
3rd Symposium on Computing and Mental Health: Understanding, Engaging, and Delighting Users

Greg Wadley

Interaction Design Lab
School of Computing and
Information Systems
The University of Melbourne
Parkville, Vic 3010 Australia
greg.wadley@unimelb.edu.au

John Torous

Department of Psychiatry
Beth Israel Deaconess Medical
Center,
Harvard Medical School
Boston MA 02215 USA
jtorous@bidmc.harvard.edu

Rafael A. Calvo

Positive Computing Lab
School of Electrical and
Information Engineering
The University of Sydney
Sydney, NSW 2006 Australia
Rafael.calvo@sydney.edu.au

Mary Czerwinski

Visualization and Interaction
(VIBE) Research Group
Microsoft Research
Redmond WA 98052 USA
marycz@microsoft.com

Abstract

The World Health Organization predicts that by the year 2030, mental illnesses will be the leading disease burden globally. Advances in technology create unprecedented opportunities for close collaboration between computation and mental health researchers. The intersection between ubiquitous computing and sensing, social media, data analytics and emerging technologies offers promising avenues for developing technologies to help those in mental distress. Yet for mental health technologies to be useful and usable, human-centered design and evaluation will be an essential ingredient in this powerful mix. The third in our series of symposia on Computing and Mental Health will provide an opportunity for researchers in a range of disciplines to come together under the auspices of HCI to discuss the design and deployment of new mental health technologies and interventions. Our emphasis in 2018 is on understanding the users of mental health technologies and how to increase engagement with these technologies in daily life.

Author Keywords

Mental Health; Positive Computing; E-health;

Paste the appropriate copyright/license statement here. ACM now supports three different publication options:

- ACM copyright: ACM holds the copyright on the work. This is the historical approach.
- License: The author(s) retain copyright, but ACM receives an exclusive publication license.
- Open Access: The author(s) wish to pay for the work to be open access. The additional fee must be paid to ACM.

This text field is large enough to hold the appropriate release statement assuming it is single-spaced in Verdana 7 point font. Please do not change the size of this text box.

Each submission will be assigned a unique DOI string to be included here.

Dates at a glance:

Submission deadline:
2 February 2018

Acceptance notification:
22 February 2018

Symposium:
21 April 2018

Special issue papers due to
JMIR by Jan 2019

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous;

Background

There is increasing focus within the Human-Computer Interaction community on the impact of technology design on users' mental health, be this via deliberately crafted intervention or unintended consequence of using the technology. Advances in mobile, wearable and social computing have enabled new forms of active and passive monitoring of human behavioral footprints, creating the potential to "detect" when intervention is required and to "deliver" appropriate and effective technology-mediated intervention [5; 10; 11]. At the same time there are opportunities to explore new types of intervention using emerging technologies such as chatbots [8] and virtual reality [9].

Growing interest in the intersection of computing and mental health is evidenced in the growth of specialist journals such as *JMIR Mental Health*, which has published 118 articles since 2014 on "Internet interventions, technologies and digital innovations for mental health and behavior change" (<http://mental.jmir.org/>). There has been significant interest also in traditional HCI forums, including a special issue of *Interacting with Computers* [6] and several sessions at CHI 2017.

Effective leverage of mental health technology depends on good human-centered analysis and design, to understand the needs of the target population and to design effective technology to support mental health. The evaluation of technologies to support mental health has also proved challenging [3], underlining the

importance of utilizing long-established methods in Human-Computer Interaction, such as contextual and participatory design, to deeply understand the intended population prior to the design and deployment of technologies, and ideally, to include them in design [7; 12]. HCI methods should inform factors that are becoming increasingly important in health applications, such as user autonomy and agency [4].

In line with CHI 2018's theme of "Engage", this Symposium on Computing and Mental Health provides an opportunity for researchers in clinical psychology, technology design, data analytics and computer science to come together under the umbrella of HCI, as depicted in Figure 1. Researchers and practitioners from academia, government, not-for-profit organizations and industry who are interested in computing for mental health will bring their ideas, projects and questions on how these disciplines can collaborate to create effective mental health technologies.

