PATIENT AND THERAPIST ADOPTION CRITERIA FOR MENTAL HEALTH APPLICATIONS

Olivia Kennedy* and Nicholas Caporusso, Ph.D.**

*College of Arts and Sciences, ** School of Computing and Analytics

Northern Kentucky University, Highland Heights, United States

THE MENTAL HEALTHCARE SERVICE GAP

- Mental health care is at a service gap, due to cost, accessibility, and stigma.
- In the United States, 19% of adults reported a mental health condition.
- The primary barriers to care are demographic and financial.
- 52% of mental health professionals are not up to their standards due high demand.

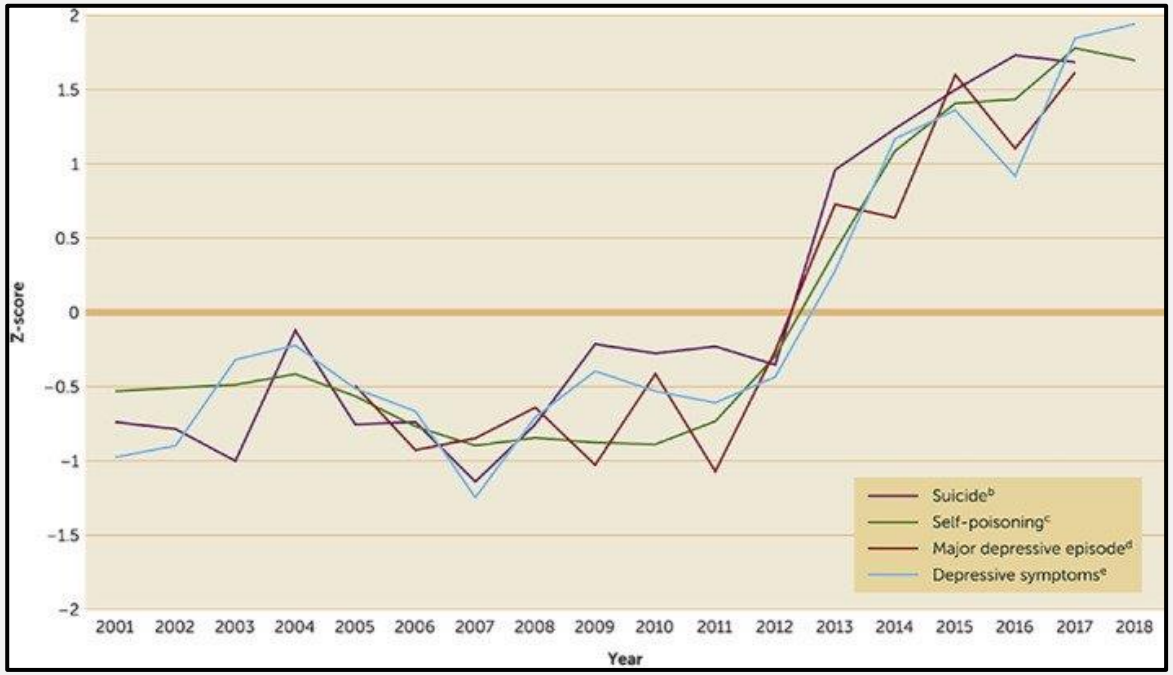


Fig. 1. Indicators of poor mental health among U.S. girls and young women, 2001–2018

Twenge J. M. (2020). Increases in Depression, Self-Harm, and Suicide Among U.S. Adolescents After 2012 and Links to Technology Use: Possible Mechanisms. *Psychiatric research and clinical practice, 2*(1), 19–25. https://doi-org.northernkentuckyuniversity.idm.oclc.org/10.1176/appi.prcp.20190015

MENTAL HEALTH APPS

- Mental health applications potentially address accessibility barriers when seeking treatment.
- Over 10,000 mental health apps are available.
- 71% of patients in a mental health clinic owned a mobile phone.
- Most mental health apps uninstalled after approximately 5.5 days.

