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Design for compassion: designing robots for e-mental healthcare

Benedetta Lusi[1], Charlotte M. van Lotringen[2], R. Klaassen[3], Geke D. S. Ludden[4], Matthijs L. Noordzij[5]

[1] Interaction Design, University of Twente, Enschede, Netherlands, b.lusi@utwente.nl
[2] Psychology Health and Technology, University of Twente, Enschede, Netherlands, c.m.vanlotringen@utwente.nl
[3] Human Media Interaction, University of Twente, Enschede, Netherlands, r.klaassen@utwente.nl
[4] Interaction Design, University of Twente, Enschede, Netherlands, g.d.s.ludden@utwente.nl
[5] Psychology Health and Technology, University of Twente, Enschede, Netherlands, m.l.noordzij@utwente.nl

Abstract — As the demand for mental health treatments rises, technology is called to bridge the gap between a traditional mental healthcare approach and the new needs of our evolving society. In the field of mental healthcare, the goal is to create a more sustainable system in which the adaptability of people is increased and supported by technology. However, when it comes to introducing technology, seen as cold and distant in a field so connected to humanness, there is a fear of losing the therapeutic alliance between therapist and patient. For this reason, we address the need for technology to be designed and developed in a way that increases the importance of benefiting the people in the mental healthcare domain. We believe that this is achieved through a design for values approach, where the value of compassion, a very important one in the field of mental healthcare, is given a central role in the development of new therapeutic technologies. In this paper, from considerations on different kinds of applicable technologies, we will focus on and shortly explore what it means to design a robot, based on the value of compassion. We will address the differences between a human-human interaction and a robot-human interaction in the compassion process, and how this affects the design of a compassionate robot.

Keywords —compassion, design for values, robots, methodology, e-mental healthcare.

1. INTRODUCTION AND MOTIVATION

In the Netherlands, the costs associated with mental healthcare are rising and waiting lists are getting longer, with more than one million patients per year seeking support. In order to keep offering high quality mental health care in the future, we need to realize a more sustainable, economically viable healthcare, focused on prevention and self-management. For this purpose, ICT has been put forward as a solution. New paths of treatment by technology mediated mechanisms were opened up, and evidence of effectiveness of e-mental healthcare treatments is rising. However, the transition to a more sustainable mental healthcare has not taken place to the extent envisioned. There are barriers that prevent this transition from happening: clients show low adherence to the technology mediated options, and professionals show hesitation in prescribing e-mental health options and a lack of digital skills to confidently explain and adapt them [1]. Furthermore, the technology mediated treatments seem to be perceived by mental health professionals as cold and inferior options that can be ignored in favor of the warmer, more humane and more effective Face-to-Face (F2F) options. In fact, current mental health technologies are often a direct translation of F2F existing therapies in and/or through a technological medium. This results in low societal readiness levels of the current mental health technologies. Societal Readiness Levels (SRL) are a way of

