

Reports

Harnessing Large Language Models to Promote Attainment of ACGME Competencies in Child Psychiatry

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Artificial intelligence and large language models (LLMs) such as ChatGPT are spurring both enthusiasm and trepidation within the medical education community. Here, we explore the application of LLMs in medical education in child and adolescent psychiatry in pursuit of the Accreditation Council for Graduate Medical Education (ACGME) Program Requirements for Graduate Medical Education. In particular, we demonstrate how one might leverage LLMs to achieve ACGME competencies in clinical skills in the major treatment modalities. We use the voice feature of the ChatGPT app to simulate a patient interaction during which the provider must engage in crisis intervention. We discuss the realistic nature of the scenario produced by ChatGPT, the ability of ChatGPT to serve as a clinical coach, and the opportunities afforded by prompt engineering. Interacting with LLMs throughout medical education in child psychiatry both promotes innovation and fosters an understanding of their limitations in clinical care. Fluency in the language of these models is of the utmost importance as their influence in health care continues to expand.

INTRODUCTION

Large language models (LLMs) show great potential to shape health care and medical education at large. Activities through which LLMs can augment clinical practice include serving as an ambient scribe to assist with documentation of clinical encounters, generating differential diagnoses, and formulating preliminary treatment plans. Research is just beginning to explore the numerous applications of LLMs in the field of psychiatry. A systematic review suggests that LLMs have the potential to transform the field through activities such as detecting mental health conditions via parsing clinical notes and social media posts, formulating psychodynamic profiles, and creating therapeutic materials.¹ Within child and adolescent psychiatry, LLMs might be applied to create interactive digital interventions² for mental health awareness among children, generate educational materials¹ for teachers and community leaders, and produce practice guidelines for pediatricians and primary care providers.

Ongoing research suggests that there are numerous opportunities for LLMs in all phases of medical education. ChatGPT passes Steps 1, 2, and 3 with greater than 85% accuracy,^{3,4} suggesting a high level of medical content ex-

pected of early-career trainees represented within its knowledge. We have previously proposed use cases for LLMs within the preclinical curriculum to reinforce the learning of core Association of American Medical Colleges (AAMC) Entrustable Professional Activities, including formulating differential diagnoses, providing interactive clinical cases, and facilitating multiple-choice question review.⁵ Numerous use cases also exist for later stages of training, including helping clerkship students identify an appropriate initial workup and supporting board exam preparation. LLMs are a learning tool we are only just beginning to explore.

The Accreditation Council for Graduate Medical Education (ACGME) Program Requirements for Graduate Medical Education in Child and Adolescent Psychiatry⁶ outline competencies for trainees in child and adolescent psychiatry. One domain of these competencies (IV.B.1.b) is Patient Care and Procedural Skills. This domain includes skill development in evaluating and treating children from diverse backgrounds across the full spectrum of psychiatric disorders utilizing a wide array of techniques, as well as documenting these encounters. It is expected that trainees will primarily develop and demonstrate the aforementioned patient care skills through treating patients; standardized



patient experiences are not typically implemented across training sites. Feedback is mostly preceptor-based, and there is not necessarily a uniform way to assess whether someone has developed competency in a particular skill. Given the dialogic nature of general medical practice,⁷ which has been more specifically rarefied in psychiatry,⁸ dialogic simulation offers a clear opportunity to operationalize the polyphonic dialogue that characterizes mental health. LLMs, particularly interfaces such as ChatGPT that function as dialogic AI, provide the opportunity to implement simulated patient interactions to promote both standardization of requirements and strengthening of patient care skills.

One of the specific competencies, IV.B.1.b).(1).(a).(ii), under Patient Care and Procedural Skills involves building an understanding of and developing clinical skills in the major treatment modalities used in child and adolescent psychiatry, including psychodynamic psychotherapy, cognitive-behavioral therapy, and crisis intervention. Here, we showcase how we used the voice feature of the ChatGPT app to practice crisis intervention (Figure 1). Using this feature, we were able to simulate a patient interaction in which the trainee had to respond live. Note that we give ChatGPT specific instructions, including defining the trainee's role and objectives as well as defining ChatGPT's role.

Figure 1. Crisis Intervention: Example from Audio Transcript.⁹ The audio file is available as supplemental material.

Trainee: I am a provider in child psychiatry. I would like to practice my skills in the major treatment modalities. In particular, I would like to practice crisis intervention. Please simulate a patient interaction for me, starting with an adolescent experiencing suicidal ideation who is calling my emergency number after hours.

ChatGPT: Absolutely. Let's set up another scenario. You receive a call on your emergency line after hours. A 17-year-old named Alex is on the other end. Alex sounds distraught, and their voice is breaking as they speak.

"Hi. I didn't know who else to call. I just can't handle it anymore. I've been feeling like this for weeks and tonight...tonight I just can't stop thinking about ending it all. I don't want to be here anymore."

You can begin your response to Alex now. How would you like to start?

Trainee: "Hi Alex. I'm really glad you called. Can you tell me a little bit more about why you don't want to be here and about what's been going on?"