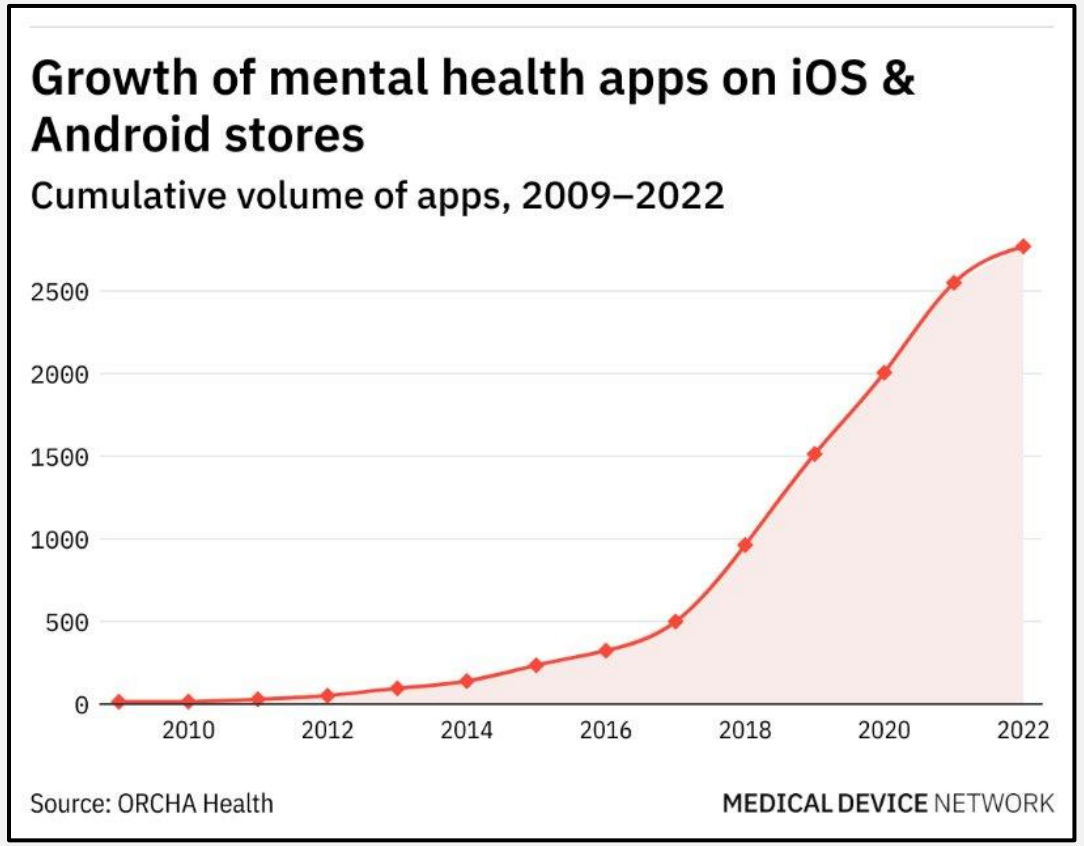


Fig. 2. An increase in mental health applications in response to rising mental health issues

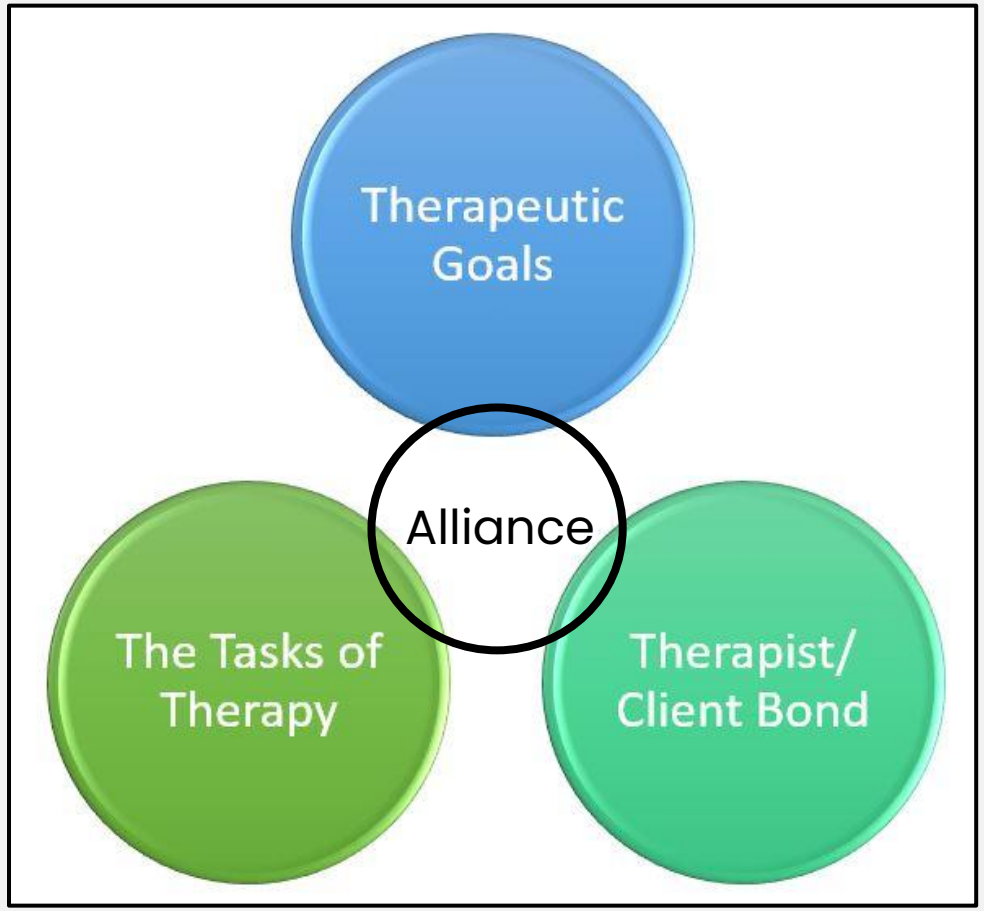
Parkins, K. (2022, March 14). Covid-19: Mental health app growth reveals unmet needs. Medical Device Network. Retrieved February 15, 2024, from https://www.medicaldevice-network.com/features/covid-19-mental-health-app-growth-reveals-unmet-needs/?cf-view

