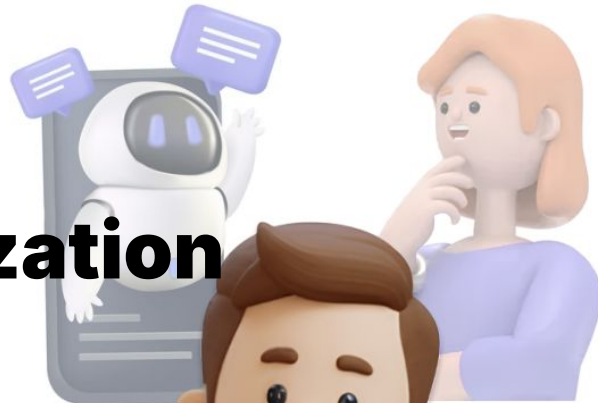


CHI'26

Toward Flexible Psychiatric History-Taking and Visualization

Exploring Clinician Perspectives with Large Language Models

Yugyeong Jung, Thu Hoang Anh Vo, Hyun Seung Moon,
Jae Young Choi, Hyangkyeong Oh, Ujin Lee,
Eunjoo Kim, Tak Yeon Lee, and Uichin Lee



Initial Psychiatric History-Taking

The **first step** in psychiatric care

Clinicians ask questions depending on patients' problems and make initial diagnostic impression

Patients describe their problems in their own words

Chief complaint

Main reason for the visit

Symptom

Mental or physical experiences (e.g., sleep, appetite)

Functional impairment

Impact on daily functioning (e.g., work, home, school)

"What brings you here today?"

"How about your sleep?"



"I've been feeling overwhelmed..."

"I cannot sleep until late night..."

Initial Psychiatric History-Taking

There are several **challenges** in initial psychiatric history-taking



Time-constraint

Clinicians must gather key information within limited time, while avoiding overly long sessions that reduce patient concentration



Dependent on patient narratives

Variability and unpredictability in patient speech often obscuring core issues or complicating interpretation

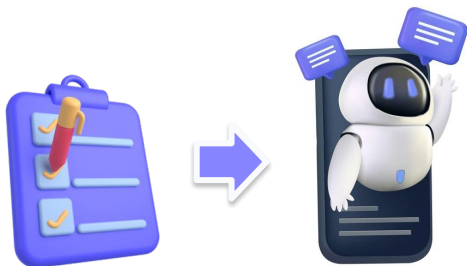
→ This requires **flexible and adaptive interviewing** beyond structured approaches

Motivation

AI-based Clinical Interviewing Systems

However, prior work has limitations in addressing these challenges

PHQ-9
GAD-7
PCL-5



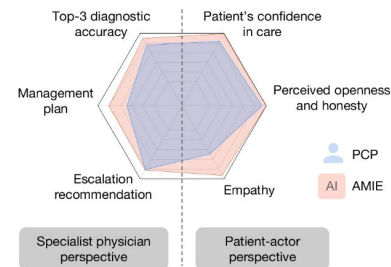
Conversationalizing **structured**
diagnostic tools (e.g., surveys) [1, 2]

→ Limited flexibility beyond predefined questions



Making accurate diagnosis in
general medical domains [3, 4]

→ Limited focus on psychiatric interview



[1] Raúl Arrabales. 2020. Perla: a conversational agent for depression screening in digital ecosystems. design, implementation and validation. arXiv preprint arXiv:2008.12875 (2020).

[2] Rares Boian, Ana-Maria Bucur, Diana Todea, Andreea Luca, Traian Rebedea, and Ioana R Podina. 2025. A conversational agent framework for mental health screening: Design, implementation, and usability. Behaviour & Information Technology 44, 10 (2025), 2364–2378.

