

Advancing pediatric care through OpenAI's Sora

Harishan Tharmaseelan¹  and Matthew Shammastoma^{1,2} 

Abstract

For children, therapeutic play—structured activities tailored to age, cognitive abilities, and health—alleviates health-related anxiety and improves outcomes. This study introduces Sora, a text-to-video artificial intelligence (AI) software, as a novel tool to enhance therapeutic play. Using Sora, we generated videos tailored to children's interests. The personalized videos were designed to foster emotional well-being and provide education for pediatric patients. We demonstrate Sora's versatility, as its videos can be tweaked to match a child's interests, preferences, and medical conditions. Videos for emotional support depict a teddy bear in playful outfits comfortably using an inhaler, a nebulizer, or an EpiPen. We also demonstrate Sora's educational potential with a video that uses a seesaw to illustrate diabetes management. Overall, this study represents the first application of text-to-video AI software in pediatrics. Through personalized child-like videos, Sora can foster a sense of comfort and engagement for children in hospital.

Keywords

Artificial intelligence, pediatrics, education, OpenAI, Sora

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Introduction

Holistic care

In the late 19th century, Florence Nightingale, the founder of modern nursing, championed the revolutionary concept of holistic care. Holistic care focuses on the patient as a whole and their connection with others and the environment.¹ Nightingale believed in the healing power of the environment, introducing elements such as flowers, colors, pets, and exercise into patient care to promote recovery.² These interventions were predicated on the belief that one's environment influences one's health. For children, play is a central means of engaging with their environment, highlighting its importance in their healing process. Recognizing this, hospital play has evolved into a therapeutic practice.

Therapeutic play

Therapeutic play is defined as a set of play activities designed based on the age, cognitive functions, and health condition of the child.³ Emotionally, play helps alleviate anxiety,^{4,5} facilitates self-expression⁶ and helps maintain

self-esteem.⁷ Medically, play reduces a child's pain during procedures^{8,9} and fosters a willingness for children to return to the hospital for ongoing treatment.¹⁰ Therapeutic play then is not only a recreational activity, but a means by which children heal and cope with their illnesses.

The hospital environment has transformed substantially since Florence Nightingale's time. Today, electronic medical records have replaced physical charts while advanced diagnostic tools such as magnetic resonance imaging machines and computed tomography scanners have revolutionized disease management. As technology continues to permeate healthcare, it is imperative to explore how these technologies can support holistic care. In this paper, we

¹Li Ka Shing Knowledge Institute, St Michael's Hospital, Toronto, ON, Canada

²Temerty Faculty of Medicine, University of Toronto, Toronto, ON, Canada

Corresponding author:

Matthew Shammastoma, Temerty Faculty of Medicine, University of Toronto, 1 King's College Circle, Toronto, ON M5S 1A8, Canada.
Email: matthew.shammastoma@mail.utoronto.ca



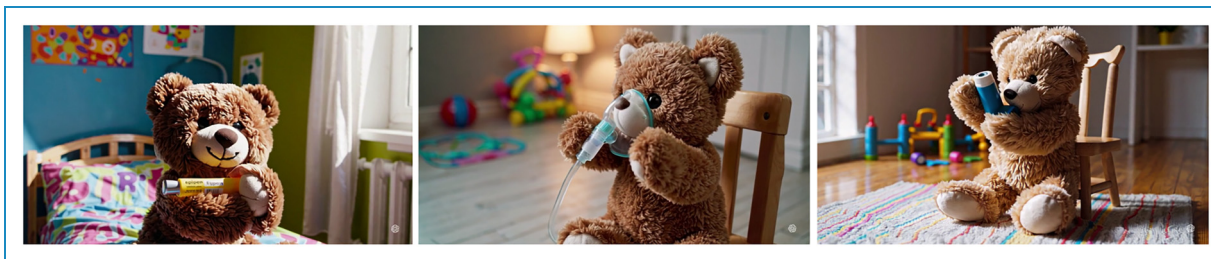


Figure 1. Teddy bears interacting with various medical devices. For the full Sora-generated videos, please refer to the Supplemental Material section.

examine Sora, a text-to-video artificial intelligence (AI) software, as a tool for therapeutic play.

