## INF 232 - Health Discussion

Colin LeFevre & Ziqi Yang @ Jan 23, 2024

### Agenda

- Lecture: Overview of Paper 1
- Discussion: Takeaways of Paper 1
- Lecture: Overview of Paper 2
- Discussion: Takeaways of Paper 2

## Paper 1

"This app said I had severe depression, and now I don't know what to do": the unintentional harms of mental health applications

Best Paper Award at CHI'24



### **Overview**

- Interested in the "unknown risks" of using depression self-management apps
- Conducts a qualitative analysis of 6,253 reviews left on 36 apps
- Finds four themes of harms and contextualizes them in an ethical framework
- Contributes recommendations and resources for HCI, Psychological Science, and consumers



#### "This app said I had severe depression, and now I don't know what to do": the unintentional harms of mental health applications

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#### ABSTRACT

A growing market for mental braith applications and increasing evidence for the efficacy of these applications have made appn a popular mode of montal healthcare delivery. However, given the gravity of narotal discuss, the potrotal lursus of using these applications must be continually investigated. In this study, we conducted a thematic analysis using user-constructs left on deprevious will examplement applications. We unabland 6.253 reviews from thirty-six, systematically selected apps from the Google Play and Apple App stores. We identified four thomes regarding the potential, sucretestood harms caused by these applications. This study uniquely contributes to the literature by examining the reported hartes to sarry caused by depression self-management appr and contextualizing them in an ethical framework. We provide missioneridations to developers for creating ethical depression selfnunogeneral apps and arrestors for practitioners and community to sid in screening appe-

#### CCS CONCEPTS

 Human-centered computing → Empirical studies in HCL Empirical studies in HCL - Applied computing → Consumer health

#### KEYWORDS

depression apps, mental health apps, own reviews, thematic analysis ACM Reference Format.

Rathard M. Kang and Tera L. Bryonish. 2004. "This upp and 3 had severe depression, and new 1 flow? Sanse with to die?" the automostical house mountal leathly applications. In Proceedings of the CHE Conference or Human Factors or Computing Systems—CHE 200. May 26 - 10, 2004. Elements. IEE, USA. ACM, See Vice, NY, USA, VI. Sparse, https://doi.org/10.1016/j.ice/1004.044218.

#### 1 INTRODUCTION

According to the National Survey on Trug The and Health, in 2000, approximately 1 in 1th Americans and 1 in 5 young adults and adults-orted ducliness theories, depression (<u>ph.</u>). Some reports indicate that the occurrence of depression almost trigled during the COVID-19 pandomic [45], and projections auggest that the growing previous of our month behalf hierars will contribute plated economy an estimated



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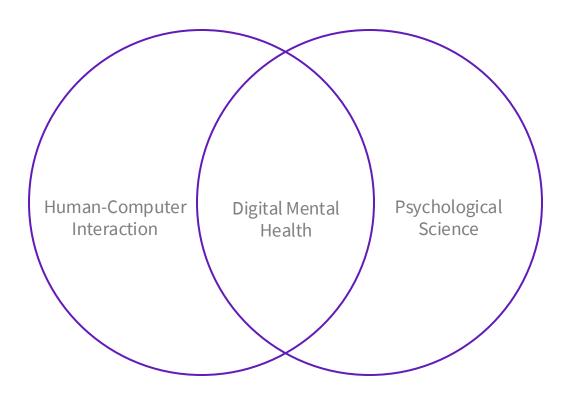
It to fills to III. Unfortunately, rates of seeking treatment remain to III. While control health providers work towards better access to healthcare to address this sean, research has begun exploring the potentials of brokenslegs; in scaling treatment and training to protests and practitioners [22]. Bencheloid in them technologies are mobile photor applications (papel, of which have of thousands are smalled in agent protests and practices of the protest and protests are provided by the protests of the protests and protests and protests are provided by the protests and protests and protests are provided by the protests and protests and protests are provided by the protests and provided by the provided by the

Research supports the efficacy of mobile mental health app. Bandomized, researched chained that have demandered that these apps can affective symptoms of depression, asciety, and other of faction disorders [33, 2, 3, 3, 1, 3, 1, 3, 4, preview statule have also focus aposition sensits automostical the quality of these apps. For example, in a strudy that evaluated the quality of depression selfstangement apps. presisterior bound the nerview day part had accept alter quality according to the valuated Mobile Applications. Briting Scied (MARSO [20, 22), has a similar study that analyzed fresions are receives on metals benth apps, researchers found that, wheh have appeared and actuals notes orderantion in how to track and improve mood, secres still expressed positive therapeutic outcomes such as better receptation of most patterns [33].

Reserver, even with the potential positive effects of these appa. It remains retiral to be eighted for potential angular outcomes. It remains retiral to be eighted for potential angular outcomes. It is noted retires analysis of deprecious appa by howelr follows and softengies [16], researchers someword a potential outcomes problem that impoded more experience and, ullimately, percented search from according the potential breafths of those applications. In that same stimple, researchers demand that these engitive sus-experiences may pose ethical insures when a sure in prevented from exceiding the out-three applications results of the sure in provide [16]. Similarly, a report published by the American Psychological Annotation (AVI) [2] waster that a lack of regulatory commely fail of these applications result cause where events that runses the tracked and, therefore, remains unknown (AVI).