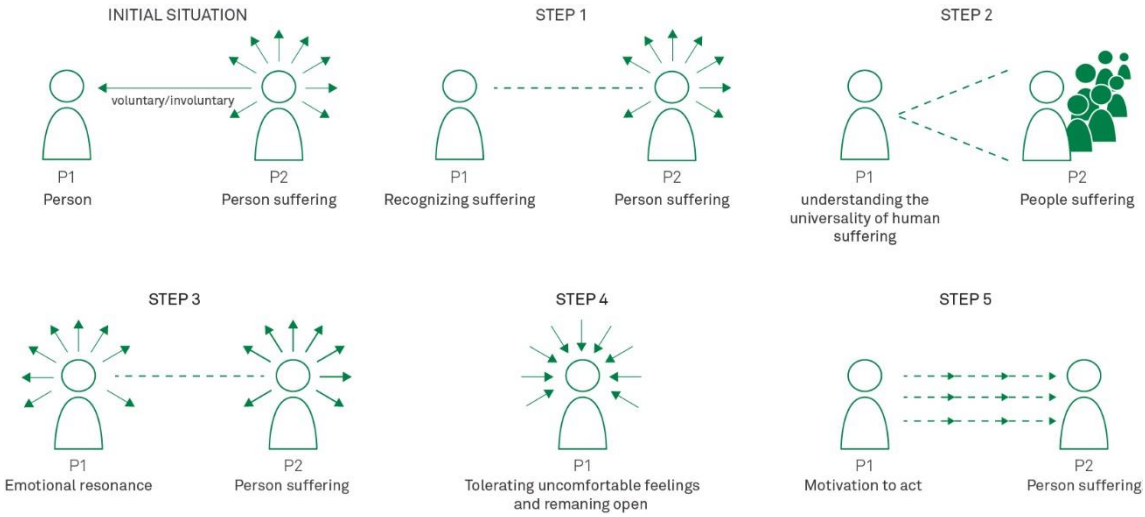

Figure 1. Compassion dynamics analysis: Human-Human Interaction

assessing the level of societal adaptation of, for instance, a product or technology to be integrated into society (as defined by Innovation Fund Denmark). If the societal readiness for a technology is expected to be low, it is necessary to offer suggestions for a realistic transition towards societal adaptation. While, currently, we are not using technology in the way it can best benefit people in this domain, innovative technologies, such as wearables, interactive devices and robotic instances could more closely support people at any time and place. To accelerate a more widespread transition to sustainable mental health care, we propose applying a further development of design for values [2]. More specifically, we will study how to design for a crucial value in the mental healthcare context: compassion. Our ambition is to support the more traditional approach with technology-mediated treatments and provide new knowledge and tools to designers and developers that will enable them to design technology for Mental Healthcare with a higher Societal Readiness Level.

2. TO DESIGN FOR COMPASSION

Compassion differs from related constructs, such as empathy, because it not only involves recognizing and imagining the suffering of others, but also includes an acting component: a motivation to act to relieve this suffering. From a psychological point of view this value has proven to be beneficial in mental healthcare settings because it supports the therapeutic alliance [3] and it is central to the process of recovery from psychopathology [4]. As for interaction design and human-robot interaction, compassion is one of the three core components of Amit Ray's Compassionate AI [5] for generating awareness and deep feelings in robots. Even so, in order to better understand the significance of compassion we need to first establish what it is.

2.1. Compassion as a process

Compassion can be broadly described as a response to suffering [6]. However, an even more relevant definition, with regards to the design of technology, is found in a recent review that describes compassion as a five-step process [7]:

1. Recognize the suffering

2. Understand the universality of human suffering

3. Feeling empathy for the person(s) suffering and connecting with the distress

4. Tolerate uncomfortable feelings

5. Be motivated to act/alleviate the suffering

What already can be inferred from this conceptualization is that compassion is both an attitude or sensitivity to suffering and well-being, and taking the expedient action to improve the human condition. This combination of sensing and acting makes it a more comprehensive concept to link to technology, which often both senses and acts, than for example empathy or intimacy, which mainly have to do with the sensing aspects of interaction [8]. In Fig.1 a first attempt is shown at analyzing the dynamics of the compassion process in a human to human interaction. From this analysis different questions are derived, such as: is compassion a P1+P2 process, or does it involve only P2? Is P1 active and P2 passive? Is it a voluntary or involuntary process? These and other questions become even more relevant when being transferred to technology. In Fig. 2 the same

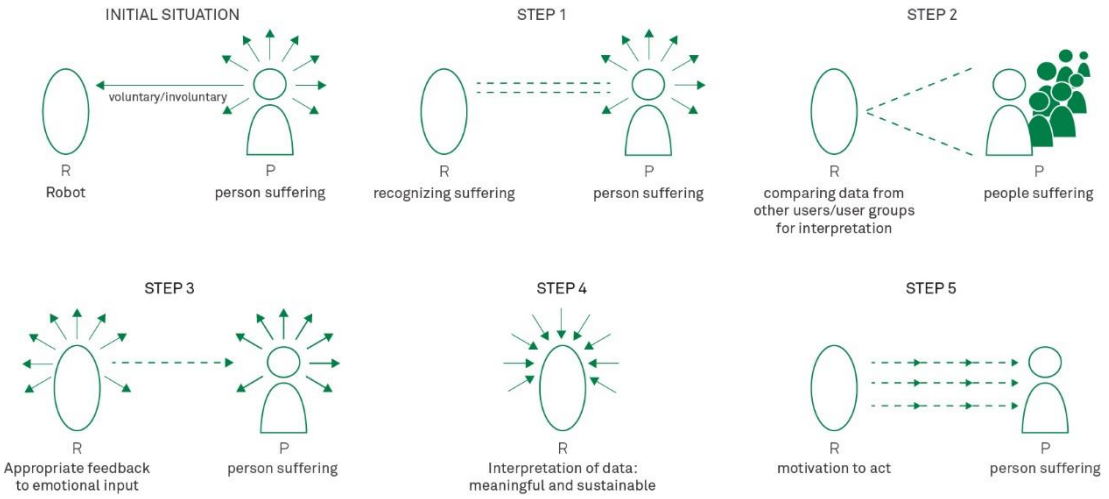

Figure 2. Compassion dynamics analysis: Human-Computer Interaction

compassion process is shown, but this time in the context of Robot-Human interaction. In this scenario we focus on interactive behaviour, rather than specific instances that would lead to equally specific technology solutions [9]. The main effort, in the case of Fig. 2, is translating behaviour that is typically human, into possible steps that are replicable for a machine.