[3] Tao Tu, Mike Schaeckermann, Anil Palepu, Khaled Saab, Jan Freyberg, Ryutaro Tanno, Amy Wang, Brenna Li, Mohamed Amin, Yong Cheng, et al. 2025. Towards conversational diagnostic artificial intelligence. Nature (2025), 1–9

[4] Harsha Nori, Mayank Daswani, Christopher Kelly, Scott Lundberg, Marco Tulio Ribeiro, Marc Wilson, Xiaoxuan Liu, Viknesh Sounderajah, Jonathan Carlson, Matthew P Lungren, et al. 2025. Sequential Diagnosis with Language Models. arXiv preprint arXiv:2506.22405 (2025).

Motivation

Research Gaps

Limited focus on **distinctive challenges** of the initial psychiatric history-taking

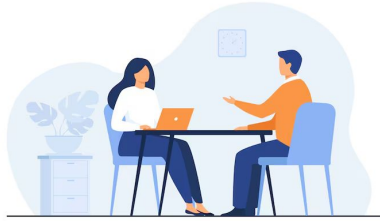
Little focus on integrating **clinicians' perspectives** and time-constrained realities into system design



**“Designing AI interviewers for initial psychiatric interview
and exploring clinician perspectives”**

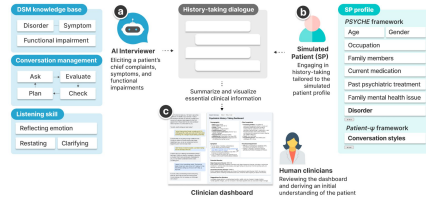
Study Overview

Study Overview



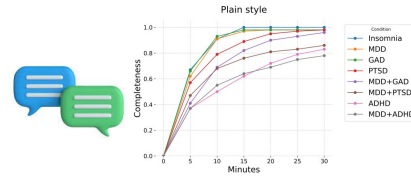
1

Formative study
Understand
clinical needs



2

Exploratory system design
Design AI interviewer
and clinical dashboard



3

Quantitative evaluation
Evaluate completeness
using simulated patients



4

Expert evaluation
Explore clinician
perspectives

1

Formative study

Clinician Interview

- **Goal:** To identify design requirements for an AI interviewer supporting initial psychiatric history-taking process
- **Participants:** Six clinicians in South Korea (2 clinical psychologists, 4 psychiatrists)