Prior symposia in this series

The first CHI Workshop on Computing and Mental Health [1], held in San Jose, CA, on May 7th, 2016, focused on bringing together clinical psychology and computation communities to discuss the use of wearable computing, online communities and social networks to improve mental health at individual, group and population levels. Submissions were clustered into three categories: prevention and treatment of mental health conditions and promotion of positive mental health [2].

The response to our call for papers was overwhelming, with close to 80 submissions and a final accepted-papers tally of 12 full presentations and 16 poster presentations after a three-person blind review process. Attendees elected to discuss five themes in structured workshops: entrepreneurship, publishing, funding, theoretical frameworks, and outcomes. Over 100 people attended, with feedback showing a strong desire to continue the workshop in the coming years to sustain this growing community, and agreement on the need for human-computer interaction methods and human-centric design in mental health applications.

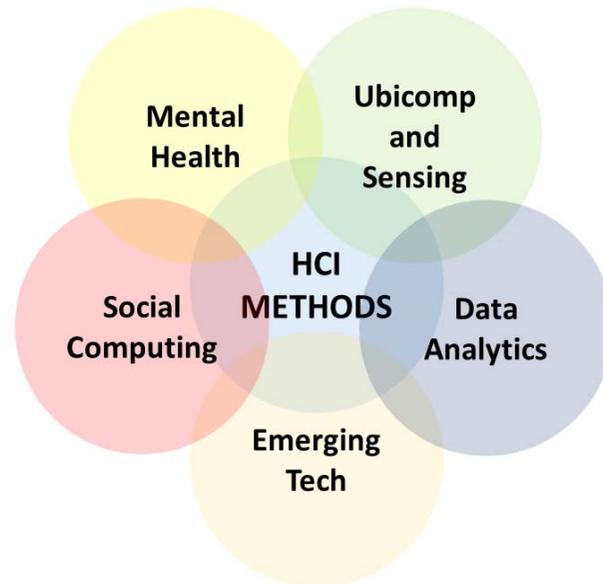


Figure 1: This symposium focus on bringing together researchers in multiple disciplines, under the auspices of HCI, to discuss the effective development and deployment of mental health technologies and interventions.

As a result of this positive feedback, we organized the 2nd Symposium on Computing and Mental Health at CHI 2017 in Denver. This was again very successful, with 19 papers and 30 posters accepted and 72 attendees.

Designing a multi-disciplinary symposium

The first two symposia on Computing and Mental Health have shown that we can bring together leading researchers and practitioners in computer science, human-computer interaction and mental health, along with a sizable presence of clinical psychologists, psychiatrists and those with lived experience. This represents a thriving community, a “new partnership between psychology, social sciences and technologists” [3] that is important to nurture and grow.

We have taken pains to design a symposium that supports our diverse community. We achieve this through a number of features. For example, we offer opportunities for attendees to network and socialize over lunch and two catered coffee breaks accompanied by poster presentations. Other opportunities to meet colleagues with similar interests are provided via a panel discussion, an open discussion session, and an optional symposium dinner. The symposium website supports collegial networking by publishing a CV from each attendee before the event begins. Based on feedback from last year, we now will offer more poster time and introduce new panels to increase the number of interactions between participants.

Our other major effort to support research community consists in organizing special issues in the highly-ranked multi-disciplinary journal *JMIR*, which has motivated high-quality submissions and interest from a broad range of researchers. One special issue has been

Structure at a glance:

9-9:30: Introduction & Welcome

9:30-10:30: 2 Invited speakers 30min each

10:30-11:00: Coffee break. Posters to be placed around the room.

11:00-11:30: 10x3 min presentations

Lunch + posters. 11:30- 1pm

1-1:30pm: 3rd Invited speaker

1:30-3pm: Panel discussion + Q&A

3 - 3:30pm: Coffee, posters, discussions

3:30 - 5pm. Structured discussion on themes chosen by attendees, including moving the community forward.

published, and another is planned for 2019. Over time these act as a compendium of work presented in the field. Furthermore, problems concerning publishing and venues for dissemination were discussed at the last symposium. It is a major challenge to find the right interdisciplinary venue. So we have invited the editors of the leading journals HCI (Prof Whittaker) and JMIR (Prof Eysenbach) to present at the symposium.