Sora and therapeutic play

Sora is an AI model that converts text prompts to realistic videos.¹¹ As it was made publicly available in December 2024, Sora's medical applications are yet to be tested. Its ability to generate personalized videos makes it uniquely suited for therapeutic play. For example, creative Sora videos can be integrated into hospital play sessions with physical toys or digital games. The videos may guide hands-on activities, such as using a toy stethoscope or role-playing a superhero. Moreover, the software can be educational by visualizing metaphors or stories that explain medical concepts in an engaging way for children.

Herein, we present Sora as a novel tool to enhance therapeutic play. Using Sora, we create personalized videos intended to emotionally support and educate children, building upon traditional play-based interventions.

Personalized Sora videos

Video development

The videos were set to a 16:9 aspect ratio with a resolution of 480p and a duration of 5 or 10 seconds. These settings were chosen to balance visual clarity and computational efficiency.

For each video, we began with an initial prompt and utilized the remix function to refine the output. The remix function allows users to modify elements of an existing video, with intensity levels ranging from 1 (minimal changes) to 8 (significant changes). We used higher intensities for substantial changes, such as switching backgrounds, and lower intensities for minor tweaks such as adjusting colors. The remix function was used 10–25 times per video. If the result was not desirable by the 25th iteration, we prompted Sora for a new base video.

Videos for emotional support

We first developed videos intended for emotional support. They promote healthy behaviors using a teddy bear. The first set of videos depicts a teddy bear calmly interacting with different medical devices including a EpiPen, nebulizer, and an asthma inhaler (Figure 1). The second set shows teddy bears dressed in playful children's costumes, including a princess and a superhero (Figure 2).

AI-generated videos like these can play an important role in alleviating a child's health-related anxiety through distraction and imaginative play. Play as a distraction is commonly used for needle-related or distressing procedures.¹² Sora videos can be another self-directed distraction tool in addition to handheld digital games, toys, or virtual reality games.¹²

AI-generated videos can also improve a child's mood by encouraging imaginative play. Imagination allows children to step out of an uncertain reality and reframe their illness positively.¹³ Consider a child with asthma who imagines himself as an explorer and uses a "magic puffer" to climb a steep mountain. In doing so, the child transforms his inhaler into a symbol of strength. Sora can bring such symbols, such as an explorer, to life by placing them in real videos. These videos then not only reinforce a child's imagination but may also reaffirm their positive adaptations to illness. Therefore, Sora has the potential to support emotional coping and resilience in pediatric care.

Videos for pediatric education

Expanding on its role in emotional coping, Sora can also be used for educational purposes. Sora videos can portray child-like medical metaphors, especially those that are difficult to visualize in person. As an example, we created a video that explains diabetes to children (Figure 3). The video depicts a seesaw balanced by sugar cubes and insulin on either end, illustrating the principles of a diabetes diet and treatment.

Sora can be a customizable visual aid for patient learning. This builds upon existing educational play interventions that lack customization options for clinicians, such as digital games, puppets, and quizzes provided by robots.¹²



Figure 2. Teddy bears in various costumes using a nebulizer. For the full Sora-generated videos, please refer to the Supplemental Material section.

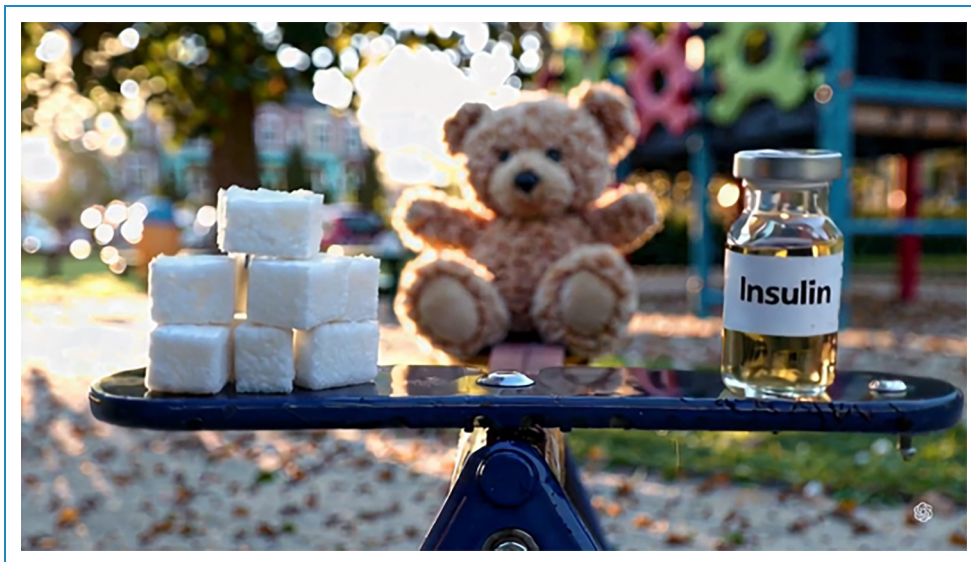


Figure 3. A metaphor for diabetes management using a seesaw balancing sugar and insulin. For the full Sora-generated videos, please refer to the Supplemental Material section.

