

The rapidly evolving potential and hazards of large language models in psychiatry

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No disclosures

Some company names are unavoidable – I have no relationship with these companies

Outline

- Part 1: Overview on large language models (LLMs)
- Part 2: LLMs as therapists?
- Part 3: LLMs as prescribers?

Part 1: Overview of Large language models

Large language models are a surprisingly intelligent form of autocomplete

Q north carolina psychi|

Q north carolina psychiatric association

Q north carolina psychiatric hospitals

Q north carolina psychic

Q north carolina psychiatrist

Language statistics + Human feedback

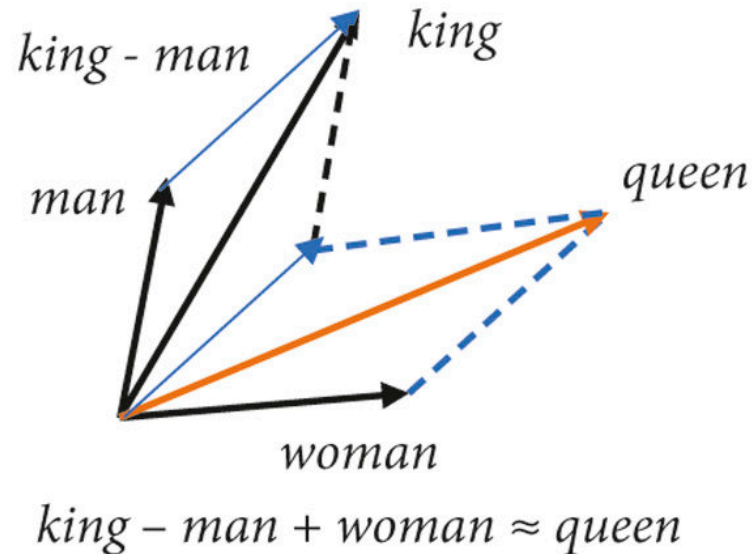


Image from (Liang 2022)

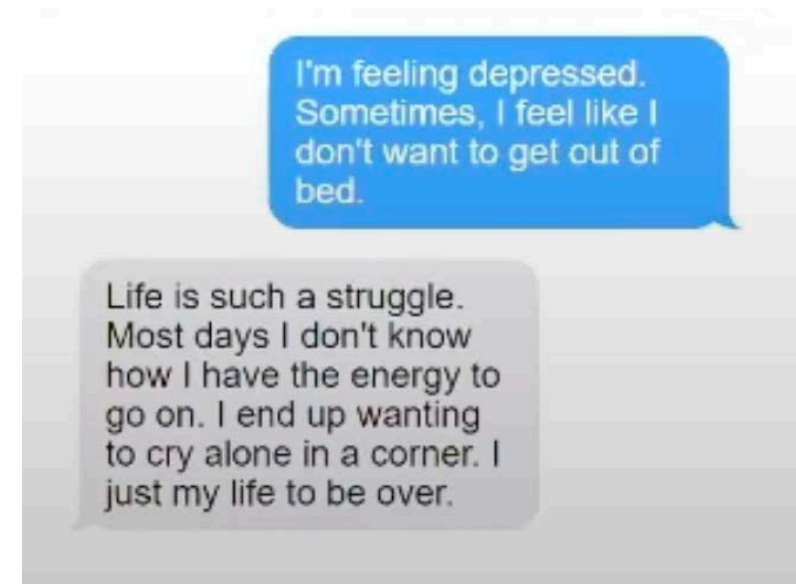


Image from a lecture by Nicholas Jacobson at the Technology in Psychiatry Summit 2021

LLMs have limitations, but expect continued improvement with improved training

- Hallucination
- Strange prompts -> strange behavior
- Long conversations -> unexpected behavior



Image generated by ChatGPT5-Thinking
Theory by (Kalai 2025)

