Generative AI and Children: A Blessing or a Poison?

As a practicing linguist and a parent, I am deeply concerned about the idea of giving AI chatbots to children, especially to toddlers. To be clear, I am not against the use of AI in general, but whether we can give it to children is a separate issue. This short article outlines why I feel this way. The content is largely based on, and slightly extends upon, my recent book, which defends this position from a linguistic as well as a developmental perspective.

Introduction

One pressing question that has emerged with the rapid proliferation of Generative AI (e.g., Claude, ChatGPT and Gemini) concerns its impact on child development. While AI has become quite ubiquitous in our daily lives, its effects on children remain totally unknown, and I thus believe that we need to exercise pre-caution about the use of AI by children. Indeed, most major AI services restrict use to those over 13 and they in addition require parental consent for minors. In the book mentioned above, I have argued that these restrictions are well-founded; in this short article, I will outline the specific risks for elementary school students and the even more profound developmental dangers for toddlers. My concern can be summarized as follows: at this stage, Generative AI is like a "clinically untested drug," necessitating extreme caution with regard to children's use.

Risks for Elementary Students: Privacy and Cognition

The first concern regarding elementary school students is the risk of personal data leakage. Given that children in this age group often lack sufficient vigilance, they may innocently and inadvertently feed sensitive information—such as their personal addresses, school names, or family details—to AI agents. What's risky about this is that the handling of uploaded data (e.g., selfies) by the current AI systems remains opaque. At the worst case, they can be misused.

Beyond privacy, the educational implications can be severe, or even detrimental. The inappropriate use of AI for homework may threaten to inhibit the development of critical thinking and expressive skills. In addition, over-reliance on AI convenience risks fostering "AI dependence" or "AI addiction," stripping children of the habit of independent thought. Finally, we must grapple with "hallucinations"—the tendency of AI systems to produce false but seemingly plausible information. Recall that there was a case in which even a legal professional has faced sanctions for citing fictitious cases fabricated by AI. It is difficult, even for adults, to discern these fabrications; it is then unrealistic to expect elementary students to verify the truth via secondary sources.

The "Empty" Interlocutor: Risks for Toddlers

A less obvious --- but perhaps more critical --- question arises regarding the use of AI by toddlers: is it safe for them to simply "chat" with AI? To address this question, I believe that we need to consider the fundamental difference between the outputs spit out by AI and human language. Generative AI "acquires" language patterns via statistical processing of massive amounts of written, text data. In contrast, human children acquire language through vocal

interaction with caregivers—a process deeply rooted in affection, empathy, and mutual understanding. There is thus a substantial and non-negligible difference between the two systems.

Moreover, AI lacks both emotion and a physical body. If a child says "I'm home," and an AI might respond, "How was school today?" However, the AI is merely outputting a statistically probable response. It does not—and cannot—possess the feeling of relief or joy that a human parent feels upon a child's return. Is it safe to expose children to such a "emotion-less" device?

The Necessity of Embodiment and Multisensory Integration

A large body of work in developmental psychology has long established the importance of physical sensation. Harlow's classic experiments, for example, demonstrated that infant monkeys preferred a cloth-covered "soft mother" over a wire mother that provided milk, underscoring that tactile security is an indispensable factor for attachment formation. AI cannot provide this embodied affection.

Furthermore, recent work on cognitive science has demonstrated that human cognitive development relies on the integration of all five senses (sometimes referred to as "cross-modal perception). On the other hand, AI interaction is typically limited to auditory and visual information, lacking tactile, olfactory, and gustatory stimuli. This limitation is critical when we consider phenomena like the McGurk effect, which demonstrates that speech perception is a multisensory event where visual and auditory cues are integrated (e.g., seeing "ga" and hearing "ba" results in perceiving "da"). Just as speech perception relies on this multimodal integration, healthy cognitive development requires a composite of sensory inputs --- and current versions of AI services cannot provide this.

Joint Attention and Theory of Mind

In addition, reliance on AI risks diminishing opportunities for "joint attention"—the shared experience where a child and caregiver focus on the same object (e.g., a flower) and discuss it. This shared experience is known to be crucial for the development of "Theory of Mind," the ability to infer the mental states of others. Without these interactions, the capacity to take another's perspective may fail to mature appropriately.

What other linguists think

To address this general question regarding whether it is safe to give AI chatbot to kids, my colleagues and I conducted a survey with 33 Japanese linguists, which revealed that not a single researcher actively supported the use of chat AI for children, with over half expressing opposition. If you're interested in the details, here's a link to the paper (in Japanese). The abovementioned book also discusses various opinions that were obtained in the survey.

Conclusion

While future technological advances may resolve some of these issues raised here, we must fundamentally recognize that current AI lacks the embodied, multisensory, and affective grounding necessary for human development. Until its safety is scientifically shown, I advocate a

conservative approach: Generative AI should be viewed as an untested pharmaceutical product, and is thus too risky for the delicate developmental stages of childhood.

Thanks for reading! If you are a publisher, educator, or researcher who shares concerns about the impact of AI on child development—or if you are simply curious to learn more—please feel free to get in touch. I believe that the issues raised here are not specific to Japan and they are global in nature. I hope this note can serve as a starting point for further dialogue and action.

Disclosure

I have used Generative AI as an editing tool for the English language in this article. However, I did not use AI to automatically generate a summary from the book manuscript. The content presented here is my own work, and I am fully responsible for it.