OUR RESEARCH

- **OBJECTIVE**
  - Understand adoption factors in mental health applications
    - From therapists' perspective
    - From patients' perspective
- **IMPACT**
  - Understand and combat high discontinuation rates
- **METHODOLOGY**
  - Literature review of existing sources

A RESEARCH GAP

- Limited and fragmented research on:
  - How mental health apps can meet the priorities of both patients and therapists
  - Effectiveness of apps in the therapeutic alliance
  - Factors driving adoption



MARS VS. UTAUT

MOBILE APP RATING SCALE (MARS)

- User engagement and feature design
- Does not address user adoption dynamics, including attitude and behavior
- Evaluates only one aspect of usability

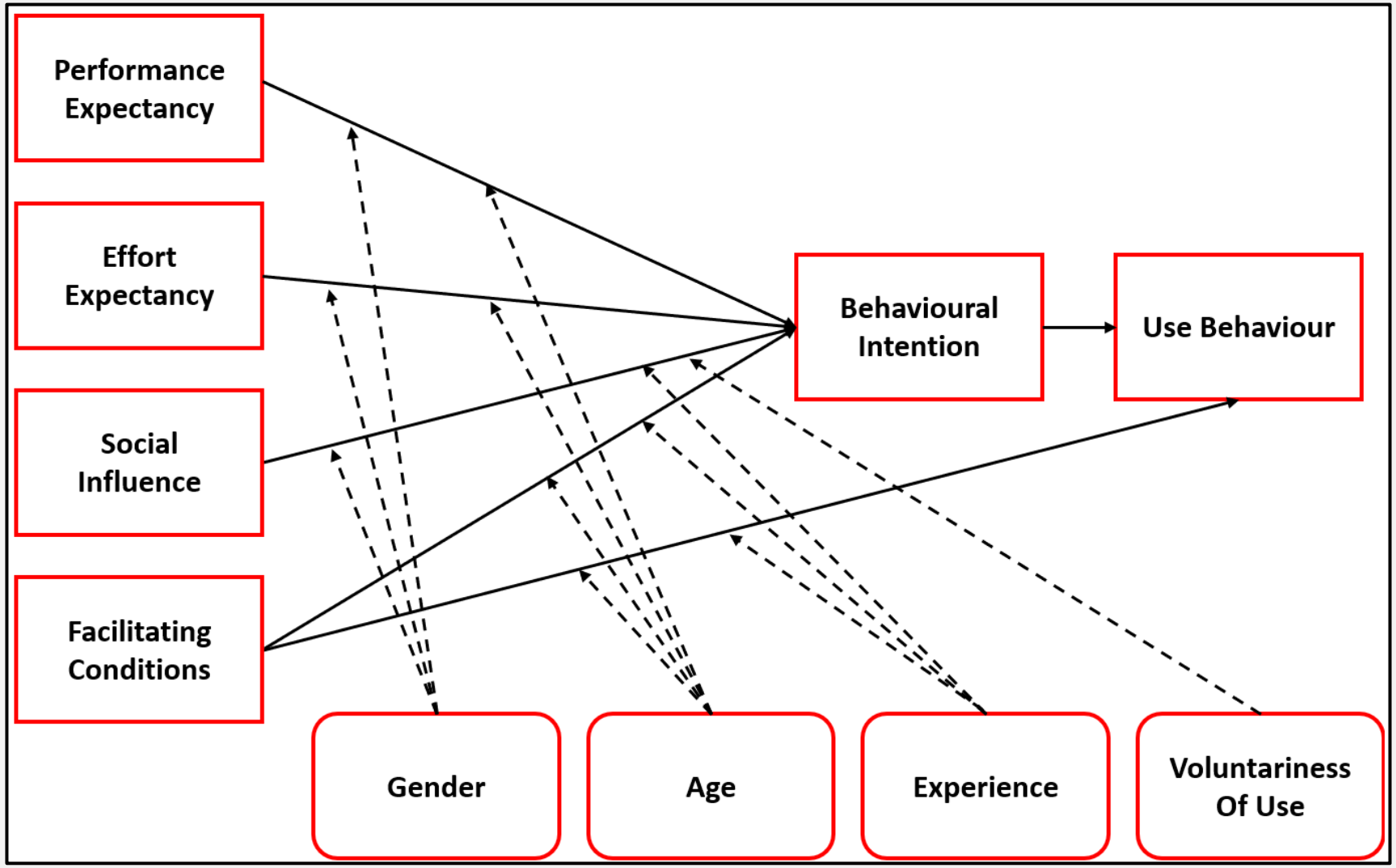
UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT)