Focus for 2018

The field of Computing for Mental Health has expanded rapidly, with work undertaken in a variety of disciplines, addressing a range of conditions, and utilizing a wide range of existing and emerging technologies. The multi-disciplinary nature of the field brings an essential variety of perspectives to this important endeavor.

Yet since we are convening at CHI, it is worth considering what value the HCI perspective brings to the mix. In the context of mental health, we believe that the value of an HCI approach lies in its focus on understanding:

- The users of mental health technologies,
- Their context of use, and
- How therapeutic technology is used in daily life.

This perspective and the discussion from participants will be critical in making mental health technologies more engaging and usable over long durations that match the chronic nature of many mental illnesses. HCI's emphasis on understanding the user also lends itself naturally to a focus on understanding the needs and ensuring the social inclusion of disadvantaged groups. Important user communities whose

experiences can be better understood through a human-centered approach include:

- The young and the elderly
- Immigrants and refugees
- Indigenous and minority groups
- People experiencing addiction, homelessness or poverty.

Successful design and implementation of technology for mental health requires that accessibility, inclusion and non-stereotypical user needs and use contexts be addressed. This perspective will hopefully lead to new solutions and expansion of mental health technologies from their current more limited reach to these new diverse communities.

Finally, we will also focus on delighting users – transforming computing for mental health resources into tools that go beyond being 'ok' or 'good'. Translating delight into mental health is certainly a challenge, but the intersection of HCI, psychology, psychiatry, business, and academia that this symposium brings together is well positioned to tackle this critical challenge.

Organizers

Our team of four organizers, working in the Asia-Pacific and North American regions, represent a range of relevant interests.

Greg Wadley (main contact) is a lecturer in the School of Computing and Information Systems at the University of Melbourne, Australia. His research involves the design and evaluation of technologies for health and wellbeing, including collaborative projects in

the areas of mental health, social connectedness, hospitalized children, smoking cessation, chronic pain and addiction. He holds degrees in computer science (Qld), cognitive science (Melbourne), and human-computer interaction (Melbourne). In 2008 he spent four months as a visiting researcher at PARC, California. Since 2009 a major focus has been collaborating with a youth mental health clinic to design and trial online social therapies for young people and their carers.

Rafael A Calvo is Professor at the University of Sydney, and ARC Future Fellow. He worked at the Language Technology Institute in Carnegie Mellon University, Universidad Nacional de Rosario (Argentina) and on sabbaticals at the University of Cambridge and the University of Memphis. Rafael also has worked as an Internet consultant for projects in the US, Australia, Brasil, and Argentina. He is the author of two books and over 100 publications in the fields of learning technologies, affective computing and computational intelligence. Rafael is Associate Editor the Journal of Medical Internet Research Human Factors (JMIR-HF). Rafael is co-Editor of the Oxford Handbook of Affective Computing and co-author of 'Positive Computing' (MIT Press) with Dorian Peters.

John Torous, MD is co-director of the digital psychiatry program at Beth Israel Deaconess Medical Center, a Harvard Medical School affiliated teaching hospital, where he also serves as a staff psychiatrist and clinical informatics fellow. He has a background in electrical engineering and computer sciences and received an undergraduate degree in the field from UC Berkeley before attending medical school at UC San Diego. He completed his psychiatry residency at

Harvard. Dr. Torous is active in investigating the potential of mobile mental health technologies for psychiatry, developing smartphone tools for clinical research, leading clinical studies of smartphone apps for diverse mental illnesses, and publishing on the research, ethical, and patient perspectives of digital psychiatry. He serves as editor-in-chief for *JMIR Mental Health* and currently leads the American Psychiatric Association's work group on the evaluation of smartphone apps.

