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# Enhancing empathic interactions in mental health care: Opportunities offered through social interaction technologies

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**Abstract.** Therapeutic rapport and empathy are essential parts of the relationship between mental health care professionals and their clients and are considered key elements of good therapeutic outcome. There are various social interaction technologies that have proven to be beneficial to current psychotherapeutic practice. Despite their proven efficacy, the adoption of these technologies among therapists is still relatively low. A prominent reason for this is the perception that mediated communication does not allow for satisfying empathic interactions. However, new technological developments offer opportunities that could help overcome this barrier and possibly even enhance the empathic interaction. The current paper explores these novel technologies in a systematic way by mapping them to the three components of empathy (cognition, affect, behavior). By identifying these opportunities, we hope to encourage a new way of thinking about technology, emphasizing its potential added value to the quality of psychological treatment, and eventually aiming to broaden the array of available treatment possibilities for mental healthcare professionals.

**Keywords.** Mental healthcare, social interaction technologies, empathy, therapeutic rapport

## 1. Introduction

Therapeutic rapport is considered a fundamental part of the therapeutic interaction process, and highly related to successful therapeutic outcomes [1-2]. Rapport can be defined as “the spontaneous, conscious feeling of harmonious responsiveness that promotes the development of a constructive therapeutic alliance” [3]. An integral part of therapeutic rapport is empathy [4], that is, the ability to understand and share the feelings of another person. Meta-analytic reviews have consistently shown that the level of therapists’ empathy perceived by their clients is a key element of therapeutic change, accounting for about 9% of the variance in therapy outcome, even more than the specific intervention used [5]. Current understanding of empathy suggests that it consists of three components: a cognitive, an affective and a behavioral one [4, 6-7]. Cognitive empathy is the process of understanding another’s feelings by reasoning about their internal states [8].

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The second, affective component, is concerned with emotions. Mirror neurons are thought to play an important role in this process, causing the emotions of interacting individuals to converge because they adjust to each other's affective states [6]. Last, the behavioral component consists of one's behavioral response as a result of empathizing with the other's emotion. There are many different ways to express feelings of empathy, either verbally through for example empathic reflections and questions [5], or non-verbally by making meaningful eye contact [10] or through comforting touches [11]. With respect to empathy in psychotherapeutic interactions, a prominent model is the Empathic Cycle formulated by Barret-Lennard [12]. According to this model, client and therapist are cycling together through four steps during their interaction. First, clients express their experience. Therapists then try to empathically resonate with their clients' experience, actively trying to 'tune in' and enter the clients' world. Third, the therapist expresses her empathic feelings. As a final step the client receives this, followed by a new cycle. The Empathic Cycle underlines the different but interrelated roles played by therapist and client [13], which is not a symmetric relationship, as one would expect in a friendship or spousal relationship. Clients unconsciously observe their therapists' responses in order to monitor their appraisal. This allows them to receive their therapist's empathy. Therapists, on the other hand, are actively trying to resonate empathically with their clients, a process which is referred to as empathic attunement. In this process, therapists form internal representations of the clients' emotions, intentions, cognitions and physical states based on the client's expression in order to respond in a way that supports the client in giving a more accurate expression during the next cycle. Every response of the client, either verbal or non-verbal, is a cue conveying information to the therapist that facilitates this attunement and allows her to respond more empathically.

Over recent decades, communication technologies have found their way into psychotherapeutic practice. Multiple benefits are associated with the use of these technologies, such as increased access to psychological treatment, convenience, as well as enhanced self-reflection and increased emotional disinhibition of the client [14-17]. Several studies have been conducted to investigate whether technological mediation affects the therapeutic relationship. From a client perspective, results are primarily positive, with the majority of studies indicating that it is possible to establish good therapeutic rapport in mediated settings [18]. However, from a therapists' perspective, the results appear to be more mixed (e.g. [19-20]). Many practitioners have doubts whether mediated interactions sufficiently support the expression and reception of affective cues, and the consequent development and maintenance of therapeutic rapport [21]. They often report that 'something' is missing; a feeling that seems to originate in having access to fewer social cues in mediated interaction [18, 22]). Importantly, therapists critically rely on these cues for empathic attunement [14, 18]. Thus, it is essential to investigate how interaction technologies should be developed or optimized in a way that satisfies therapists' needs and helps to overcome the limitations of communication technologies in supporting the empathic relationship.