- Specific factors related to user adoption
- Interplay between adoption factors
- Broader scope

THE UTAUT MODEL

- **Performance expectancy**
  - The degree that the user believes that the system is benefiting them
- **Effort Expectancy**
  - The ease to use the technology
- **Social influence**
  - The impact of the user's surroundings on the technology use
- **Facilitating conditions**
  - Conditions that either support or oppose the use of the technology
- **Intrinsic motivation**
  - The motivation or an individual's conviction to use the technology

THE UTAUT MODEL



RESULTS: PERFORMANCE EXPECTANCY

1. **Complexity**
    - High complexity and quality of information (offering more than what users might find through a Google search)
2. **Guidelines**
    - Incorporation of psychoeducation principles, adherence to best-practice guidelines, and citations for sources
3. **Treatment**
    - Comprehensive and available treatment options
4. **Tracking**
    - Tracking abilities (ex: sleep, medication usage, mood)
5. **Baseline**
    - Baseline emotional state measurements (including depression screenings)
6. **Data collection**
    - Providing customized scales, fragmented data collection tools, and reporting systems

RESULTS: EFFORT EXPECTANCY

1. **Design**
   - Easy design and functionality (Ex: Preference of buttons over sliders, professional and uncluttered layout)
2. **Clarity**
   - Meeting the users' needs (Providing clarity on what is being treated and how)
3. **Engaging**
   - User engagement and retention
4. **Customization**
   - Having feature customization (Ex: The ability to opt-out of irrelevant treatment options)

RESULTS: SOCIAL INFLUENCE

1. **Professionals**
   - Therapist associations and professional organizations influence (disseminating information, guidelines, and endorsements)
2. **Personal Therapist**
   - The therapist' recommendation (encourage the use of mental health apps in a supportive manner, offering recommendations rather than mandates)
3. **Sharing**
   - Ability to share data with therapists or trusted accountability partners
4. **Observation**
   - Observing the use of mental health trackers by peers and in public settings can normalize these tools
5. **Media**
   - Social media campaigns (Ex: Facebook and Instagram)

RESULTS: FACILITATING CONDITIONS

1. **Privacy**
    - Having privacy and security measures (very low percentage of apps provide a privacy policy)
2. **Availability**
    - App availability in both Google Play and Apple App Stores
3. **Data sharing**
    - Option to opt-out of data sharing
4. **Customer support**
    - Including customer service
5. **Interoperability**
    - Ability to track and save data across multiple devices and share it with the therapist

RESULTS: INTRINSIC MOTIVATION

1. **Goals**
   - Goal-oriented outlook (important to have the ability to set concrete goals, a plan, and track progress)
2. **Notifications**
   - Incorporation of notifications (Ex: reminders, motivational quotes, and affirmations)
3. **Rewards**
   - Including a reward- system (Ex: in-app badges, tokens, or streak of usage)
4. **Anthropomorphism**
   - Having human-like qualities built into the app

