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Preface

Emotional Wellbeing



Good mental health and emotional wellbeing are fundamental to quality of life, enabling people to experience life as meaningful, handle daily stresses, work productively, and to have stable and fulfilling relationships. Beyond the direct impact on the individual, emotional wellbeing is identified as vital for society as a whole. It is an essential component of social cohesion, peace and stability in the living environment, contributing to social capital and the economic development of society (WHO, 2005). Unfortunately, the metrics of the World Health Organisation show that poor mental health is a leading cause of disability worldwide (Murray et al., 2012). Healthcare researchers are thus faced with two fundamental questions. Firstly, what steps can be taken to maintain, strengthen and nurture positive emotional wellbeing, thus improving people's quality of life and reducing the risks of mental health difficulties? Secondly, how can we provide more effective support for people who are experiencing mental health difficulties?

A growing body of research suggests that the HCI community – working collaboratively with healthcare researchers and practitioners – has a valuable role to play in helping to address these challenges. For example, a number of systems have recently been developed specifically to support mental health interventions. This includes online treatments (Knowles et al., 2014; Lederman et al., 2014), mobile support (Bardram et al., 2013; Lawson et al., 2013; Ben-Zeev et al., 2014), therapeutic computer games (Coyle et al., 2011; Pykhtina et al., 2012; Brezinka, 2014), virtual and augmented reality exposure therapies (Opriş et al., 2012), and relational agents (Bickmore and Gruber, 2010) or robotic companions (Wada and Shibata, 2007) designed to provide emotional support. There is also rapidly growing interest in passive and non-passive techniques to monitor and assess emotional wellbeing and provide information that can increase emotional awareness, support positive behaviour and enable richer expressions of emotional states. Examples include physiological monitoring systems (Lu et al., 2012), affective diaries (Ståhl et al., 2009) and systems that present feedback to promote mindful self-awareness and meditative practices (Thieme et al., 2013). Others have explored the potential of technology in positive psychology (Morris and Picard, 2014), in supporting the construction or re-construction of identity (Bers, 2001) and in creating opportunities for meaningful interpersonal communication, nurturing a sense of belongingness to others (Wallace et al., 2013).

Building on successful workshops at ACM CHI 2012 (Coyle et al., 2012) and ACM DIS 2012 (Thieme et al., 2012) this special issue brings together recent examples of HCI research on designing for emotional wellbeing. Alongside examples of the issues discussed above, our call for papers asked the HCI community to consider

key themes including: the role that empowering and supportive relationships can play in emotional wellbeing; the differing emotional needs of distinct communities, e.g. children, adolescents and older adults; and the importance of emotional needs in physical healthcare and wellbeing more generally.

Five papers have been selected for publication, each of which provides new insights on design for emotional wellbeing.

The first paper by Piper et al. addresses the issue of empowering and supportive relationships. In a similar vein to Frohlich's (2004) prior work on audiophotography, they explore the potential of audio-enhanced paper photos to support the relationship between older adults and their caregivers. The two case studies they present show firstly, how audio-enhanced paper photos supported the process of reflecting on speech and attempting to improve it during speech therapy, and secondly, provided a positive resource for social interaction and reminiscence for an older person living in a retirement community. The flexibility of the medium was found to be a key factor in its success. It meant that caregivers could tailor the design of the photos according to the needs of the older people they were providing care for, whilst taking advantage of the ways in which the photos could, through the incorporation of imagery and voice, evoke positive emotions.

Supportive relationships and social bonds are also key themes in the second paper, authored by Wadley et al. In this case the focus is on how an ambient technology can support a sense of social connectedness between hospitalised children and both their parents at home and peers at school. Their paper presents the design process and an exploratory field trial of the *Presence App* that combines an ambient visualisation of activity levels in remote locations with a photo-sharing functionality; thereby mediating a social connection between physically separated places and people without compromising their privacy or causing disruption. Wadley et al.'s work compellingly describes how compromises between varying perspectives and expectations of different stakeholders (parents, teaching and hospital staff) were negotiated for the design. This contributes to recent, under-developed, yet important discussions around the challenges and complexities that researchers in HCI are faced with in the design and real-world deployment of wellbeing technologies (Doherty et al., 2010; Frost and Houben, 2014), particularly within sensitive and often highly regimented, institutional settings such as hospital services or schools (Wallace et al., 2012).

Whereas Piper et al. and Wadley et al. address the needs of specific age groups and vulnerable communities, Collins and Cox consider the potential of technology to both cause and relieve day-to-day stresses many of us will be familiar with. We now live in

societies where work patterns have become less well defined and there is growing concern over work-home interference, where the stress of work interferes with a person's home life. For example, smart phones allow for ready access to work-related emails at any time of day. In this context, the authors seek to understand the role of digital recreational activities in supporting people's ability to relax and detach from work. The paper investigates whether playing digital games, one of the most popular contemporary recreational activities, can facilitate post-work repose. Positive correlations are found between hours spent playing digital games and a range of recovery-related outcomes. Furthermore, highly immersive games such as first-person shooters and other action games were most strongly correlated with post-work relaxation. This work suggests that playing digital games, an activity often criticised for promoting obesity, lowering physical activity and reducing sociality, conversely can have important positive impacts on mental health and emotional wellbeing. More generally, this paper highlights the value of further research on how digital recreational activities can help us cope with and manage the stresses generated by the always-on nature of modern digital technology.

In the fourth paper, Chittaro and Sioni take an empirical approach to assessing the effectiveness of biofeedback and affective computing to support relaxation training. Two approaches to physiological sensing – one simple, one more complex – are evaluated in the context of a computer game that detects a user's level of stress and uses it to influence the affective state and behaviour of a 3D virtual character. Most interestingly, perhaps, the authors also introduce the use of a placebo condition in which the avatar's behaviour, unbeknown to participants, is determined pseudo-randomly instead of taking into account physiological sensor readings. Results obtained show that participants perceived feedback from the simple single-sensor algorithm as significantly more accurate than the placebo. The more complex multi-sensor feedback was perceived as no more accurate than a placebo. For Chittaro and Sioni this outcome emphasises the importance of using more thorough methodologies in future affective computing studies.

The final paper of this special issue draws further attention to the significant potential of immersive digital experiences, body-centric interactions and persuasive technologies for meditative practices and behaviour change. Vidyarthi et al. discuss and evaluate Sonic Cradle; a unique system that acts with a number of senses simultaneously to create an environment that at once diminishes visual and physical distractions, whilst enabling a user to control their sonic surroundings with their own respiration. Differing from related work by Schnadelbach et al. (2012), this system focuses on drawing a user's attention inward and the personal experience and meditative practice that stems from this. The study reports on the responses of users revealing a range of nuanced bodily and emotional experiences. This paper, again, presents compelling evidence of the potential for digital technologies to support emotional and mental wellbeing in new ways and contributes to an as yet under-explored space in HCI research.

Together, the papers presented in this special issue provide valuable examples of the potential of HCI research to help address one of society's most important healthcare challenges. HCI research in this area is still in the early stages. Moving forward there is an opportunity for the community to build on this initial work by drawing on many related themes, including cognitive rehabilitation, human memory and reminiscence, social connectedness, emotion regulation and behaviour change, empathy in design and designing for reflection.

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