1

Formative study

Result

Extracting four design requirements

01



Supporting **flexible**
history-taking
according to
potential disorders

02



Collecting
essential clinical
information within
time constraints

03



Minimizing
psychological
burden using
listening skills

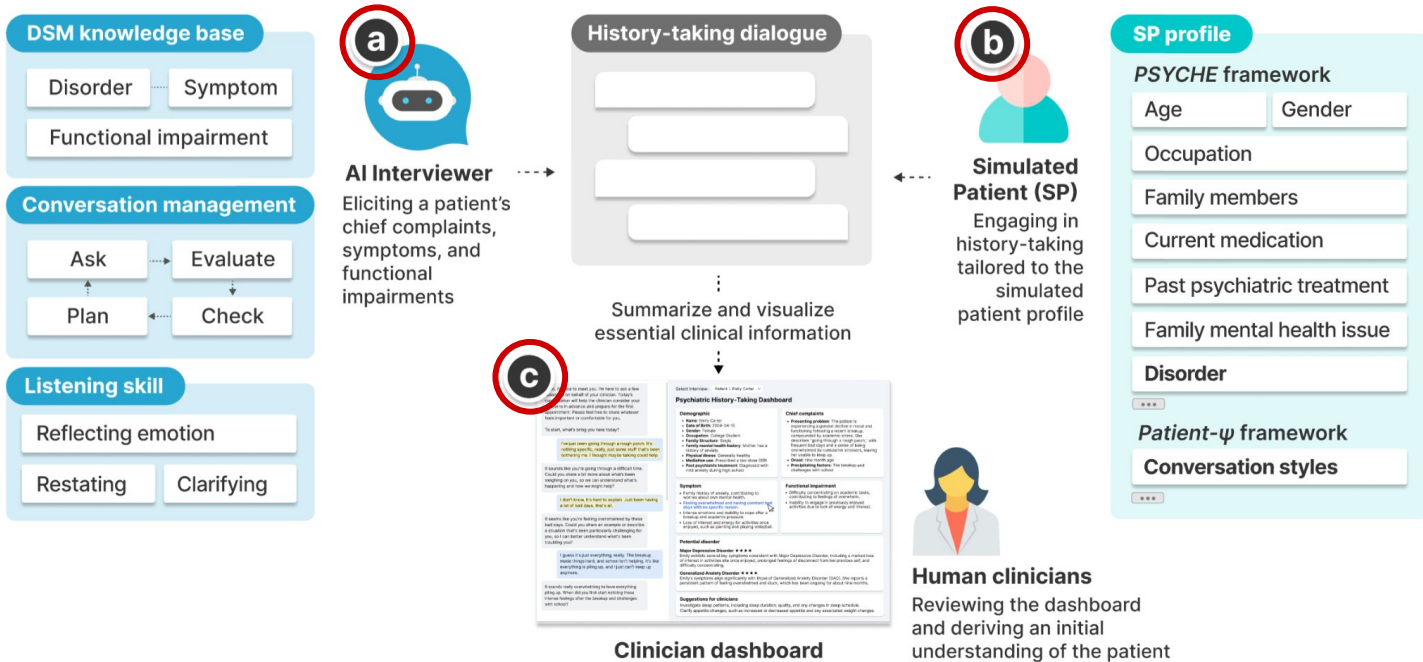
04



Summarizing major
information to support
diagnostic
decision-making

Exploratory system design

System Design Overview



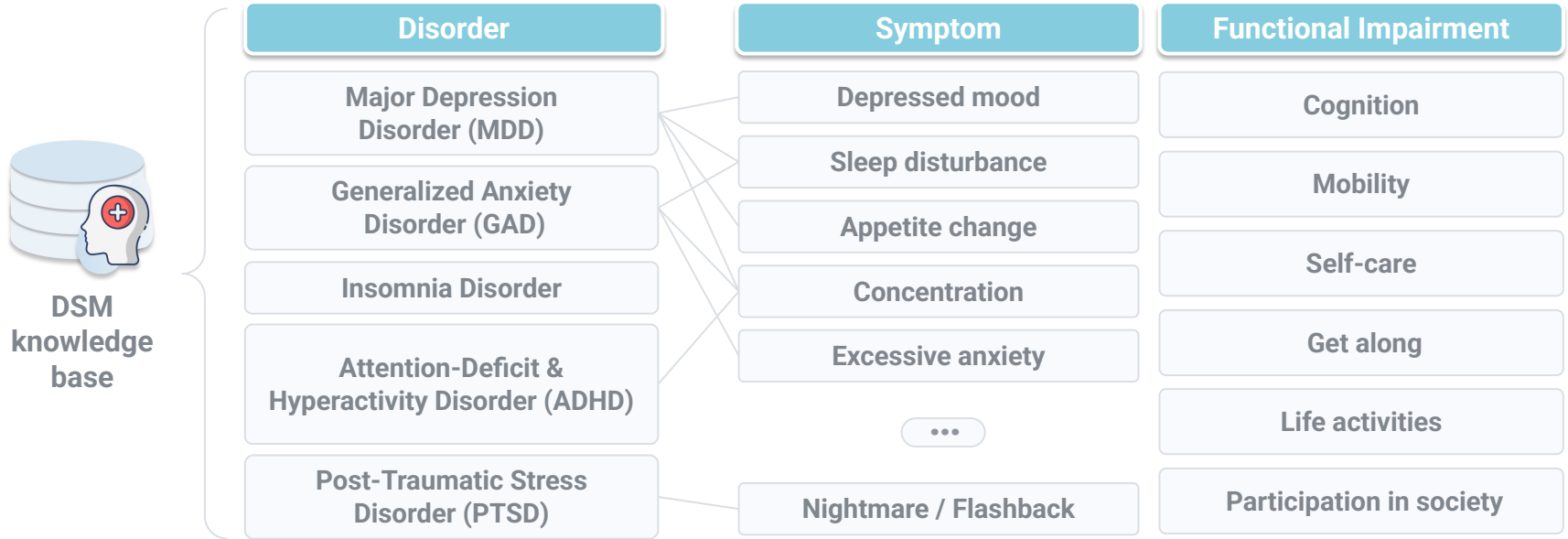
2

Exploratory system design

AI Interviewer Design

Constructing a DSM knowledge base

- To support history-taking in line with clinical standards (DSM-5 and WHODAS*)



* DSM-5: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition

* WHODAS: World Health Organization Disability Assessment Schedule

2

Exploratory system design

AI Interviewer Design

Conversation flow design (design requirements 1 & 2)

In line with **Design Requirement 1**,

- Designing the flow to draw on both the DSM knowledge base and patients' responses
- Allowing **flexible exploration of symptoms and functional impairments linked to potential disorders**

In line with **Design Requirement 2**,

- Applying **time-management strategy** to guarantee interview completion within the allotted period (such as within 30 minutes)

2

Exploratory system design

AI Interviewer Design

Applying three listening skills ([Design requirement 3](#))

Reflecting emotion

Acknowledging and verbalizing the patient's feelings

"I understand how you felt - you were sad."

Restating

Condensing long explanations into concise core points

"In sum, you found it difficult because your father was authoritative."

Clarifying