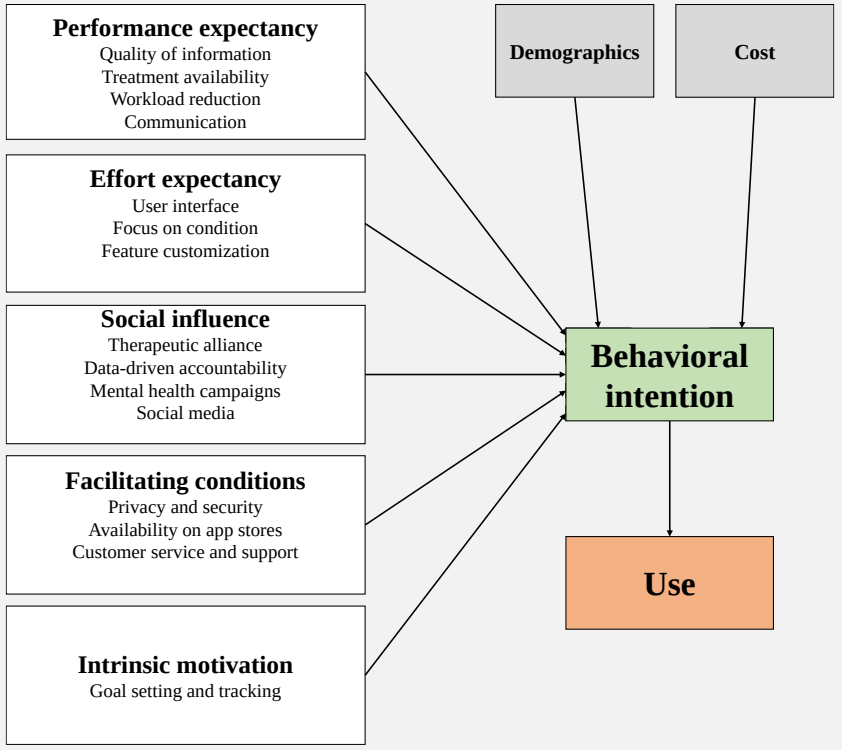
RESULTS: PRICE

- UTAUT model defines aspects related to cost as a separate dimension, for the purpose of this paper, we intended cost as associated with the entire space of mental health applications rather than with individual apps
- **Insurance**
  - Inclusion of insurance by prescribing apps as treatment
  - Enabling mental health applications to leverage the Current Procedural Terminology (CPT) and the Healthcare Common Procedure Coding System (HCPCS) as a means for insurance billing (a step toward facilitating broader access)
- **Ads**
  - Many applications leverage ads to reduce or eliminate the cost (however, the presence of ads in free or freemium models was reported as a detractor of the user experience)

RESULTS: DEMOGRAPHIC FACTORS

- **Gender**
  - Males generally experiencing easier transitions out of unpleasant emotional states (suggesting that intrinsic motivation may vary across gender)
- **Age**
  - Senior users were reported to prefer an application when it helps them maintain a pleasant emotional state (suggesting that intrinsic motivation may vary age groups)
- **Representation**
  - Users who do not feel represented—whether due to gender identity, disability, or neurodiversity—may find their motivation to engage with an app significantly diminished (use of inclusive language)

