

Can we Introduce Mindfulness Practice through Digital Design?

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We follow a person-centred, collaborative approach in the development of a set of innovative, interactive artefacts: the *Spheres of Wellbeing*, designed specifically for women with a dual diagnosis of learning disability and borderline personality disorder, who are living in a medium secure unit of a UK hospital. The women present a very vulnerable and difficult to treat client group due to their extremely challenging behaviours, complex needs and a persistent lack of motivation to engage in therapy. Simultaneously, they have a strong need for attention, care and positively experienced interactions. The paper presents the design and rationale of one of the Spheres: the *Heartbeat Sphere*, which is intended to encourage the women to practice mindfulness. Mindfulness practice is a vital component of Dialectical Behavioural Therapy; a specialist psychosocial treatment for their condition. Interactions with the Heartbeat Sphere are envisioned to complement their mindfulness skills practice and to enhance their mental wellbeing.

Mental Wellbeing, Mindfulness, DBT, BPD, Emotional Design, Interaction Design, User Experience.

1. INTRODUCTION

The paper describes our work in progress on the design of a set of digital artefacts – the *Spheres of Wellbeing* – specifically developed for women with a dual diagnosis of learning disability and borderline personality disorder (BPD), who live in a medium secure unit of a UK hospital.

Individuals with BPD have profound difficulties in regulating their emotions. This relates to their high sensitivity and responsiveness towards emotional cues as well as to difficulties in modulating resulting emotions (Linehan, 1993b). In attempting to regulate their emotions, particularly intense negative emotions, the women engage in behaviours which promise immediate relief or distraction, such as inappropriate outbursts of anger, impulsive behaviours or acts of self-harm (Linehan, 1993a; Yen, et al., 2002). The emotional dysregulation further nurtures cognitive disturbances and impacts on their ability to form and maintain stable interpersonal relationships (Linehan, 1993b; Palmer, 2002). Moreover, BPD is far more prevalent in women (70-75%) than it is in men (Simpson et al., 1998).

In this paper we present the design and rationale of the *Heartbeat Sphere*, one of three Spheres of Wellbeing artefacts. The Heartbeat Sphere is sought to encourage the women in practices of mindfulness. Mindfulness skills are a vital component of dialectical behavioural therapy

(DBT), which is a specialist psychosocial treatment for their complex condition (Linehan, 1993a).

We regard the Heartbeat Sphere as a means to introduce mindfulness meditation to the women and engage them in regular practice. To this end, the Heartbeat Sphere is designed to externalise and present the heart rate of a person through colourful light and soft pulsating vibrations. This invites a visual and very practical observation of one's heartbeat just as it unfolds moment by moment (cf., Kabat-Zinn, 2009). As such, the Sphere is envisioned to cultivate a new, experiential way of bringing awareness to their bodily sensations.

The continued practice and application of learned DBT skills has been found to increase individuals' coping abilities at times of personal and emotional distress and to reduce impulsivity and incidences of self-harm (Swenson et al., 2002). To master important DBT skills, such as mindfulness, and to establish behavioural control in the long run, however, requires the individual to learn, practice and apply these skills (Lew et al., 2006; Lieb et al., 2004). It is hoped that the Heartbeat Sphere, which will be personalised through a collaborative design process with each woman, will become an artefact of personal significance to them. This may help to overcome a lack of motivation and engagement in skills practice as is often found with exercises promoted in formal therapy.

Moreover, individuals with BPD have difficulties in analysing their own behaviours and abilities or

have limited understanding of how they can best practice skills which help them to gain more control. Whilst the women are often desperate for behavioural feedback, they are highly sensitive towards any negative comments. Additionally, most of the feedback they usually receive is contaminated by other people's interpretations of the person's underlying behavioural motives or intents (Linehan, 1993b). Thus, it is hoped that the personalised design of the Heartbeat Sphere, with its suggested visual and practical interaction, offers the women an engaging opportunity for continuous practice of mindfulness through the provision of interesting, objective feedback on their heartbeat.

2. BACKGROUND

2.1 Dialectical Behavioural Therapy

Dialectical behavioural therapy (DBT) is one of few psychosocial interventions whose effectiveness in treating personality disorders has been evidenced in controlled clinical trials (e.g., Koons et al. 2001; Safer et al., 2001; Turner, 2000). The therapy combines established Western therapy approaches from cognitive science, behaviourism and neurobiology with Eastern psychological and spiritual practices (including mindfulness meditation), and thereby resonates with current trends in mental health care (Morrissey & Ingamells, 2011; Palmer, 2002; Simpson et al., 1998). DBT usually encompasses a combination of individual psychotherapy and group skills training, teaching individuals with BPD the mastery of four key skills: emotion regulation skills, interpersonal effectiveness skills, distress tolerance skills and core mindfulness skills. Vital components of DBT are also its focus on validating the individual by empathically acknowledging her feelings, thoughts and behaviours, and attempts to continuously motivate and reinforce the individual to practice taught skills (Linehan, 1993b).

2.2 Learning Disability

In addition to the personality disorder, the target women of this research also suffer from a learning disability (LD). Individuals with LD in fact present the population that is most at risk for mental health and behavioural problems. Their prevalence of anxiety or mood disorders is twice as high as in the general population (Robertson, 2011). LD is a lifelong disability which has shown to cause difficulties in learning, understanding and people's interactions and communications with others (MENCAP, 2012). Potential participants of this research are expected to fit into a range of borderline to mild levels of LD, making it more difficult for them to develop a sense of independence, to learn skills or make own life choices. Moreover, due to LD related limitations in

their attention span, understanding and difficulties in solving problems, they more often experience situations that they find emotionally provocative or frustrating (Chilvers et al., 2011). Thus, they have a great need for effective and practical treatments such as mindfulness-based psychotherapy, as it is part of DBT, helping them in their management of stress, anxiety, depression, aggression and self-harming behaviours (Robertson, 2011).

