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# Games for the Assessment and Treatment of Mental Health

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**Abstract**

The prevalence of mental illness is on the rise [7] – 18% of adults in the USA had a diagnosed mental illness in 2014 [31]; however, 57% of adults with mental illness in the USA do not receive treatment [28]. Untreated mental illness has serious consequences. The cost of depression and anxiety alone is estimated at \$1 trillion per year in US dollars [8]. In addition to these financial costs, people experience costs to their well-being that range from a lower quality of life [39] to a loss of life [32]. Although mental health care systems can provide support, there are several reasons why people may not receive treatment [40]. For example, there are not enough trained professionals to provide for those in need; access to treatment is lower for people who live in underpopulated or lower-income areas [28]; and people with mild impairment lack access to a system that is already burdened from treating those with more severe issues.

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## Biographies

**Regan Mandryk** co-directs the Interaction Lab. With over 150 papers that have been cited over 5700 times, Regan creates novel ways of understanding player experience in partnership with multiple industrial and international collaborators. She also develops and evaluates games for health, and games that foster interpersonal relationships. Regan has played a central role in the growth of CHI PLAY and the games community within SIGCHI.

**Isabela Granic** leads the Games for Emotional and Mental Health Lab and is CEO of the Playnice Institute. She bridges developmental science and game design in order to create a suite of evidence-based games that can be widely disseminated to build children's emotional resilience. Her seminal article (with Lobel) on the benefits of playing video games in *American Psychologist* (2014) has already been cited over 400 times.

These limitations in access to treatment cannot be addressed solely by growing the existing mental health system [10]; rather, the solution requires a variety of approaches, including a scaling in delivery mechanisms [8] that involve digital solutions [6,15,33]. There are already examples of digital interventions in the domain of mental health (see [26] for overview), whose success offer promise for use in self-help or as an adjunct to clinical treatment [17].

Effective designs of digital interventions for mental health necessitate several considerations. For example, patients need to adhere to the intervention repeatedly over the long term; assessments need to be standardized in their administration; solutions should be accessible to people from different geographic locations and demographic populations; and should be customizable for individual patients. These factors that describe good intervention design – i.e., accessible, motivating, broadly appealing, and tailored– also characterize the space of digital games [3].

### *Games for Mental Health*

People play a lot of games; four out of five American households own a device used to game [41], and internationally, the game market is expected to exceed \$102 billion by 2017 [42]. As such, researchers have started to question what makes games so compelling to play. Digital game researchers have started to deconstruct how satisfaction of needs during play [36] leads to game enjoyment for different players [2,20,36] and in varying gameplay scenarios [1,18,19]. Others have explored how to leverage these game design elements to motivate people in non-game contexts – a process called gamification [11,30]. There are already several examples of gamified interventions in the

context of mental health (e.g., [13,22,23,27,29,37,38]). Furthermore, games offer an opportunity for improving mental health at a large-scale as it is known that people use games to recover from noxious moods. Mood repair through escapism is included in validated scales on motivations for play [12] and game addiction [25], and surveys have found that both adults [19,34] and children [14] report mood regulation as a major motivation for play. Several researchers have started to examine how games facilitate recovery from the stress of life [4,5,9,35]. Finally, researchers have suggested that digital games provide an opportunity for improved emotion regulation [21], for example, by rewarding players who down-regulate negative affect [16].

The community for research on video games for assessment and intervention for mental health spans multiple disciplines, from cognitive sciences, computer science, and interaction design, to psychology, neurobiology, and medicine [24]. The goal of this workshop is to bring together an international group of researchers to discuss the current state of games for mental and formulate a plan for moving this research agenda forward in the CHI PLAY community.

## Objectives & Expected Outcomes

The workshop has the following objectives:

- Bring together an international group of researchers
- Create an overview of current game-based approaches for the assessment and interventions of mental health
- Discuss interests and directions for innovation
- Identify overlap between research groups

## Biographies

**Max Birk** is a PhD Student in Computer Science with a background in experimental psychology, psychophysiology, games user research, and human-computer interaction; Max has a variety of experience, all connected by his interest in games and has been involved as an AC and organizer of several CHI PLAY and CHI conferences.

**Marieke van Rooij** is an Assistant Professor at the Behavioral Science Institute. Her background in applied math and experimental psychology spawned her interest in the detection of individual patterns of change in behavioural and physiological data generated by games.

- Define a plan for knowledge exchange and collaboration between groups – e.g., through internships, research visits, invited presentations, and formal and informal collaborations

Participants will have the opportunity to gain knowledge about the state of the international research community interested in game-based solutions for mental health. There will be opportunities to meet peers in different stages of their careers and discuss opportunities for future collaborations to consolidate a community in this emerging area.

The community will benefit from the growth of a novel, timely, relevant, and underexplored research area that opens possibilities for interdisciplinary research at the intersection of game design and mental health.

## Planned Activities

The workshop will be run as a single day event, split into 4 units. The first unit will be dedicated to the introduction of the participants, including a short presentation of the submitted work. During the second unit, participants will discuss and capture current progress and challenges of game-design for mental health, considering aspects of clinical, computational, and design demands. In the third unit, participants will discuss potential solutions for the challenges identified in unit two. In unit four, participants will summarize the progress made and discuss potential collaborations. We may also combine with the workshop on games for positive psychology in unit four.

Coffee breaks and lunch will be used for networking and community development, which will be continued during a workshop dinner.

The outcome of the workshop will be summarized, documented and made available for the community; potentially in the form of a special issue of a journal. Furthermore, the community will benefit through future workshops and collaborations that will inevitably result from this workshop.

## Participants

Participants are encouraged to submit a 2 to 4-page position paper, including a biography. Papers will be reviewed by the organizers and accepted papers will be presented on the website as part of the workshop proceedings. Position papers on the following topics are encouraged: game-design, evaluation techniques, technologies, protocols, and best-practices for game-based interventions and assessment of mental health and emotional wellness.

We have identified multiple international groups within and outside of the CHI Play community who are potential attendees. We are in communication with research groups from Europe, Australia, and North America who are interested in attending the workshop. We assume that around 20 experts from multiple institutions will submit proposals and attend the workshop. The success of the Symposium on Computing and Mental Health at CHI 2016 and 2017 provides an indication of the current interest in technical solutions for mental health issues.

## Conclusions

This workshop will form the foundation for connecting a growing group of researchers both within and outside of the CHI PLAY community interested in the use of games for mental health and emotional wellness.

## Biographies

**Adam Lobel** is a postdoctoral researcher and game designer at the Swiss Center for Affective Sciences in Geneva, Switzerland. His PhD research in Psychology focused on the emotion regulation benefits of video gaming.

**Vero Vanden Abeele** is a professor at the Faculty of Engineering Technology, KU Leuven. Her research relates to game-based assessment and gamification of self-assessments, with a specific focus on understanding attentional and motivational processes to increase adherence and reliability of measurement. Vero has been involved in the international game community (chairing Fun and Games 2010), and is papers chair of CHI PLAY 2016 and CHI PLAY 2017.

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