Mary Czerwinski is an American cognitive scientist and computer-human interaction expert who works for Microsoft Research as manager of their research group on visualization and interaction. Czerwinski earned her doctorate in cognitive psychology from Indiana University. She worked in computer-human interaction for Bellcore, the Johnson Space Center, and Compaq, and also held an adjunct position at Rice University while at Compaq. She moved to Microsoft in 1996, as a usability manager in product development. Two years later, she joined Microsoft Research. She is an adjunct professor in the University of Washington's Information School. In 2015 she was named a Fellow of the Association for Computing Machinery "for contributions to human-computer interaction and leadership in the CHI community."

Website

A website at <http://mentalhealth.media.mit.edu> has been created and is being used to store the proceedings from 2016 and 2017. We will use this again in 2018.

Easychair will be used to manage short paper and poster submissions. Long papers will be selected from

those accepted for publication in JMIR, the highest ranked journal in medical informatics.

All position papers, project descriptions and videos will be published on the website before the symposium gets underway.

Pre-Workshop Plans

Based on the past two years, we expect this symposium to attract a large number of attendees. Most participants will be researchers, developers and mental health professionals, and will not give presentations. In lieu of oral presentations, these participants, selected through review, will be encouraged to create a short 1-minute video based on their position paper.

Videos and papers will be distributed via the symposium website. The website will also contain information about all participants in the symposium, in order to build community.

We will choose discussion themes ahead of time via an online poll to be completed by attendees two weeks before the symposium.

Workshop Structure

This one-day symposium is organized around the following structure.

- Introduction & Welcome (9-9:30)
- 2 Invited speakers 30min each (9:30-10:30)
- Coffee break (10:30-11:00).
Posters to be placed around the room.
- 10x3 min presentations (11:00-11:30)

- Lunch + posters. We will arrange for lunch to be delivered to the venue. (11:30- 1pm)
- 3rd Invited speaker (1-1:30pm)
- Panel discussion + Q&A (1:30 - 3pm)
- Coffee and discussions (3 - 3:30pm)
- Structured discussions on themes chosen by attendees. Open discussion on moving the community forward. (3:30 - 5pm)

Speakers and panelists

Each of the Symposia on Computing and Mental Health has invited prominent researchers from a range of disciplines to give keynote presentations and take part in discussions.

This year's symposium will feature three speakers chosen to represent different HCI and mental health research communities, including local voices and a focus on interdisciplinary publishing.

We have confirmed participation by the following distinguished speakers:

- Steve Whittaker, UC Santa Cruz
- Shalini Lal, Uni of Montreal
- Gunther Eysenbach, Uni of Toronto

Steve Whittaker is a Professor in Human-Computer Interaction at the University of California at Santa Cruz. His work focuses on the design and implementation of systems to support computer-supported cooperative work, computer-mediated communication, personal information management, information retrieval, and wellbeing. He has over 40 patents. He is a Fellow of the ACM and is editor of the journal *Human-Computer Interaction*.

Shalini Lal is Principal Scientist and Assistant Professor at the School of Rehabilitation, Faculté de Médecine, Université de Montréal. She works on improving access and quality of youth mental health interventions and services, including e-mental health services. She is a Principal Lead of ACCESS-Canada, a pan-Canadian network that is implementing and evaluating service transformation in youth mental health at sites across Canada.

Gunther Eysenbach conducts research into healthcare, health policy, eHealth, and consumer health informatics. He is senior scientist at the Centre for Global eHealth Innovation at the University Health Network (Toronto) and associate professor in the Institute of Health Policy, Management and Evaluation at the University of Toronto. He is editor-in-chief of the *Journal of Medical Internet Research* (JMIR) and organizer of the annual *Medicine 2.0 Congress*.

Post-Workshop Plans

Our 2nd special issue of JMIR will be published in time for the anticipated 2019 symposium and consist of full versions of papers presented at the 2018 symposium.

We will discuss with participants their desires regarding further symposia. We anticipate that the symposium will continue to run in 2019.

We have created a LinkedIn group to support an ongoing interdisciplinary community.