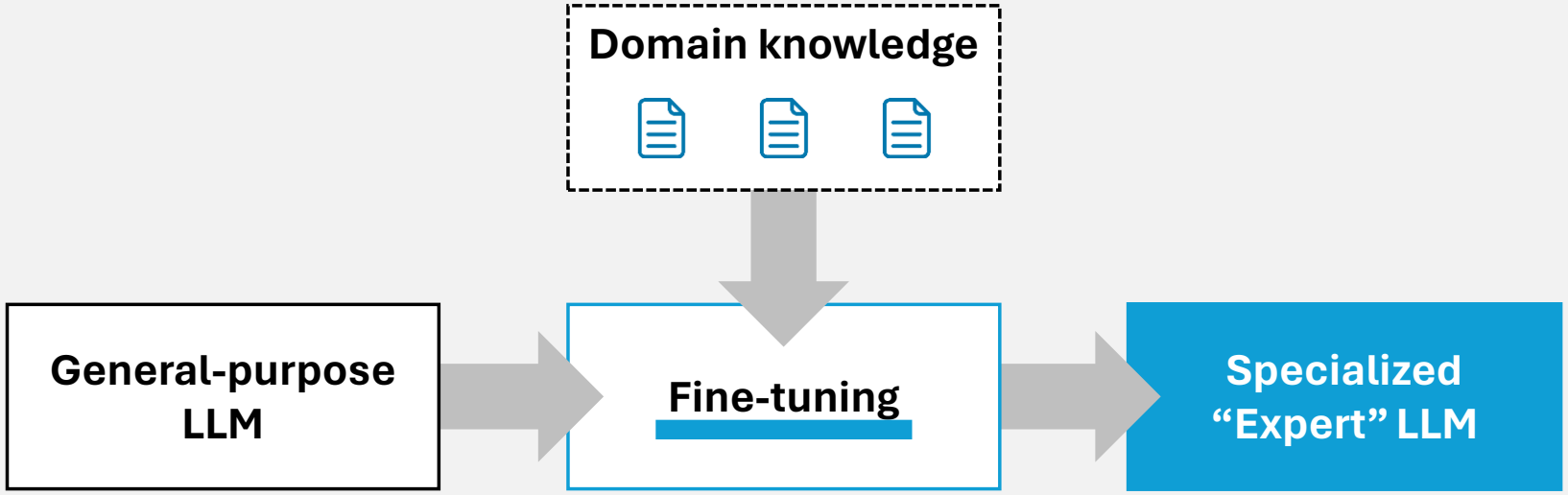
CONCLUSION


Performance expectancy
Quality of information
Treatment availability
Workload reduction
Communication
Effort expectancy
User interface
Focus on condition
Feature customization
Social influence
Therapeutic alliance
Data-driven accountability
Mental health campaigns
Social media
Facilitating conditions
Privacy and security
Availability on app stores
Customer service and support
Intrinsic motivation
Goal setting and tracking
Demographics
Cost
Behavioral intention
Use