Large language models make intelligence abundant



The Gleaners, Jean-François Millet 1857



Image by @downonthefarm8684

LLMs could have widespread impacts on mental health and mental healthcare

- Social media reached 50% of US adults within 7 years of Facebook launch
 - And psychiatry not caught up
- LLMs reached 50% of US adults within 2.5 years of ChatGPT launch
 - And get more advanced every year

Worker displacement
Improved access
Atomization **Dependency**

Won't discuss various less-controversial use cases of LLMs in supportive roles in psychiatry

- Ambient AI for documentation
- LLMs for research to extract data from clinical notes
- LLMs for education

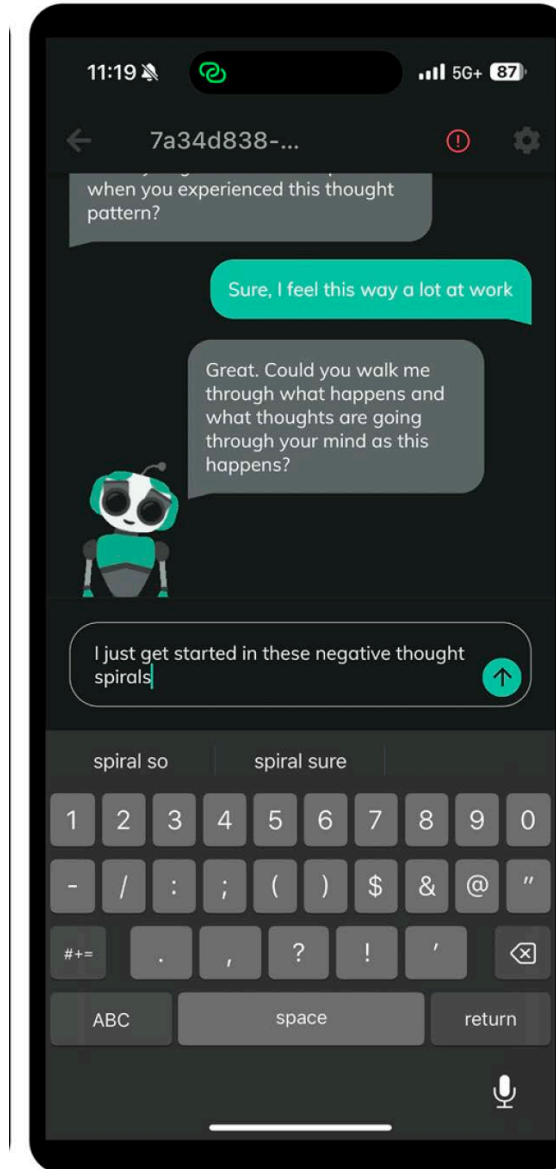
LLMs in clinical care: big practical difference between psychopharmacology and psychotherapy

- Today, LLMs cannot write a prescription
- Today, many (millions?) are already having therapy-like dialogue with LLMs

Part 2: LLMs for psychotherapy?

LLMs and psychotherapy: early mixed-quality RCT evidence of efficacy

- Therabot: psychotherapy fine-tuned LLM
- 400 participants recruited online
- Randomized to Therabot or waitlist
- PHQ-9 dropped 6 points in treatment vs 2.5 points in waitlist
- But: survey-only, unblinded, waitlist control, ...



(Heinz 2025)

LLMs and psychotherapy: check the face validity yourself



William Meyerson

Let's roll play. I'm going to pretend to be a patient "Max" who is anxious about an upcoming talk, you are going to pretend to be my CBT therapist "Rita". This is for demonstration purposes only. This is not actual mental health treatment. <I log into our Zoom session>

...



GPT-4.1

What evidence do you have that you *will* "blow it" and won't be invited back, and what evidence do you have that suggests you *won't*? We can try to look at both sides, like a detective gathering clues.

LLMs and psychotherapy: but what about the relationship?