250-word Call for Participation

The World Health Organization predicts that by the year 2030, mental illnesses will be the leading disease burden globally. Advances in technology create opportunities for collaboration between computation and mental health researchers to develop technologies to help those in mental distress. Yet for mental health technologies to succeed, human-centered design and evaluation will be essential.

This 3rd inter-disciplinary symposium on Computing and Mental Health will provide an opportunity for researchers to meet under the auspices of the annual CHI conference. It follows two highly successful symposia at CHI 2016 and 2017.

In convening at CHI we are especially interested in work that seeks to understand users and use in context. This lends itself naturally to a focus on disadvantaged groups and social inclusion.

Four kinds of submission are invited.

- *Short papers* are expected to be developed later for inclusion in a special issue of JMIR, to be published in May 2019. Authors will present a poster at the symposium.
- *Long papers* should be submitted straight to JMIR. Authors will be invited to give a presentation at the symposium.
- *Posters* describe work-in-progress, a technology, or an existing publication.
- *Social papers* are maximum one page in length and act as a CV for networking.

Posters and short papers will be made available via the symposium website. Submissions will be managed via EasyChair. Special issue papers are collected at <http://www.jmir.org/themes/461> . For more details please see the symposium website: <http://MentalHealth.media.mit.edu/>.

Important Dates:

- Submission deadline: 2 February 2018
- Acceptance notification: 22 February 2018
- Symposium: 21 April 2018
- Special issue papers due by: Jan 2019

References

1. Rafael Calvo, Karthik Dinakar, Rosalind Picard & Pattie Maes. 2016. Computing in Mental Health. CHI EA '16 Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems. pp 3438-3445
2. Rafael Calvo and Dorian Peters. 2014. Positive Computing: Technology for wellbeing and human potential. MIT Press.
3. Rafael Calvo, Dianne Vella-Brodrick, Pieter Desmet & Richard Ryan. 2016. Positive Computing: A new partnership between psychology, social sciences and technologists. *Psychology of Well-being* 6, 5.
4. Rafael Calvo, Dorian Peters, Daniel Johnson & Yvonne Rogers. 2014. Autonomy in Technology Design. CHI '14 Extended Abstracts on Human Factors in Computing Systems. pp 37-40. ACM
5. Mary Czerwinski & Ran Gilad-Bachrach. 2016. Designing Interventions for Health and Wellbeing. Position paper at the 2016 Workshop on Computing and Mental Health, San Jose.
6. Gavin Doherty & Timothy Bickmore. 2010. Guest editor's introduction. *Interacting with Computers* 22, 4 (1), 241-242
7. Gavin Doherty, David Coyle & Mark Matthews. 2010. Design and evaluation guidelines for mental health technologies. *Interacting with Computers*, 22(4), 243-252.
8. Kathleen Fitzpatrick, Alison Darcy & Molly Vierhile. 2017. Delivering Cognitive Behavior Therapy to Young Adults With Symptoms of Depression and Anxiety Using a Fully Automated Conversational Agent (Woebot): A Randomized Controlled Trial. *JMIR Mental Health* 4(2), e19.
9. Daniel Freeman, S. Reeve, A. Robinson, A. Ehlers, D. Clark, B. Spanlang & M. Slater. 2017. Virtual reality in the assessment, understanding, and treatment of mental health disorders. *Psychological Medicine* 1-8.
10. Rosalind Picard. 2016. Emotion technology, wearables, and surprises. In Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing, p. 1. ACM.
11. John Torous, Mathew Kiang, Jeanette Lorme, Jukka-Pekka Onnela. 2016. New Tools for New Research in Psychiatry: A Scalable and Customizable Platform to Empower Data Driven Smartphone Research. *JMIR Mental Health* 3, 2, e16.
12. Greg Wadley, Reeva Lederman, John Gleeson & Mario Alvarez-Jimenez. 2013. Participatory design of an online therapy for youth mental health. In *Proceedings of the 25th Australian Computer-Human Interaction Conference*. ACM.