In the workshop, we would like to discuss how we may adapt the compassion process to a machine. What technology can we use to make a machine compassionate technology? Does a machine need to experience compassion itself or is it sufficient to design detailed and targeted actions for a variety of cases? For instance, if we analyze step 2, we went from understanding the universality of human suffering to comparing data from users/user groups for interpretation. This step involves not only sensing, but also understanding that: 'other people are sentient, feeling organisms: a skill that is needed by the robots to treat other agents accordingly' [10], a principle key to the theory of mind [11]. We asked ourselves what this could mean for a machine, and for the sake of exploration and theoretical speculation we propose that, for example, the machine could compare data from a large user group, in order to "understand" the characteristics of that group and use it to provide feedback. Within the context of mental healthcare this discussion is particularly relevant to understand near and distant future scenarios, for instance it is important to consider what will change for the therapist and for the client with the adoption of e-health treatments. Thanks to technology and its ubiquitous nature, the client is acquiring more and more responsibility: private medical data is accessible through web-platforms, self-help modules are available in a number of programs, web platforms and mobile applications [12]. At the same time, the role of the therapist is also transforming: it is no longer the case that mental healthcare treatments have to be prescribed, they can be chosen, the tools of the profession are changing and learning iterations have to be put in place to keep up with the updates [13]. Finally, in Fig. 3 we made some considerations on the value of compassion and its value system, the following questions emerged: what value system is compassion in? What is its

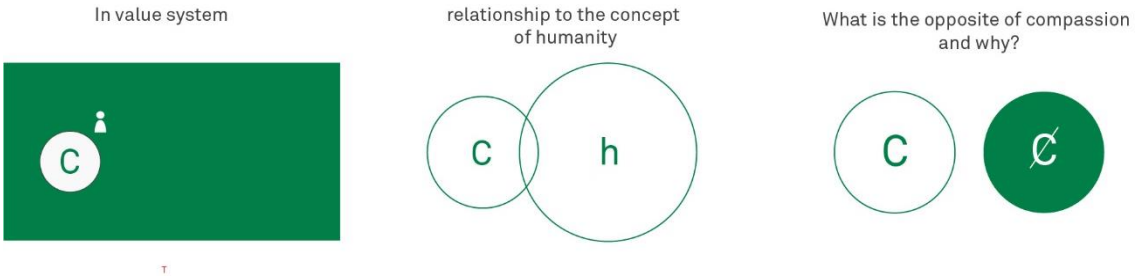

Figure 3. Value System Exploration

relation to the concept of humanity? How will it change within the technology context?

2.2. Design for values

The focus of the therapeutic alliance of patient and professional is human connection: alleviating mental suffering and increasing wellbeing. In the same way, there is a need to focus technology for mental healthcare on compassion. As B. Friedman states: “Value Sensitive Design is theoretically grounded approach to the design of technology that accounts for human values in a principled and comprehensive manner throughout the design process.” [14]. This design approach allows the expression and embedding of values in products and in ways of working. It affirms that a conscious and explicit thinking about the values in our designs is socially and morally significant. However, the reflection on values has to take place early on in the design process, when it can still make a difference. We need to study how this methodology can maximize the benefits of a ubiquitous technology.

3. CONCLUSION

Designing for a shift in the way technology is perceived is essential in general and especially in the context of Mental Healthcare. In this position paper we proposed a new way of designing technology and robots for e-mental healthcare based on pivotal human values. While the traditional approach to both technology and mental healthcare has failed to create a new model for a more sustainable mental healthcare, we believe that designing for compassion will not only allow to intervene at the levels that are of interest for this specific project, but also create new knowledge and tools for designers and developers to be applied in other areas. Through value-based and human-centred design we want to create a better fit between the context of mental healthcare and its end-users. The challenge is centralizing the needs and values of the users and integrating innovative technologies, social interactive machines into their ways of working. Finally, our aim is to use the benefits machines offer in a compassionate and human-supporting way, employing design for compassion to engage and stimulate people in using current e-health solutions, as well as new and innovative solutions that enable mental health in a different way.

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