2.3 Women with BPD in Secure Settings

BDP does not only occur more frequently in women than in men, but women also represent a much more vulnerable and difficult to treat client group due to extremely challenging behaviours particularly with regard to self-harm and impulsivity. Their specific circumstances of requiring secured treatment means that they lose their liberty, and this often lasts for 3-4 times longer than their peers in prison or male counterparts (Aitken & Logan, 2004). Especially because the women do not leave the secure unit, it is very important to regard them as active contributors to their care process with a strong emphasis on engagement, collaboration and education, particularly for individuals with LD (Hall & Duperouzel, 2011).

With this in mind, the medium secure unit ensures that the women have 25 hours of meaningful activities each week (CQUIN, 2008). Meaningful activities, which have intellectual, creative, and social dimensions, involve the kind of planning, thinking and discovery that brings balance and satisfaction. They also help facilitate the cultivation of relationships among the community of women. Ensuring that the women have the opportunity to engage in meaningful activities is in line with the National Health Service (NHS) person-centred care agenda, which actively promotes innovative practices and aims to continuously improve the quality and standards of their health services (Darzi, 2008).

3. DESIGN CONCEPT

In the spirit of the person-centred care agenda and the importance of meaningful activity to care and wellbeing, this research centres on a meaningful, empathic and creative engagement between the women and the researchers to collaboratively complete the design of the Heartbeat Sphere to the personal preferences of each woman.

The Basic Design of the Heartbeat Sphere

Upon touching, the *Heartbeat Sphere* (see Figure 1) assesses and reflects a person's heart rate through soft pulsating vibrations and colourful lights, providing a new, experiential way of bringing awareness to one's body. This offered opportunity

to intimately connect the individual to her body is crucial for the experience and expression of emotion (cf., Williams et al., 2007) and invites the person to be mindful of her heartbeat. In bringing gentle and kind awareness to the experience of one's heart, the individual may develop more appreciation and self-kindness for her body (Crump & Fraser, 2011). The manifestation of this inner sensation in the ball however does not remove it from the body, but facilitates to be in touch with the heart by closely holding the Sphere in one's hands.



Figure 1. Concept of the Heartbeat Sphere.

The Sphere is envisioned to provide the women with a very visual, practical and engaging interaction that enables them to feel in touch with oneself and one's body, to be mindful of one's heartbeat and perhaps to notice change in one's bodily sensations. Mindfulness and the ability to sense one's body and to notice one's emotions are key skills in DBT and an important prerequisite for the ability to regulate emotions (Linehan, 1993b). As a form of biofeedback, the Heartbeat Sphere may not only help the women to better trust their own behaviours and emotions (cf., Lew et al., 2006), but also allow them to learn how they can regulate one important aspect of their self: their heart (Reynard et al., 2011; Yen et al., 2002).

Collaborative Design Process & Personalisation of the Heartbeat Sphere

The basic design of the Heartbeat Sphere, as described above, has been chosen as the starting point in our user-focused collaborative design process (cf., Coyle et al., 2009), as it addresses many of the specific design challenges and requirements demanded by our sensitive user group and their specific environment. These challenges relate for instance to aspects of object safety (e.g., prevention of self-harm through the interaction with the Sphere), lack of engagement and motivation, difficulties in understanding or self-expression, and so forth. Addressing these challenges, the basic Sphere design has been

established as suitable through a series of meetings between the research team and staff at the hospital – including members of the R&D department as well as nurses and psychologists working with the women.

Beyond this close collaboration with the women's care givers, the research plans to carefully invite the women to contribute to an individual design of their Sphere object. To this end, we are planning to engage each woman in a set of 4-5 creative sessions over the course of 5 weeks, where they will work with different crafting materials. The women will be encouraged to design their own clay jewellery or grow beautiful crystals, which will then be visibly encased as decorative elements within their *Heartbeat Sphere*. The crafted components by the women turn each Sphere into a unique, personal possession that they can relate to and proudly present to others (cf., Belk, 1988). In designing for a personal appropriation of the Spheres' artefact, it is hoped to increase engagement with the object. This requires an artefact whose design offers opportunities for identification with it, so it can become an extension of a person's self and allow the individual to associate personal meanings with it (cf., Thieme et al., 2011; Wallace et al., 2012).

4. CONCLUSION & FUTURE STEPS

In our research we follow a person-centred, collaborative approach in the development of the Heartbeat Sphere, one of three Spheres of Wellbeing artefacts specifically designed for women in a medium secure hospital unit, who live with a dual diagnosis of BPD and LD. Following recommendations of the Department of Health, participants will be actively involved in the research and the design process through close, empathic and creative engagements, allowing for a personalisation of the *Spheres of Wellbeing*. The interaction with the Heartbeat Sphere is sought to encourage practices of mindfulness, which is a vital component of their DBT treatment programme. This research and the proposed interaction with the Sphere, however, do not aim at replacing existing therapy, but to complement its services in supporting the women in building a life that they feel is worth living. Moreover, through the artefact, we attempt to better understand how we can design technology that has the potential to motivate engagements in practices of mindfulness.

The project currently undergoes final alterations prior to its submission for ethical approval to the responsible NHS R&D and REC departments. Once approved, the research will be accompanied throughout all phases of the design, deployment and evaluation by a multidisciplinary team of researchers and health care practitioners. This is

hoped to allow for a more holistic understanding of the women and how they appropriate their Sphere artefacts. To this end, a rich mixed-method approach will be followed for the gathering of information encompassing crafted materials by the women, quantitative log file data, and recorded qualitative observations as well as interviews with members of staff and the women.

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