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Editorial: Designing Technology for Emotions to Improve Mental Health and Wellbeing

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Editorial on the Research Topic

Designing Technology for Emotions to Improve Mental Health and Wellbeing

Over the past 20 years, there has been increased awareness of mental health and the distress that can be caused. High profile sporting personalities, such as Ben Simmons and Naomi Osaka, have openly discussed mental health issues in the media. Far more important than the celebrity cases, however, is the sizable number of members of the population at large that struggle with mental health. It is a positive development that some of the stigma associated with mental health has started to be removed publicly. However, there is still a long way to go to improve mental health outcomes.

Technology has been proposed as a way of improving mental health. A lot of research projects—some with considerable funding—have been conducted in this space. While there have been some positive results, there have been no real breakthroughs in a wide application of technology for supporting mental health outcomes. The limited success is perhaps not surprising.

We believe that technology will not help to improve or stabilize mental health without serious consideration about what function it serves. Good design is essential. Support mechanisms to ensure technology is adopted are also very important. In our experience the design process needs to strongly consider the emotions of the individuals engaging with technology to ensure longer-term take up and lasting health benefits.

With that awareness from our own research in mind, we accepted an opportunity to facilitate a special edition of Frontiers in Psychology and Frontiers of Computer Science to highlight the issue of designing technology to Improve Mental Health where consideration of emotions plays a significant role.

The background from the Proposal for the editorial stated:

“The scope of the special issue is to consider all aspects of designing and implementing technology for improving the mental health of people at all stages of the life cycle, including teens and older adults. We are interested in requirements elicitation methods, innovative design methods, and how emotions are taken into consideration. Interesting case studies are in scope. We are interested in the broad gamut of evaluation methods for technology, both quantitative and encompassing all stakeholders in mental health including psychiatrists, patients, health professionals, family, friends and other support workers. Are there trade-offs between focusing on lived experience versus medical expertise?”

There was significant interest in the topic, with much diversity on the approach to emotions, and many expressions of interest. Seven papers were submitted. From these we have chosen four to be published. The papers discuss research conducted in four different countries, and are relevant for the mental health of differently aged populations.

Before we discuss the papers selected for the special issue, we make two points. The first is that the subject, Designing Technology for Mental Health, is inherently interdisciplinary. There was

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much discussion as to which area is key, and we ultimately chose a focus on both *Frontiers in Psychology* and *Frontiers in Computer Science*.

The second point is that there is a lot of diversity in what people consider as emotions. The underlying neuroscience is in transition. In contrast to prevailing views in the previous century, there seems agreement that emotions are an equal partner with rational thought. Further there is no clear region of the brain that recognizes primary emotions, such as sadness and anger, and there is a degree of construction of emotions over people's experience.

The first paper is *Is Fun for Wellness Engaging? Evaluation of User Experience of an Online Intervention to Promote Well-Being and Physical Activity* by Scarpa et al..

Adapting a description from the abstract, Fun for Wellness is a novel online intervention grounded in self-efficacy theory which is intended to improve multidimensional wellbeing and physical activity. It includes capability-enhancing opportunities, learning experiences such as games, video vignettes, and self-assessments. Randomized control trials have suggested that Fun for Wellness is efficacious in improving subjective and domain-specific wellbeing. It is effective in improving mental health, physical health, physical activity, and self-efficacy in U.S. adults who are overweight and in the general population. The paper discusses qualitative and quantitative user experience data collected during two trials. The results suggest that Fun for Wellness is enjoyable, moderately engaging, and easy to use.

The second paper is *Emotionalism Within People-Oriented Software Design* by Sherkat et al..

The paper proposes a systematic technique entitled the Emotional Goal Systematic Analysis Technique to systematically analyse people's emotional goals. It allows software developers to address emotional goals which sit alongside functional and quality goals. The technique allows in-depth analysis of emotional goals to build a software system and provides a visual notation for representing the analysis, which facilitates communication and documentation. It enables system analysts to convert emotional goals to traditional functional and non-functional goals that can be analyzed by existing software engineering methodologies without demanding excessive effort.

The third paper is *Technology for Healthy Aging and Wellbeing: Co-producing Solutions* by Astell et al..

The paper arises from the Technology for Healthy Aging and Wellbeing initiative. The authors organized two interactive co-production workshops, to bring together older adults, health and social care professionals, non-governmental organizations and researchers. In the first workshop two activities were used: Technology Interaction and Scavenger Hunt, to explore the potential for different stakeholders to discuss late life mental health and existing technology. In the second workshop the authors used Vignettes, Scavenger Hunt and Invention Test to examine how older adults and other stakeholders might co-produce solutions to support mental wellbeing in later life using new and emerging technologies.

Overall, the interactive methods were successful in engaging stakeholders with a broad range of technologies to support mental health and wellbeing and in co-producing ideas for how they could be leveraged and incorporated into older people's lives and support services.

The final paper is *Involving Older Adults during COVID-19 Restrictions in Developing an Ecosystem Supporting Active Aging: Overview of Alternative Elicitation Methods and Common Requirements from Five European Countries* by Mooses et al..

This paper is also concerned with elicitation of emotional goals. Due to COVID-19 restrictions, alternative approaches to commonly used face-to-face methods were deployed across six pilot sites. Requirements were elicited with the help of goal models. The most prevalent functional goals elicited were "Monitor health," "Receive advice," and "Receive information." The most prevalent quality goals elicited were "Easy to use/comfortable," "personalized/tailored," and "automatic/smart." The most frequently occurring emotional goals were "involved," "empowered," and "informed."

AUTHOR CONTRIBUTIONS

All authors were involved in developing the special edition.

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This special issue was also affected by COVID restrictions. The guest editors thank the *Frontiers* team, the authors, and the reviewers for their patience. This topic was started in the second half of 2020. Yet we have arrived here in 2022, and look forward to more great research on the topic.

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