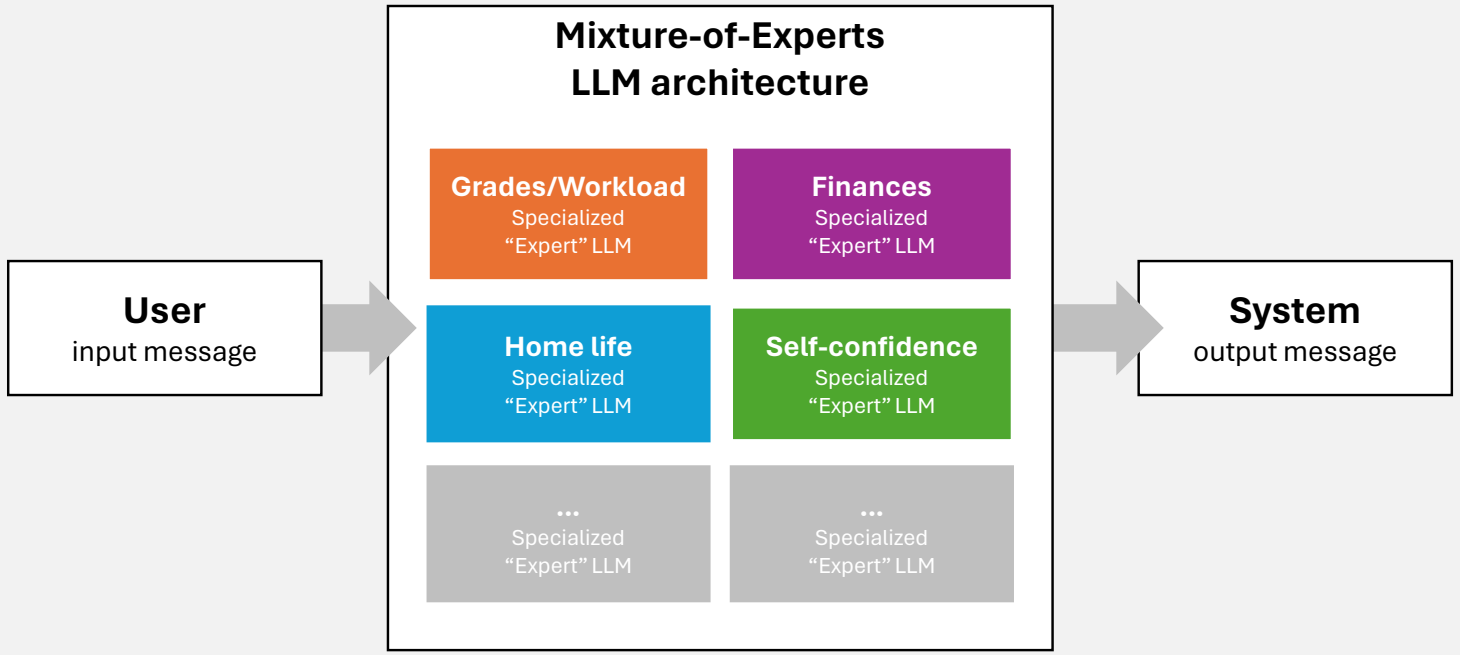
FUTURE WORK

- Using the findings from this literature review, our lab is moving forward in the field of mental health tools.
- The benefits of incorporating AI into mental health applications for students is of interest.
- This consists of:
  - Speaking with professionals in the mental health/ AI field
  - Surveying the public on their disposition toward AI's place in the mental health field
  - Working within Northern Kentucky University to examine the benefits of the technology for students

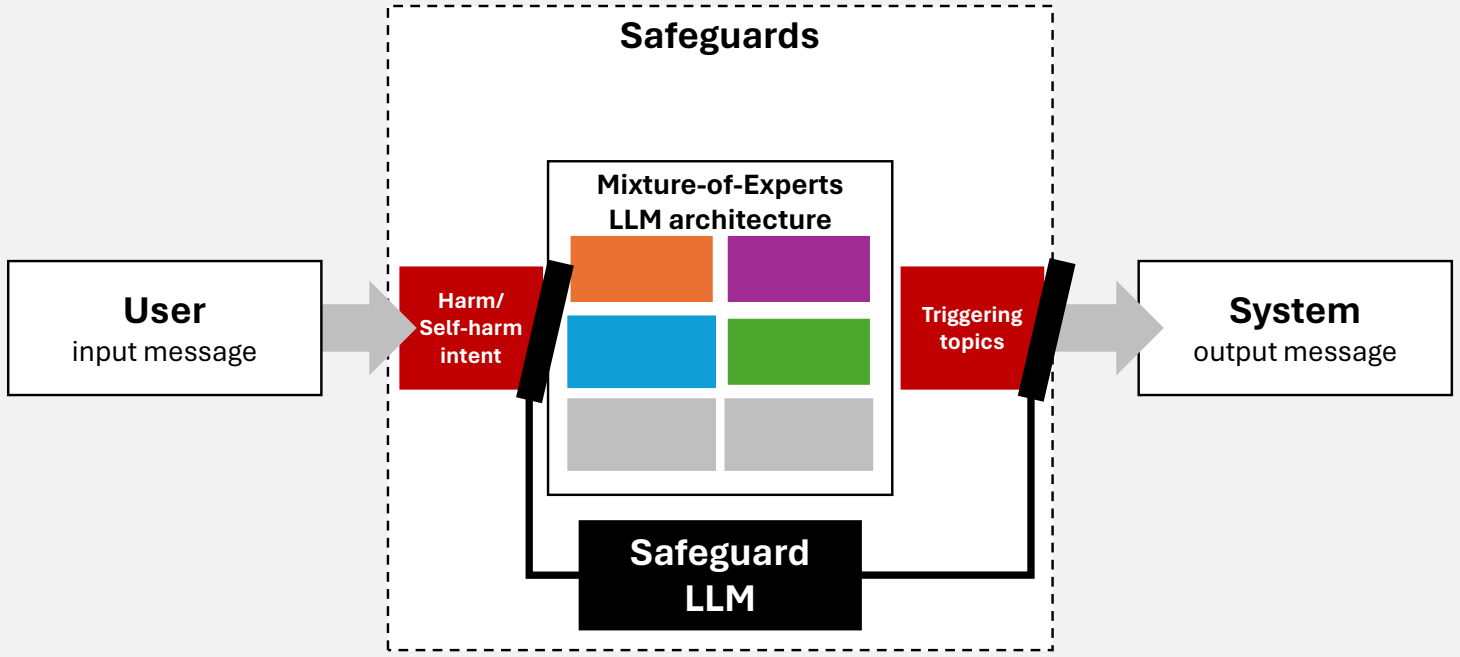
A GLIMPSE OF WHAT'S NEXT (1/4)