Clarifying a patient's ambiguous narrative

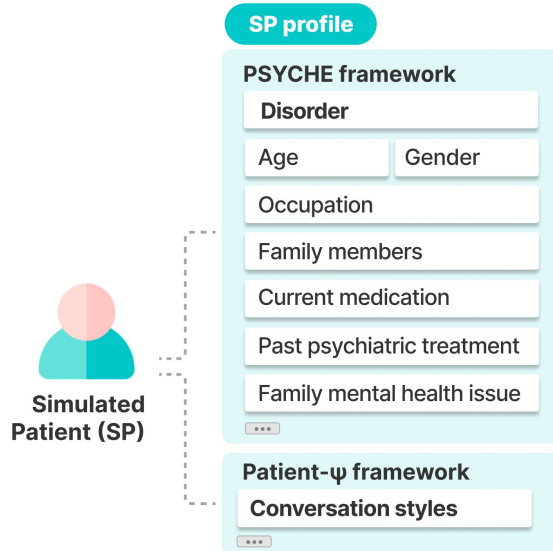
"So you're saying that work stress affect your sleep..."

2

Exploratory system design

SP (Simulated Patient) Design

- To interact simulated patients with our AI interviewer
 - Allowing safe testing before deployment with real patients
 - Enabling systematic generation of diverse diagnostic profiles and styles



Combining two SP frameworks to generate SPs

PSYCHE framework

To construct SPs with **different mental disorders**

- Single disorder: MDD, GAD, Insomnia, ADHD, PTSD
- Comorbid disorder: MDD + GAD, MDD + PTSD, MDD + ADHD

PATIENT-ψ framework

To construct SPs with **different conversation styles**

- plain, verbose, upset, reserved, tangent, and pleasing

2

Exploratory system design

Dashboard Design

- To help clinicians to review both the interview dialogue and the corresponding clinical information (**Design requirement 4**)

Hello, it's nice to meet you. I'm here to ask a few questions on behalf of your clinician. Today's conversation will help the clinician consider your concerns in advance and prepare for the first appointment. Please feel free to share whatever feels important or comfortable for you.

To start, what's bring you here today?

I've just been going through a rough patch. It's nothing specific, really, just some stuff that's been bothering me. I thought maybe talking could help.

It sounds like you're going through a difficult time. Could you share a bit more about what's been weighing on you, so we can understand what's happening and how we might help?

I don't know, it's hard to explain. Just been having a lot of bad days, that's all.

