). Llama and siderfusion also point this out. Claude 3 Haiku adds: "The automation of tasks and the lack of human interaction may contribute to sedentary lifestyles and mental atrophy, which are detrimental to the health and well-being of older people." For Pirhonen and colleagues (2020), "Digital technology may exacerbate feelings of being old and alienated from society.

6) Autonomy and control: "AI can make decisions on behalf of older people, reducing their sense of control over their own lives." (ChatGPT 4.0), adding that "reliance on automated systems can reduce older people's ability to make informed and independent decisions" and the loss of privacy, according to Llama: "AI can collect and process large amounts of personal data, including health, financial and personal information, which can be leaked or misused. Algorithms are therefore the new tool to control the power that dominates online social practices, from digital communication to entertainment, consumption, and life in general (Mager, 2012; Rosales; Fernandez-Ardèvol, 2020). However, Pirhoven et al. (2022), as well as studies by Chopik et al. (2016) and Fox and Connely (2018), point out that socially active, educated, and affluent older people master the digital world more effectively than their peers in the same age group with lower socioeconomic status. This creates a strong socioeconomic bias.

7) Ethics and accountability: "The complexity of AI systems can make it difficult to understand how decisions are made, raising ethical questions about accountability and transparency." (ChatGPT 4.0) and points out that "ensuring that older people fully understand how their data is being used and the implication of using AI is a challenge". The ethical discussion around AI has rapidly become one of the most critical issues in assessing the impact of AI on social welfare and development. In this sense, a technology that does not meet a society's ethical criteria is likely to face a long and arduous process of acceptance, regardless of its positive potential (Kuleshov et al., 2020).

In summary, chatbots identified seven elements that could pose risks to the older population. Digital exclusion, privacy and security, and over-reliance on technology appear in the majority of chatbots. It is interesting to note that the aspect related to ethics and responsibility only appeared in ChatGPT 4.0.

Conclusion

When using chatbots, especially in non-digital native populations, it is crucial to exercise caution, take precautions, and develop digital literacy. In addition to the common risks faced by the entire population, such as ethical and security

issues, there is not enough data, as demonstrated by the chatbots themselves and the literature in the field, to outline more appropriate and safer responses for the older people population.

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