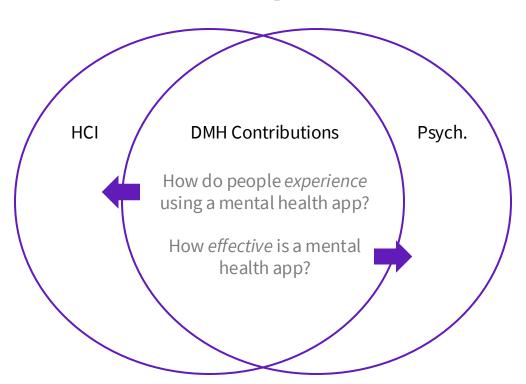
In this paper, we aim to investigate the potential "unknown which "to wave of depression self sumangement applications. We there to focus specifically see depression self-sumangement applications, which is depression in the a deletification, chinacis condition that has been linked to increase rath of mixide, will have, and suicidal schedulors [26, 53, 56, 56]. The theremore, which have revealed schedulors [26, 53, 56, 56]. The theremore, which have revealed increasing intervals in patients indicting from depression and other mental filteriors in utilize appear to help immage symptoms and oil in harping [26, 25, 37]. We explained part in the flames are respectived for the specific and depression and distance analysis of size reviews help in depression affections, and experience of the intervals of the superior and depression will management mobile phone ages found in the Google Fley and Apple Ago stoms. Our research questions were an addition.

## Digital Mental Health (simplified)



Other fields have been excluded for the sake of time

## Digital Mental Health (simplified)



### How Paper 1 builds on DMH literature

- Establishes the importance and utility of mental health apps using both HCI and Psychological Science research
- 2. Surfaces the lack of attention to ethics in the design and development of mental health apps using HCI research
- 3. Evaluates ethical issues in mental health apps using Psychological Science standards (i.e., APA ethical principles)
- 4. Analyzes those ethical issues from an experience-focused, HCI perspective

### What and to whom Paper 1 is contributing

The authors list three contributions:

- Recommendations to developers for creating ethical mental health apps (specifically depression self-management apps)
- Resources for mental health practitioners to screen mental health apps
- Resources for consumers to to screen mental health apps

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These contributions are **empirical**, which connects to the *general* knowledge gap identified in the paper.

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The contributions are directed towards digital mental health researchers / professionals and consumers.

What are the main takeaways of this paper for the HCI research community? Are there takeaways for other research communities?

Nobody has responded yet.

Hang tight! Responses are coming in.



## Some of Colin's Takeaways

- 1. Ethics is an important dimension of mental health app design which ought to be attended to but seems to have been understudied
- 2. HCI may work to create evidence-based mental health apps, but unethical apps are still available to and used by consumers
- 3. Harms arising from poor user experience are yet another reason to consider *experience* along with *effectiveness* in the design of digital mental health tools

## Paper 2

MigraineTracker: Examining Patient Experiences with Goal-Directed Self-Tracking for a Chronic Health Condition

**Y** Best Paper Award at CHI'24



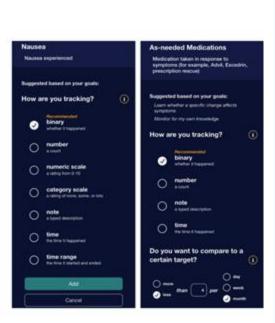
### Refresher

#### Motivation:

- Personal health tracking tools
- Complexity of health conditions and tracking goals

#### Design of MigraineTracker:

- Tracking configuration
- Data entry
- Data review
- "Goal is the center"





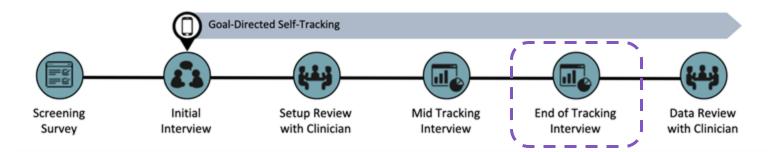
### Refresher

### Deployment study:

- Patients + clinicians, mostly pairs
- Average 2.5 months of tracking, with interview and surveys

#### Analysis:

- Focus on end of tracking interview
- Inductive and deductive coding + other data analysis



## **Areas of Inquiry**

#### Areas:

- Within HCI: self-tracking, personal health informatics
- Outside HCI: chronic condition management (using migraine as an example)

### Expansion to the areas:

- Understanding the use of self-tracking tools for chronic condition management
- Ways to improve personal health informatics models
- Design of technology to support chronic condition management

### Contribution

- Mainly to HCI + health researchers
- Some system/artifact contribution
- Empirical contribution (by studying the use of the MigraineTracker app)
  - How goal-directed data collection and reflection supports patients in their personal health tracking
  - Understanding of goals, their evolution, and the benefits of goal expression for patients
  - Challenges and design implications to personal informatics and design of self-tracking tools

## What are the main takeaways of this paper for the HCI research community? Are there takeaways for other research communities?



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### Ziqi Debrief on Takeaways

#### For HCI researchers...

- Learning from the methods: from design to deployment
- On goal-oriented self-tracking, e.g. classes of goals, the evolution of tracking goals in long-term chronic condition management

#### For other research communities...

 Potentially on how to leverage self-tracking tools for chronic condition management

# Thank You $\bigcirc$