Digital Acceptance and Commitment Therapy: A Scoping Review

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There is increasing interest in digital mental health interventions that can provide effective and accessible care to entire populations. A comparably new approach with much potential to be a treatment for a wide range of mental health disorders is acceptance and commitment therapy (ACT). Researchers have examined the effectiveness of both, traditional ACT and digital ACT (iACT), with promising results, but with little focus on understanding the design of iACT interventions and how design features affected intervention effectiveness. Thus, we present a protocol for a scoping review to explore and define the emerging field of iACT, and to identify functionalities associated with iACT. In understanding how iACT interventions are delivered, we can address future design and research opportunities to expand the field of digital mental health interventions.

CCS Concepts: • **Human-centered computing → Human computer interaction (HCI)**.

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1 INTRODUCTION

Due to the growing number of people suffering from mental health disorders [9], delivering accessible treatment is a significant challenge. Thus, it is not surprising that we have seen a rise in the research and deployment of digital therapies. We can observe a focus on studies on the digitisation of cognitive behaviour therapy (CBT). However, CBT might not be suitable for every individual, and for every mental health disorder. Therefore, it is worth highlighting the opportunities of other empirically supported psychotherapies: therapies such as acceptance and commitment therapy (ACT), dialectical behavioural therapy, or mindfulness-based cognitive therapy have been proven to be effective and add a variety of methods and techniques to the pool of treatment options [6]. Although a large corpus of studies and meta-analyses on traditional face-to-face third-wave therapies can be found, our understanding of digital versions remains limited.

2 BACKGROUND

So-called 'third-wave' psychotherapies combine concepts of traditional behavioural therapies with themes like meta-cognition, acceptance, mindfulness, or spirituality [6]. One third-wave therapy with a good evidence base is ACT. Unlike

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most Western psychotherapies including CBT, ACT does neither aim to reduce symptoms nor to teach methods to avoid or control feelings, but rather aims to reduce the influence of negative feelings and experiences [3]. The underlying idea is to increase psychological flexibility, which is defined as

> "being able to contact the moment as a conscious human being more fully as it is, not as what it says it is, and based on what the situation affords, persisting or changing in behavior in the service of chosen values" [4, p.187].

This definition includes the six processes of the ACT model: 'Cognitive Defusion', 'Acceptance', 'Contact with the Present Moment', 'Self as Context', 'Values', and 'Committed Action'. The focus on psychological flexibility means that ACT is supposed to be not limited to specific mental health disorders, which makes it a valuable treatment alternative. A review by Hayes et al. [5] highlights the variety of mental health disorders targeted already in 2006, only 20 years after the first randomised controlled trial on ACT was published. A more recent review of meta-analyses by Gloster et al. [2] supports this further: it is reported that ACT shows efficacy across a wide range of mental health conditions, including but not limited to depression, anxiety, chronic pain, and stress.

Compared to traditional face-to-face treatment with ACT, there are only a small number of reviews reporting on digital interventions based on ACT (iACT). Three meta-analyses focused on the outcomes of randomised controlled trials (RCTs) have reported iACT to be effective: Trindade et al. [12] investigated online delivered ACT on chronic pain (5 studies), Brown et al. [1] explored the effectiveness of ACT in the treatment of common mental disorders and well-being in a web-based delivery format (10 articles), and Thompson et al. [11] looked at the effect of iACT on anxiety, depression, quality of life, and psychological flexibility, compared to alternative or no treatment. Moreover, engagement with iACT has been reviewed (25 studies, 32 articles). Kelson et al. [7] is the only systematic review including uncontrolled pilot studies in addition to RCTs (20 studies). The aim of this review was to provide a comprehensive account of the empirical status of iACT for anxiety. Up to date, little to no information about the design of, and the ACT components used for digital interventions has been reported in the existing reviews on iACT.

3 RESEARCH AIMS

Digital acceptance and commitment therapy is a relatively new area with only little insight into the challenges and opportunities for HCI researchers. Through a scoping review, we aim to understand the emerging field of digital interventions based on acceptance and commitment therapy (iACT), and identify functionalities associated with iACT. Our research questions are the following:

RQ1 What was the motivation to use ACT?
RQ2 For which mental health disorders or symptoms are the interventions designed?
RQ3 What types of digital interventions have been used?
RQ4 What components of ACT have been included in these digital interventions?
RQ5 How were the interventions delivered?
RQ6 What was the role of therapist support?