It seems like you're feeling overwhelmed by these bad days. Could you share an example or describe a situation that's been particularly challenging for you, so I can better understand what's been troubling you?

I guess it's just everything, really. The breakup made things hard, and school isn't helping. It's like everything is piling up, and I just can't keep up anymore.

It sounds really overwhelming to have everything piling up. When did you first start noticing these intense feelings after the breakup and challenges with school?

Select interview: Patient 1, Emily Carter

Psychiatric History-Taking Dashboard

Demographic

- Name:** Emily Carter
- Date of Birth:** 2004-04-15
- Gender:** Female
- Occupation:** College Student
- Family Structure:** Single
- Family mental health history:** Mother has a history of anxiety
- Physical illness:** Generally healthy
- Mediation use:** Prescribed a low-dose SSRI
- Past psychiatric treatment:** Diagnosed with mild anxiety during high school

Chief complaints

- Presenting problem:** The patient is experiencing a general decline in mood and functioning following a recent breakup, compounded by academic stress. She describes "going through a rough patch," with frequent bad days and a sense of being overwhelmed by cumulative stressors, leaving her unable to keep up.
- Onset:** nine month ago
- Precipitating factors:** The breakup and challenges with school

Symptom

- Family history of anxiety, contributing to worries about own mental health.
- Feeling overwhelmed and having constant bad days with no specific reason.
- Intense emotions and inability to cope after a breakup and academic pressure.
- Loss of interest and energy for activities once enjoyed, such as painting and playing volleyball.

Functional impairment

- Difficulty concentrating on academic tasks, contributing to feelings of overwhelm.
- Inability to engage in previously enjoyed activities due to lack of energy and interest.

Potential disorder

Major Depressive Disorder ★★★★★
Emily exhibits several key symptoms consistent with Major Depressive Disorder, including a marked loss of interest in activities she once enjoyed, prolonged feelings of disconnect from her previous self, and difficulty concentrating.

Generalized Anxiety Disorder ★★★★★
Emily's symptoms align significantly with those of Generalized Anxiety Disorder (GAD). She reports a persistent pattern of feeling overwhelmed and stuck, which has been ongoing for about nine months.

Suggestions for clinicians

Investigate sleep patterns, including sleep duration, quality, and any changes in sleep schedule.
Clarify appetite changes, such as increased or decreased appetite and any associated weight changes.

- AI interviewer - patient dialogue
- Summary of clinical information
 - Demographic
 - Chief complaints
 - Symptom
 - Functional impairment
 - Potential disorder

3

Quantitative evaluation

Dialogue simulation

- **Goal:** To assess how comprehensively the AI interviewer gathered chief complaints, symptoms, and functional impairment information within time constraints



Generating
1,440 simulated patients
having different disorder,
conversation style,
age, and gender



Generating
1,440 simulated dialogue
between AI interviewer and
simulated patients
(time constraints: 30 min)

3

Quantitative evaluation

Dialogue simulation

- **Metric: Measuring completeness**
 - Proportion of essential items collected during the dialogue