ChatGPT: "It's just, everything is falling apart. My parents are always arguing and it feels like I'm invisible to them. At school, I feel like I don't fit in. I used to have friends but now it seems like everyone has turned against me. My grades are terrible and I just keep disappointing everyone. I feel so alone like nobody cares and I just can't see things getting better. I feel like I'm a burden and maybe if I wasn't here, things would be easier for everyone." What would you like to say to Alex to address these feelings of being a burden and to explore further thoughts and feelings?

Trainee: Honestly, I'm not sure what to say. What are three potential ways I could respond?

ChatGPT: That's completely okay. Here are three possible ways you could respond to Alex. 1. Validate feelings and provide reassurance: "It sounds like you are feeling really overwhelmed and alone right now, Alex, and I'm so sorry you are feeling this way. I want you to know that you're not a burden and I care about what's happening to you. It's important we talk about how we can make sure you're safe right now"; 2. Express empathy and build connection: "I hear how much pain you're in and I'm really sorry you're feeling like this. You're not alone in this and we can work through these feelings together. Can you tell me a bit more about what's making you feel like there is no way out?"; or 3. Assess safety and immediate risk: "Thank you for sharing that with me Alex, it sounds really tough. Can you tell me if you've had any thoughts about how you might end your life or if you've taken any steps towards that?"

Each of these steps serves to validate Alex's feelings, build trust, and gather more information to assess the immediate risk and guide further steps. Which one feels most comfortable to you, or would you like to try a different approach?

DISCUSSION

In this simulation, ChatGPT gives a plausible patient scenario to facilitate the practice of crisis intervention techniques by providing basic instructions. These instructions are flexible; we can change aspects of the scenario, such as the circumstances under which the patient calls the psychiatrist (eg, suicidal ideation vs panic attack) or characteristics of the patient (eg, adolescent vs child). Furthermore, ChatGPT is able to take on a coaching role; it gives appropriate suggestions as to how a trainee might navigate the

conversation in a way that mimics bedside precepting. Using ChatGPT to practice crisis intervention is also inherently less risky than in a real patient scenario and more cost-effective than hiring standardized patients.

With more specific prompt engineering, it would be possible to produce even more realistic scenarios and responses that are in line with a particular practice or style that instructors may want to emphasize. For example, a program director could give an LLM specific scenarios as guidelines and predetermined appropriate responses on which to base feedback. Thus, although LLMs are inherently stochastic, prompt engineering enables confines to be placed around the interaction, enabling trainees to practice with their clinical context GPT in a more standardized way than chance clinical encounters; programs can control the variability of the prompts more readily than the variability of patients presenting to a service. This structured approach allows trainees to practice adapting clinical reasoning to different patient contexts in a controlled manner, ensuring exposure to specific scenarios to support a more systematic approach to personalized care.

Crisis intervention is certainly not the only potential ACGME competency whose attainment can be augmented by LLMs. Any of the major treatment modalities could be practiced using the voice feature of ChatGPT. As has been shown comprehensively with knowledge-based undergraduate learning,¹⁰ LLMs can also be used to facilitate the acquisition of medical knowledge in psychiatry, per IV.B.1.c. For example, LLMs can be harnessed to build competency in understanding the basic neurobiological, psychological, and clinical sciences relevant to psychiatry, in accordance with IV.B.1.c).(1).(a), through facilitating dynamic interaction with research papers via OpenEvidence, Google Notebook, and SciSpace, among others.

There are potential downsides to incorporating artificial intelligence tools such as LLMs into attaining ACGME competencies. Some skills are best learned through interacting with other humans, for example conducting a physical or neurological examination, per IV.B.1.b).(1).(a).(iv), or a procedure, per IV.B.1.b).(2). Regarding simulated patient scenarios, although an LLM may be able to recapitulate some nuanced communication through prosody, voice apps cannot represent nonverbal communication. Additionally, because these models learn from corpora that embed historical social inequities, their outputs can potentially perpetuate or even amplify harmful biases, particularly toward marginalized groups.^{11,12} Careful prompt design, post hoc review, and ongoing evaluation of equity impacts are therefore essential when integrating LLMs into clinical training. More generally, it is important that the trainee not rely entirely on these tools for clinical knowledge and judgment. Caution must be exercised to ensure that these tools are used to complement rather than supplant clinical skills and judgment.

In addition to supporting trainees and programs in their attainment of ACGME competencies, interacting with LLMs is inherently important as further applications of LLMs inevitably arise in the clinical practice of child and adolescent psychiatry. It is essential that trainees build fluency in this

technology to learn its strengths and weaknesses to promote responsible use. It behooves programs educating the next generation of psychiatrists to account for the fact that as of the past year, medical students will never have interacted with patients without having access to ChatGPT. Much as the dynamics of personal electronics changed the use of resources such as UpToDate from static CD libraries to a pocket search engine, ChatGPT offers a software-driven evolution in the information and learning tools available to the physician.

Take Home Summary

Large language models such as ChatGPT are spurring both enthusiasm and trepidation within medical education. Here, we explore the application of large language models in child psychiatry, showcasing the use of the ChatGPT app's voice feature to practice crisis intervention.

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SUPPLEMENTARY MATERIALS

Audio: Conversation between Anne Elizabeth Sidamon-Eristoff and ChatGPT

Download: <https://jaacapconnect.org/article/141397-harnessing-large-language-models-to-promote-attainment-of-acgme-competencies-in-child-psychiatry/attachment/291910.mp4>