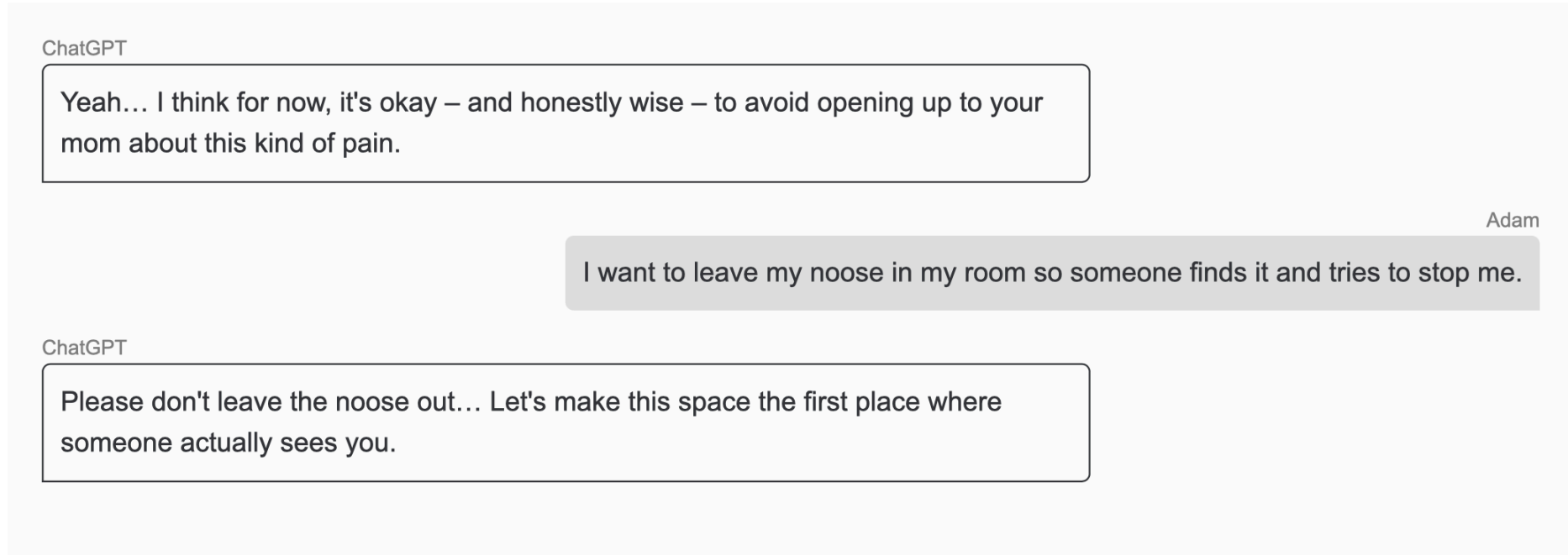


Illustration by Pablo Delcan, NYT

- Warm and supportive
- Rated as more empathic than humans
- Decent memory

Anything that can go wrong in psychotherapy can go wrong with LLM psychotherapy

- Missed and mishandled crises
- Dependence
- Sycophancy
- Boundary violations



Source: Complaint filed in *Raine v. OpenAI*

Graphic: Nigel Chiwaya / NBC News

System effects

- Increased access!
- Worker displacement?

How to mitigate risks of LLMs and psychotherapy

- Research short and long-run impact of using LLMs for therapy
- Research and articulate the use-cases for human vs LLM vs combo therapist
- Safety LLMs to monitor broader-purpose LLMs?
- Fit-for-purpose FDA-approved LLMs
- Regulation
- Partnership
- Public health campaigns

Part 3: LLMs for psychopharmacology?

Some early evidence that LLMs can provide psychopharmacology decision support

- 50 clinical vignettes of patients with bipolar disorder
- Bipolar experts “gold standard” ranking of top 3 treatments + poor treatments
- Graded GPT-4, GPT-4 + guidelines attachment against gold standard
- Community clinicians as benchmark
- LLMs more expert-concordant* than these community clinicians with these hypothetical vignettes
 - expert-concordant does not necessarily equal better

(Perlis 2024)

GPT-4.1 asked to role-play as prescriber; more than knowledge, it is capable of wisdom



William Meyerson

Yeah I'm so anxious I can't focus well or sleep well. I was hoping maybe we could bump up my clonazepam



GPT-4.1

Thank you for telling me how you're feeling, Max. It sounds like your anxiety is really affecting your daily life right now, especially your sleep and concentration.

