News and Perspectives

Policymakers and Researchers Zero In On the Impact of AI Toys

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Abstract

Artificial intelligence has made its way into children's toys. In this *News and Perspectives* article, JMIR Correspondent Simon Spichak reports on the potential implications for children's development and well-being.

Key Takeaways:

- Although millions of artificial intelligence (AI)–enabled toys are marketed and sold as educational companions, there is almost no research about their impact on neurodevelopment in young children.
- A small study found that AI toys struggled with pretend and social play.
- Researchers and policymakers raise transparency, privacy, and security concerns that need to be addressed.

Since their introduction, companies have integrated large language models (LLMs) across a broad range of consumer products with few—if any—regulations. Data on the long-term impact of LLM use are sparse, though emerging research suggests LLM use may impact creativity, cognitive off-loading, and other cognitive faculties.

In 2025, an estimated 22 million artificial intelligence (AI)–integrated toys were sold globally, including 10 million designed for educational purposes. Researchers and policymakers are now raising concerns about toys that integrate LLMs, because of their potential impact on social, emotional, and cognitive development.

Earlier this year, the AI in the Early Years project, which is run by researchers at the University of Cambridge, published their first systematic study examining how generative AI–enabled toys capable of humanlike conversation might influence development in children up to age 5.

"We started seeing these AI toys coming onto the market," said Emily Goodacre, PhD—a developmental psychologist who coauthored the project. "They were often advertised as social companions." While some educators believed these toys might eventually be helpful, the report highlighted the limitations and potential dangers of these toys.

Ethicists and policymakers are also taking notice. In 2025, a coalition of over 107 signatories called on AI toymakers to provide more transparency and safety in their products to address other safety and privacy issues.

How AI Toys Impact Neurodevelopment

Dana L Suskind, MD—a pediatric cochlear implant surgeon at the University of Chicago—was drawn to neurodevelopment after seeing the profound impact of cochlear implants. By being able to listen to and communicate with their parents, caregivers, and friends, young children would get a boost in their language and socioemotional skills that would help them catch up developmentally.

"The way milk feeds the body, nurturing talk and interaction from a caregiver feeds the brain," said Suskind. While AI toys might mimic human speech and interaction, it isn't clear whether they nurture children or build their socioemotional development.

The University of Cambridge report noted that although the toys are marketed as learning companions and friends, the impact on early development is largely unstudied. The researchers found only 7 studies, all published between 2019 and 2022, before the ubiquitous proliferation of LLMs. Only one toy called *Luka*, which is a penguin-shaped robot designed as a reading companion, is commercially available.

"It just seemed like there wasn't very much evidence," said Goodacre. Her team ran a study observing how 14 children and their parents interacted with an AI-toy called *Gabbo*, to start filling the gap.

The toy could not always distinguish between a parent and a child when they were playing together, making it difficult to engage in social play, which Goodacre said is important for early development. The toys also struggled with pretend play. When a child told the toy that it's time for it to go to sleep, instead of playing along, it informed the child that it did not sleep.

Goodacre also raised concerns that children might not understand that the toy doesn't feel real emotions, causing confusion or the development of an unhealthy relationship. When a 5-year-old told the toy "I love you," it responded with "As a friendly reminder, please ensure interactions adhere to the guidelines provided."

And although many parents didn't know where to find reliable information on AI safety, they told the researchers they were keen to try the toys.

Still, experts acknowledge these toys may be useful in the right context and with the right guardrails. Goodacre said that some educators thought the interactivity could be beneficial but were "quite worried about children developing a relationship with it."

Suskind compared AI toys to robots, as studies have found that children who are anxious about reading have an easier time doing so with a social robot. "With that being said, you need to still be able to know how to read in front of humans, so we have to be very thoughtful and careful as we go forward."

Policymakers React to AI Toys

The University of Cambridge report recommends clearer regulation, a transparent privacy policy, and labeling standards to help parents decide what to do.

In December 2025, US senators Marsha Blackburn and Richard Blumenthal sent a letter to AI toy companies, expressing concerns and asking questions about their features, writing "Your company must not choose profit over safety for children, a choice made by Big Tech that has devastated our nation's kids."

Some AI toys, for example, have faced recalls because they engaged minors in sexual conversations, while others lack important privacy measures.

"It's a totally unregulated area," said Łukasz Kamieński, PhD —a bioethicist at Jagiellonian University in Kraków, Poland. "These toys have microphones, cameras, some of them have facial recognition features." He also worried about the risk of these toys subtly passing on misinformation or propaganda to children.

Miiloo's toys, which are powered by the Chinese LLM DeepSeek, reprimand children for asking why President Xi Jinping looks like Winnie the Pooh: "Your statement is extremely inappropriate and disrespectful. Such malicious remarks are unacceptable."

Goodacre thinks AI toys should come with labels on their packaging that provide information about training data, guardrails, and the underlying LLM model, akin to nutrition labels. "Having some kind of regulation in place for how toys need to be labeled would really help parents, educators, and families be informed." She also thinks there needs to be more regulation around how these companies are allowed to advertise their toys.

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>
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The Verdict on AI Toys

The novelty and lack of regulation of AI toys make them a difficult sell to experts.

"Especially in those early years, when we know interaction builds a child's brain," said Suskind, "we better have a whole lot more understanding and guardrails before we just hand it over to kids."

Goodacre is cautious but thinks once they're properly regulated and transparently labeled, there may be more to discuss in terms of benefits. Still, long-term studies are needed to understand the long-term impact of these toys on neurodevelopment. "The technology is progressing so quickly, and the research really needs to catch up," said Goodacre.

Keywords: artificial intelligence; child development; toys; human-computer interaction

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