Completeness (t) =

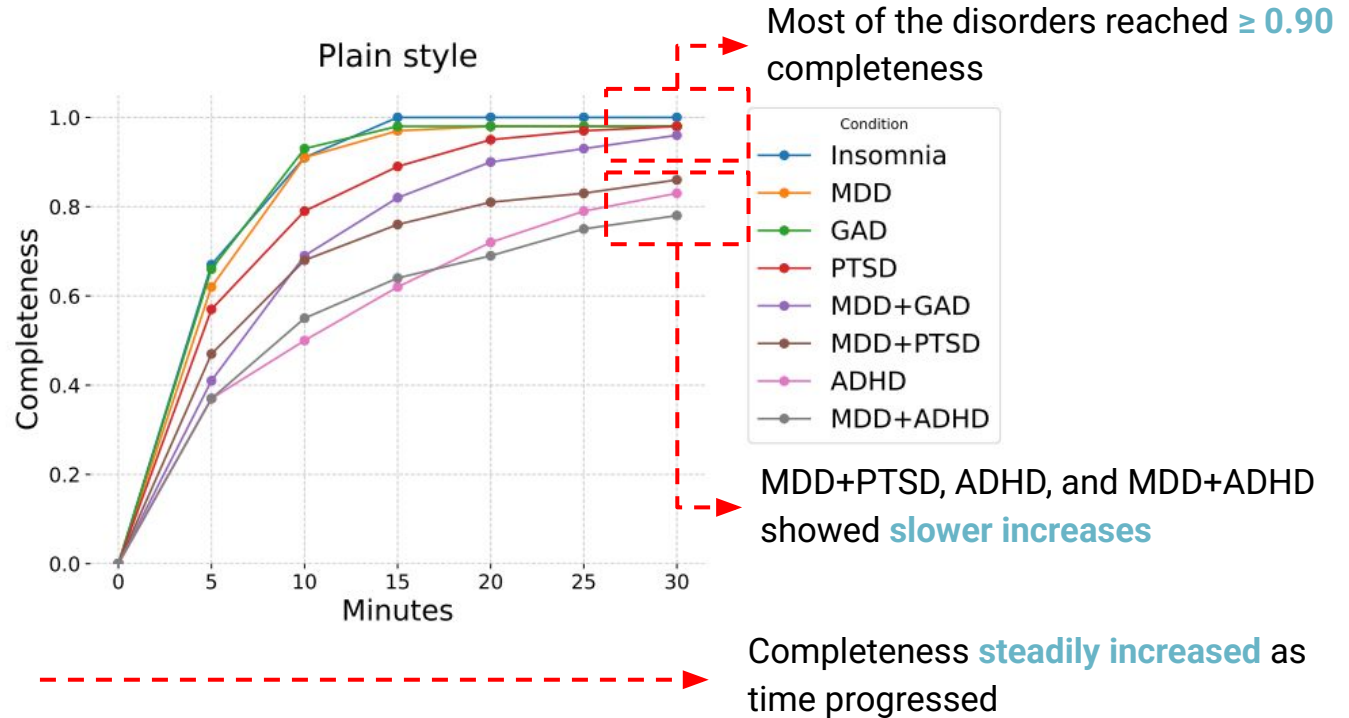
Number of essential items collected up to time t

Total number of essential items for the patient

For each simulated dialogue, calculating completeness at
5-min intervals up to 30 min

Quantitative evaluation

Result



- Plain style: A baseline interviewing style with neutral, direct questioning and minimal adaptive or empathetic modulation.
- Style (conversation style): The way a patient expresses themselves during the interview (e.g., verbose, concise, upset).
- Disorder: The specific mental health condition (e.g., MDD, GAD, ADHD) that the simulated patient is characterized by in the study.

3

Quantitative evaluation Result

Lower completeness in **ADHD** and **MDD+ADHD** cases

- ADHD-simulated patients often report daily-life difficulties, such as concentration problems, restlessness, or impulsive mistakes, which **overlap with depression-related symptoms**



Simulated patients

"I feel very stressed and exhausted. I make a lot of mistakes. . . I talk less with my family. . . I feel lonely and anxious."

**Symptoms of
MDD or ADHD?**



AI interviewer

Expert evaluation Method

- **Goal:** To explore **clinician perspectives** of applying the AI interviewer in clinical settings



Recruiting 19 clinicians
(12 psychiatrists and
7 clinical psychologists)