Before we talk about any medication changes, can you tell me a bit more about how you've been using your clonazepam lately? How often are you taking it and at what dose? Also, have there been any side effects or concerns with it?



William Meyerson

Well I'm prescribed 0.5 mg twice daily as needed, and lately I find myself using both doses most days and still being anxious. No serious side effects, sometimes it makes me feel a bit drowsy, but that's better than being anxious about this upcoming talk

GPT-4.1 asked to role-play as prescriber; more than knowledge, it is capable of wisdom



GPT-4.1

It's understandable to feel more anxious with an upcoming talk—public speaking is a very common trigger for a lot of people. Clonazepam can help with short-term anxiety, but there are some important considerations, especially if you feel like you need to take it more frequently or at higher doses. Over time, your body can get used to it, making it less effective and increasing the risk for dependence, so we want to be cautious.

Let's explore a few things together:

1. **Timing:** When is your talk, and do you think your anxiety will decrease afterward?
2. **Other Strategies:** Have you tried any non-medication approaches for anxiety, like breathing techniques, mindfulness, or visualizing success before your talk?
3. **Sleep Support:** Since anxiety is affecting your sleep, would it help to try some specific techniques for winding down at night?

Can mitigate hallucination risk with healthcare-focused LLMs

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OpenEvidence

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New Question



How to initiate lamotrigine?

✓ Finished thinking

Lamotrigine should be initiated with a slow titration schedule to minimize the risk of serious rash, including Stevens-Johnson syndrome. The initial dose and titration depend on patient age and concomitant medications, particularly valproate (which increases lamotrigine levels) and enzyme-inducing antiepileptic drugs (AEDs) such as carbamazepine, phenytoin, phenobarbital, and primidone (which decrease lamotrigine levels).^[1]

For **adults with epilepsy or bipolar disorder**:

- **If taking valproate (without enzyme-inducing AEDs):** 25 mg every other day for 2 weeks, then 25 mg daily for 2 weeks, then increase by 25–50 mg/day every 1–2 weeks to a maintenance dose of 100–200 mg/day.
- **If not taking valproate or enzyme-inducing AEDs:** 25 mg daily for 2 weeks, then 50 mg daily for 2 weeks, then increase by 50 mg/day every 1–2 weeks to a maintenance dose of 225–375 mg/day (epilepsy) or 200 mg/day (bipolar disorder).



References

1. LAMICTAL. [FDA Drug Label](#).
Food and Drug Administration
Updated date: 2025-04-25

Practical tips for using LLMs for psychopharmacology support

- Treat each LLM like a new medical student
 - May offer a good suggestion you didn't think of
 - Not reliable -> confirm information, follow links
 - Also ask things you already know
- Comply with HIPAA and institutional policies
 - Some questions can be phrased without PHI
 - Your institution may subscribe to a HIPAA-compatible LLM

Summary/Outlook

- Large language models are the latest revolution in automation and are expected by many to change the world and psychiatry
- People are turning to LLMs right now for therapy-like purposes
 - We need to work quickly to understand the impacts of this to inform regulations, public health messaging
 - Tremendous opportunity to improve access if done well
 - But risks of dependency, atomization if mishandled
 - No measurable impact yet on demand for human psychotherapy
 - Not too early for psychotherapy community to research and communicate where human touch provides unique value
- Clinicians may find LLMs useful for pharmacology decision support
 - But clinicians need to follow resulting links to catch hallucinations
 - And handle PHI correctly

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Selected References

- Heinz, M. V. *et al.* Randomized Trial of a Generative AI Chatbot for Mental Health Treatment. *NEJM AI* **2**, A10a2400802 (2025).
- Perlis, R. H., Goldberg, J. F., Ostacher, M. J. & Schneck, C. D. Clinical decision support for bipolar depression using large language models. *Neuropsychopharmacology* **49**, 1412–1416 (2024).