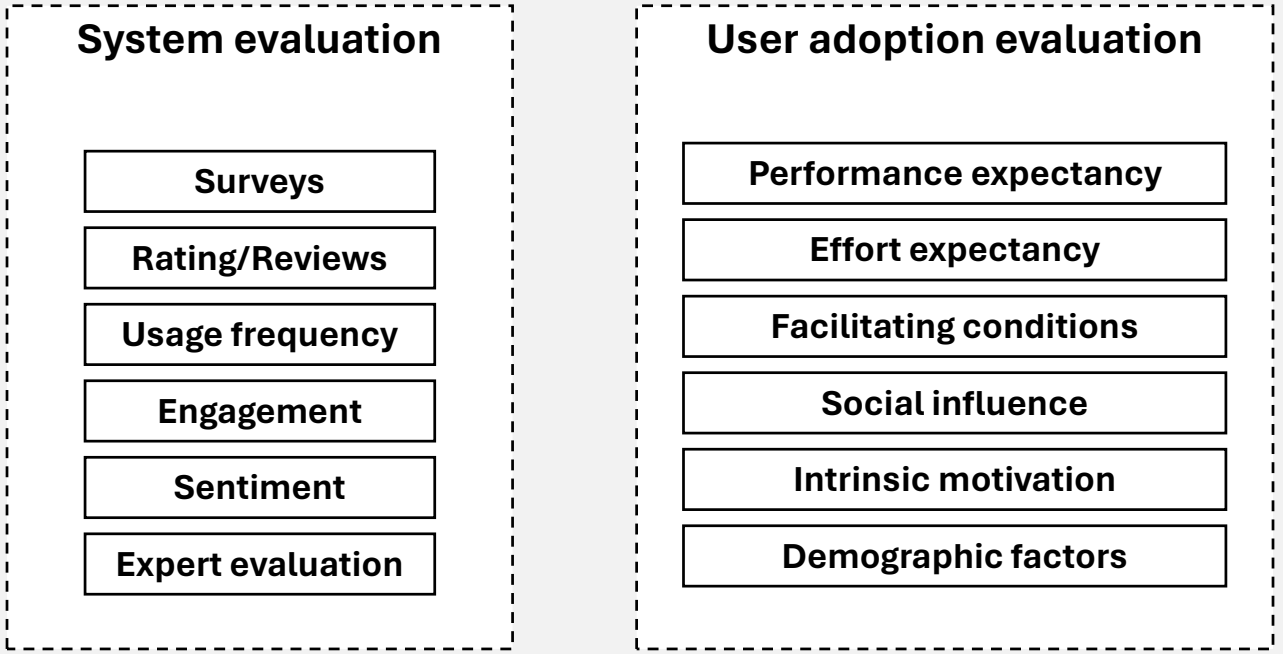
A GLIMPSE OF WHAT'S NEXT (2/4)



A GLIMPSE OF WHAT'S NEXT (3/4)



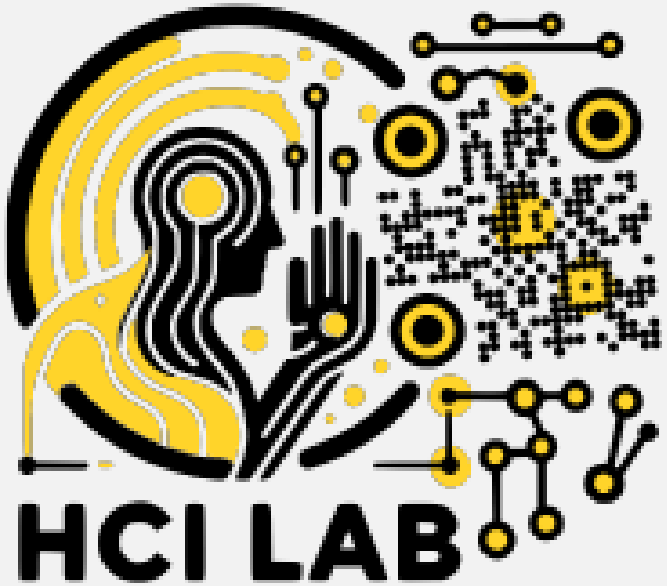
A GLIMPSE OF WHAT'S NEXT (4/4)



QUESTIONS?

Please see “Patient and Therapist Adoption Criteria for Mental Health Applications” for more information.

Our Human-Computer Interaction Lab



Olivia Kennedy LinkedIn