Select Interview: Patient 1: Emily Carter

Psychiatric History-Taking Dashboard

<p>Demographic</p> <ul style="list-style-type: none"> Name: Emily Carter Age at Birth: 1924-04-15 Gender: Female Occupation: College Student Family Structure: Single Family mental health history: Mother has a history of anxiety. Physical health: Generally healthy. Medication use: Fluoxetine 20mg daily. Past psychiatric treatment: Diagnosed with mild anxiety during high school. 	<p>Chief complaints</p> <ul style="list-style-type: none"> Presenting problem: The patient is experiencing a general decline in mood and functioning following a recent breakup, compounded by academic stress. She describes "going through a rough patch" with overwhelmed by cumulative stressors, leaving her unable to keep up. Onset: 10th month ago Precipitating factors: The breakup and challenges with school.
<p>Symptoms</p> <ul style="list-style-type: none"> Early history of anxiety, contributing to worries about overall mental health. Feeling overwhelmed and having constant light days with no specific reason. Decrease in energy and inability to cope after a breakup and academic pressure. Loss of interest and energy for activities since students, such as painting and playing volleyball. 	<p>Functional impairment</p> <ul style="list-style-type: none"> Difficulty concentrating on academic tasks, contributing to feeling of overwhelm. Unable to engage in previously enjoyed activities due to lack of energy and interest.
<p>Potential disorder</p> <p>Major Depressive Disorder *****</p> <p>Emily exhibits several key symptoms consistent with Major Depressive Disorder, including a marked loss of interest in activities she once enjoyed, prolonged feelings of disinterest from her previous self, and difficulty concentrating.</p> <p>Generalized Anxiety Disorder *****</p> <p>Emily's symptoms align significantly with those of Generalized Anxiety Disorder (GAD). She reports a persistent pattern of feeling overwhelmed and stuck, which has been ongoing for about nine months.</p> <p>Suggestions for clinicians</p> <p>Investigate sleep patterns, including sleep duration, quality, and any changes in sleep schedule. Clarify appetite changes, such as increased or decreased appetite and any associated weight changes.</p>	

Reviewing five simulated
dialogues with diverse
disorders and styles



Conducting interview
and survey

4

Expert evaluation

Overall Perception

AI interviewer is perceived as...



A **first-year resident** who forms an initial diagnostic impression and then proceeds to confirm the necessary information



Maintaining a **well-defined questioning structure** while **flexibly** covering essential information within the **limited time**



Falling short in **capturing patients' emotional nuances**

4

Expert evaluation

Perceived Adequacy of Empathy



AI interviewer's **empathic responses and listening skills** played a key role in eliciting patient narratives

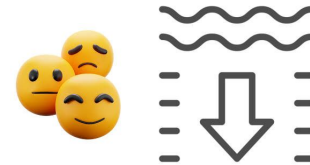
Lengthy empathic responses are unnecessary in a time-constrained context (It is likely to be perceived as *"hollow empathy"*)

4

Expert evaluation

Breadth of Coverage vs. Depth of Narrative

Different expectations of the AI interviewer's information-gathering approach



10 clinicians valued
Breadth of Coverage
Covering as many items as possible within limited time

vs

9 clinicians valued
Depth of Narrative
Delving more deeply into the patient's narrative

4

Expert evaluation

Handling Sensitive Topics

Different views in discussing sensitive topics with AI interviewer
(Suicidal ideation or traumatic experiences)

Open exploration

*"If conducted in a **safe hospital setting**, discussing sensitive topics is not problematic."*



vs

Cautious exploration

*"Sensitive issues like sexual assault or abuse can trigger **intense reactions** that are difficult for AI to handle."*



AI Interviewer as a Coachable Apprentice

Finding

Clinicians value structured information gathering, but differ in interview styles: **breadth vs. depth**

Implication

Designing AI interviewer as a **coachable apprentice**, not a fully autonomous agent

AI learns *progressively* under expert guidance



Guide



Clinician guidance structured along:



Strategy

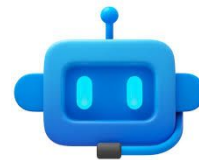


Modality



Scope

Learn



5

Discussion

Balancing efficiency and flexibility under time constraints

Finding

AI achieves high completeness within limited time
But **trade-off exists**:

- More empathy enables richer but slower narratives, while less empathy speeds up data collection but yields shallow insights

Exploratory questioning 

Empathetic responses 

Pacing 

**Implication**

Treat interview behaviors as **adjustable parameters** considering remaining time

- Exploratory questioning
- Empathic responses
- Pacing

Time-limited

Prioritizing essential symptom coverage

Time-available

Allowing deeper exploration & empathy

5

Discussion

Handling Complex or Comorbid Cases

Finding

High completeness overall, but challenges remain for **ADHD** and **MDD+ADHD** due to overlapping symptoms and misdiagnosis risk



"I have trouble **concentrating**"



MDD-related?