With respect to the incorporation of social interaction technologies in mental healthcare, two different approaches can be distinguished. The traditional approach is to support or simulate face-to-face interactions as closely as possible, thereby attempting to overcome limitations imposed by the medium (e.g., supporting eye contact or gesturing). Developing and applying technologies to meet a basic level of empathic interaction is in line with this approach. However, a second, complementary

approach is to use unique affordances of the medium to transform the interaction into something that could add value above and beyond what would be possible even in an unmediated encounter. This type of approach was already argued for by Hollan and Stornetta in 1992 [23]. Research on empathic accuracy has shown that empathy in humans is a teachable skill that can be improved when appropriately supported [24-25]. Following this second line of thinking, one could imagine the potential of technology to not just support a basic level of empathy in technology-mediated settings, but to *augment* empathic interactions, both in mediated as well as media-assisted co-located settings.

When applying this second approach, a variety of opportunities arise as a consequence of the development and application of new sensors and actuators for measuring and representing social and affective cues. In addition, the mediated nature of the interaction allows for the transformation of the communicated social and affective cues. The aim of the current paper is to explore the ways in which novel communication technologies can be used to support and enhance empathic attunement in therapeutic interactions. To structure this exploration, the three components of empathy will serve as a framework to which the various technologies are mapped. By identifying these opportunities, we hope to encourage another way of thinking about the use of technology in psychological treatment, that is, not merely as a digital copy of traditional face-to-face therapy, but as an opportunity to use some of the unique affordances of technology to add value to the treatment ways that were not possible before. Thus, we hope to broaden the range of possible treatment options for psychotherapists and so contribute to the quality of mental health care

## **2. Opportunities to augment empathic interactions**

### *2.1 Cognitive component*

Technology can add relevant information during therapy that would normally be unavailable, even in a face-to-face setting. This information can improve therapists' understanding of their clients' internal states, i.e., the cognitive component of empathy. A major part of the relevant studies in the field of affective computing has been focused on emotion recognition [25]. An extensive body of research shows that current technologies can do this relatively accurately (for example, see [26]). Emotion recognition is usually based on facial expressions, speech parameters, and/or physiological measures (for a review, see [27]). So far, a lot of attention has been given to the application of these measures in assessing stress, but other uses are increasingly being explored [28]. For example, research shows positive results for applying affective technologies in assisting persons with autism in understanding the context during social interactions, i.e. supporting the cognitive component of empathy [29]. A challenging factor that needs to be taken into account is the way in which the feedback on physiological measures is presented, as research shows that different representations result in different interpretation of the same information [30].

### *2.2 Affective component*

Emotional convergence, the process related to the affective component of empathy, is assumed to result from a human tendency to mimic and synchronize with the other's non-verbal behavior (e.g. facial expressions, speech, body movements and posture [6]).

Feedback on physiological states cannot only be used to increase understanding of the client's state (i.e., the cognitive component), but also to enhance the affective component. By *exchanging* this information, implicit socio-emotional information can be made explicit, which facilitates therapists to 'feel with' their clients. Indeed, first exploratory studies have shown that using physiological feedback as a communication cue, i.e., social biofeedback, significantly enhances interpersonal intimacy [31], as does information on non-verbal interactional behavior [32-33]. Most of the studies on social biofeedback have either used graphical or auditory representations to show the information [e.g. 30-33]. However, research shows that touch is the primary modality for conveying intimate emotions [34]. Hence, transferring physiological information through a haptic pathway could serve as a powerful affective cue that increases emotional convergence and subsequently enhances the empathic interaction.