Sora offers clinicians the opportunity to tailor their metaphors, matching children's learning abilities. Metaphors help children think about abstract medical concepts by relating them to more familiar ideas.¹⁴ Ultimately, improvements in pediatric education can result in improved medication adherence,¹⁵ greater self-efficacy,¹⁶ and reduced caregiver burden.¹⁷ Sora can improve pediatric education by delivering engaging visual metaphors, making abstract medical concepts more accessible for children.

Barriers and future directions

Technical barriers

While generating videos using Sora, we encountered several technical barriers. Firstly, Sora struggles to achieve realistic physical dynamics.¹¹ In our experience, creating videos with human-like characters or hands was difficult since their movements tend to be more complex. We chose a teddy bear as our central figure for its simplicity in animation, and universal appeal.

Secondly, Sora struggled with accurately portraying medical devices. Even after multiple iterations to optimize inhaler and EpiPen use, the model failed to generate a video showing either device being discharged. Likewise, even after 25 refinement iterations for the “teddy bear with nebulizer” video, the tubing spontaneously narrows in certain frames (Supplementary Materials). However, these minor inaccuracies do not detract from the videos’ primary goal: engaging pediatric patients and improving their understanding of care procedures. For young audiences, minor device inaccuracies may be acceptable as long as the video remains relatable and clearly conveys the core message (e.g. “use your inhaler when you feel sick”). We also anticipate the software’s physical dynamics, and efficiency to improve in future versions.

Risks

Sora, like most AI medical applications, comes with challenges including content safety, bias, and patient privacy.¹⁸

Content safety involves creating context- and age-appropriate videos. At present, Sora’s usage policies restrict harmful content.¹⁹ However, certain themes which are appropriate for 8-year-olds may not be suitable for 4-year-olds (e.g. superheroes fighting germs vs. teddy bears washing hands). Moreover, patients with a medical phobia may find videos involving medical procedures distressing. In clinical practice, it would be prudent for a third-party to vet the appropriateness of videos for children.

Moreover, Sora may be biased toward representing common illnesses and interests, potentially overlooking rarer conditions such as cystic fibrosis. Lastly, patient privacy is an important consideration. It should be emphasized that personal identifiers, including a patient’s name or age, should be avoided even if they augment the video’s quality. With robust guardrails, expanded training data, and clear privacy guidelines, AI-generated videos can be an age-appropriate, inclusive, and safe tool for pediatric patients.

Future directions

The present study demonstrates that Sora can generate realistic and personalized pediatric videos; however, we do not evaluate Sora’s efficacy. Moving forward, clinical trials can be developed to assess Sora’s efficacy for therapeutic play. A clinical trial can assess patient anxiety before an invasive procedure using personalized videos or educational outcomes through metaphors generated with Sora.

Conclusion

This study represents the first exploration of generative AI text-to-video software for medical applications. We demonstrated that Sora can be prompted to develop personalized

videos that support pediatric emotional well-being and education. Personalized videos can foster a child’s imagination, promoting their ability to positively reframe medical illness. Personalized videos can also portray metaphors for patient education. In both cases, Sora offers an accessible and engaging form of play therapy with the potential to enhance both the emotional resilience and medical understanding of pediatric patients.

ORCID iDs

Matthew Shammash-Toma  <https://orcid.org/0000-0002-9338-6541>

Harishan Tharmaseelan  <https://orcid.org/0009-0009-5534-6758>

Ethical considerations

The article does not contain any studies with human or animal participants.

Author contributions

HT: writing—original draft, writing—review and editing, conceptualization, investigation, methodology, and visualization. MS: writing—original draft, writing—review and editing, conceptualization, and investigation.

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Supplemental material

Supplemental material for this article is available online.

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