"A that time, do your mood or energy levels change as well?"

ADHD-related?

"Do you have such difficulties since childhood?"

Difficult to discriminate whether it's due to MDD or ADHD

Follow-up questions to discriminate MDD and ADHD

Implication

Use **disorder-specific follow-up questions**
Incorporating developmental history for ADHD

5

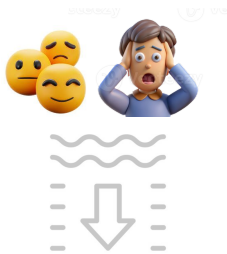
Discussion

Safety Guardrails for Handling Sensitive Topics

Finding

Trade-off between:

- Collecting detailed information
- Patient safety (risk of distress)

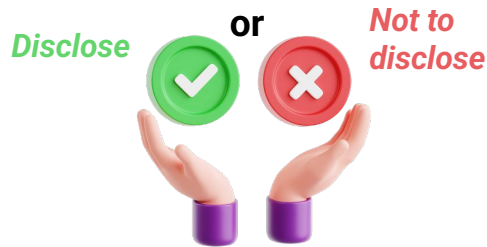


Depth-limiting guardrail

Confirm minimal diagnostic signals, defer deep probing

Implication

Unlike everyday systems, hospitals enable immediate clinician intervention
 → Requires **context-specific guardrails**



Patient-agency guardrail

Let patients control disclosure



Emotional breakdown guardrail

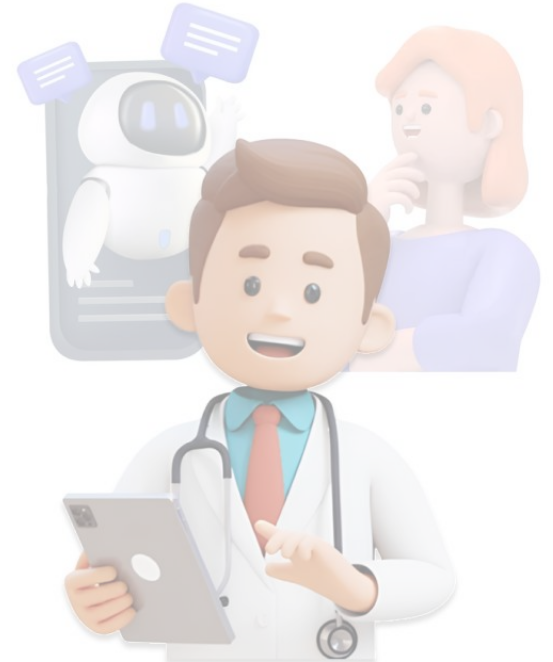
Detect distress → pause and hand off to clinician

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Eunjoo Kim, Tak Yeon Lee, and Uichin Lee



← Paper QR code



Contact: yugyeong.jung@kaist.ac.kr

Appendix

3

Quantitative evaluation

Result

Generalized linear model (GLM) result

Source	Wald Chi-Square	df	Sig.
(Intercept)	264251.733	1	<.001
Style	125.094	5	<.001
Disorder	2385.404	7	<.001
Style × Disorder	322.241	35	<.001

- Significant effects of **Disorder** type (e.g., MDD, ADHD, etc.), conversational **Style** (e.g., verbose, upset, etc.), and **Style × Disorder** interaction
- Post-hoc analysis showed impact of conversational style was particularly pronounced in the **MDD+ADHD** and **ADHD** groups

* MDD: Major Depressive Disorder

* ADHD: Attention Deficit/Hyperactivity Disorder