In addition, social perspective taking [35] is known to enhance emotional convergence. A technology that quite literally allows you to put yourself in someone else's shoes is Virtual Reality (VR). A key feature of VR is its ability to experience someone else's world from a first-person perspective [36]. That, in combination with a strong sense of embodiment, allows you to become an actor in the environment instead of merely a spectator [37]. In this way, VR can heighten feelings of empathy in a unique way. Indeed, studies show that experiencing someone else's viewpoint in VR led to more positive feelings about the relationship [36] and increased feelings of concern and helping behavior [38]. In addition, studies have been conducted with virtual simulations of mental illnesses such as schizophrenia [39] and dementia [40], showing that participants held more positive attitudes towards people suffering from these disorders and after being exposed to the simulations. They reported that it enabled them to truly experience what it feels like to live with such disorders, which resulted in increased feelings of empathy during subsequent interactions.

### 2.3 Behavioral component

The possibilities of VR can also be used to support the behavioral component of empathy, that is, facilitating therapists in expressing appropriate levels of empathy towards their clients. The increased feelings of closeness in shared VEs may increase self-disclosure from the client [41], which in turn is expected to further increase feelings of interpersonal closeness and empathy between therapists and their clients [12]. Moreover, it is also argued that some clients feel more secure in the controlled surroundings of a virtual environment [17, 41-42], which also facilitates self-disclosure.

An important behavioral aspect of empathy is interpersonal touch, which can help to convey interpersonal understanding and alleviate stress and anxiety in a patient [34]. Touch implies direct physical interaction and co-location and therefore inherently evokes feelings of social presence. However, current social interaction technologies mostly rely exclusively on vision and audio. Not allowing the expression of emotions through touch compromises the experience of being together and will likely decrease perceived empathy. Recently, multiple systems have been developed that incorporate some kind of social touch [43-44]. Even though most systems are still research prototypes and not broadly available, the ability of empathic touch to provide support suggests that it is worthwhile to explore the potential of appropriate mediated social touch in remote interactions between therapists and their clients. It has to be noted that psychotherapeutic approaches and cultures differ in their opinions about consoling touches between therapist and client, being more usual and considered appropriate in

some therapeutic approaches (i.e., schema-therapy) than in others (i.e. psychoanalysis). Having said that, mediated social touch has a number of unique affordances that would offer an interesting alternative to physical touch in therapeutic settings. As there is no direct skin-to-skin contact, it is assumed to be less intimate than real touch. Moreover, in mediated social touch, being touched or not is under the control of the client. They can turn the ‘touch option’ on or off, much like turning video on or off during a Skype session. Mediated touch may even offer ways to practice human touch for people that have difficulties with that in their social life. Investigating whether remote social touch can serve these purposes offers an important direction for future research.

### 3. Conclusion

In this paper, we have identified several opportunities for novel technologies to support empathic attunement between therapists and their clients. We have structured this exploration by mapping these technologies to the three key components of empathy: cognition, affect and behavior.

With respect to the implementation in psychotherapeutic practice, there are still significant steps to take. First, whereas some technologies are already more mature, many of the suggested applications are research prototypes that are still under development, and therefore not yet sufficiently robust, versatile, user-friendly, and cost-effective to be deployed in current practice. Second, despite the clear potential of several types of technologies to enhance the empathic relationship and thus benefit mental health care practice, much research is still needed to empirically establish this and also to gain more insights into which technologies are most suitable for which clients and mental disorders. It is only after convincing and well-controlled demonstrations of clinical efficacy that we can expect larger-scale acceptance and uptake of such innovations by mental health care professionals. Nevertheless, with this exploration we hope to have underlined the importance of empathy for an effective psychotherapeutic relationship, and the positive roles that communication technology may play, both in supporting as well as potentially augmenting empathy.

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