4 METHOD

4.1 Study Design

To address our research aims, we use a scoping review method. A scoping review is a suitable approach to investigating emerging areas that are not clearly defined yet. Whereas systematic reviews are the better choice for assessing clinical

evidence, scoping reviews are well-suited to identify and discuss concepts and characteristics based on the existing literature [8] which aligns well with our aims.

4.2 Search strategy

The databases ACM Guide to Computing Literature, IEEE Xplore Digital Library, PubMed, and PsycINFO (via the EBSCOhost interface) were searched for articles addressing ACT in a digital context. The search terms used to retrieve were informed by previous systematic reviews and meta-analyses on iACT [1, 7, 11, 12]. The search terms combined two main concepts: framework (ACT), and digital delivery. Moreover, they were limited to titles, abstracts, and keywords. An initial search conducted in March 2023 led to an initial set of 1061 articles.

4.3 Eligibility criteria

We consider articles relevant that (1) are concerned with the prevention, or treatment of a mental health disorder, (2) concerned technology as part of the intervention or treatment process, (3) are described as being based on ACT and included at least two core processes of ACT (excludes papers that describe technology that is not primarily based on ACT), (4) describe ACT features that were delivered digitally (e.g., via a computer, tablet, smartphone, smartwatch, or personal digital assistant), (5) are written in English, (6) are peer-reviewed (excludes books, book chapters, and theses), and (7) are accessible. Literature reviews and survey papers will be excluded from the analysis but recorded.

4.4 Selection of Source of Evidence

First, two authors will independently review a subset (approx. 15%) of the titles and abstracts against the inclusion criteria and compare findings. Conflicts will be resolved by consensus or a third reviewer. The remaining articles will then be split between the same two reviewers and the final list of eligible articles will be reviewed by both authors. Then, the first author will retrieve the full text of eligible articles and both reviewers will independently review them against the inclusion criteria. Reasons for exclusion will be recorded and conflicts will be resolved by consensus or a third reviewer. The reference lists of included articles as well as of the previously recorded literature reviews and survey papers will then be searched by the first author for additional records by reviewing titles and abstracts against the inclusion criteria; the same process of two independent reviews for any additional full texts will be conducted. Publications considered near misses will be recorded and the reasons for exclusion discussed.

4.5 Data Extraction and Analysis

For data charting a Qualtrics form developed for this study will be used. The following data will be extracted by the first author: General data, Motivation, Health topic, Target disorder, Intervention format, Delivery format, Treatment length, Number of modules, Therapeutic approach, ACT processes, Manual protocol, Intervention features, System features, Therapist support, Type of therapist communication, People involved in the design process, Study design, Participants, Intervention aim, and Measurements used.

These data factors are either charted directly into binary or nominal categories or recorded as unconstrained text for further analysis. Combinations of both are possible. We conducted preliminary searches and piloted data extraction on a small number of papers (n=8). The predefined categories are developed based on the data extraction of the pilot, the literature and the eligibility criteria used for data inclusion. An example, therefore, is 'Health topic'. It is captured as either 'Mental health' or 'Physical health and mental health'. Eligibility criteria (1) limits the categories to these two options. The categories for unconstrained text entries shall be developed inductively from the data charted. An example,

therefore, is 'Motivation'. In the data extraction form, a box is ticked if the motivation to use ACT is explicitly described. The motivation is then recorded into a free text box by copying and pasting the author's description. These descriptions will then be analysed. An example of a combination of both, nominal categories and free text entry, is 'Target disorder'. Data are captured in the predefined categories 'Depression', 'Anxiety', 'Substance use', 'Chronic Pain', and 'Other'. Multiple boxes can be ticked and a free text box for 'Other' is provided. The categories are based on common disorders that were identified to be treated using ACT [2]. As ACT is not limited to these conditions and a comprehensive list of options for all possible target disorders would be too extensive, these are captured using a free text option.

5 CONCLUSION

This scoping review aims to explore the field of digital interventions based on acceptance and commitment therapy with a focus on understanding what ACT components and features are digitalised across a variety of mental health disorders. Due to the nature of ACT being value- and not goal-oriented [10], we expect to find similar features across common mental health disorders. In understanding how iACT is delivered, we can identify gaps in current technologies, and address future design and research opportunities for alternative evidence-based treatments for mental health.

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