A Virtual Reality Study of Help Recognition and Metacognition with an Affective Agent

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ABSTRACT

Advances in the use of virtual affective agents for therapeutic purposes in mental health opened a research avenue to improve the way patients interpret other’s behavior as helpful instead of menacing. Here, the authors propose an original paradigm based on affective computing and virtual reality technologies requiring the assessment of helping intentions as well as self-monitoring metacognition. Sixteen healthy subjects played a 38-turns card games with a virtual affective agent (MARC) during which they had to guess between two cards the one that would be color-matched with another card. Their guesses could be oriented by the agent’s emotional displays. Three subjective ratings on a percentage analog scale were recorded after each trial: helpfulness, self-monitoring, and sympathy. Help recognition and self-monitoring metacognitive ratings raise the question of the importance to enhance both components in therapeutic situations within psychiatric populations. Overall, this study exemplifies the promising use of virtual reality settings for future studies in the medical psychology field.

Keywords: Affective Agent, Emotion Recognition, Help, Metacognition, Virtual Reality

DOI: 10.4018/IJSE.2015010104
INTRODUCTION

The outcome of psychiatric conditions may be significantly ameliorated when a patient and his/her caregivers and physicians are engaged in a strong therapeutic relationship. Amongst the many factors that intervene in the building of a therapeutic relationship, many authors identified the construct of clinical empathy as a key component. Increasing the quality of clinical empathy may result in better short-term and long-term outcome as theorized by Neumann et al. (2009). However, the concept of clinical empathy has multiple facets and covers at least two perspectives: first, the professional empathetic skills toward the patients, and, second, the patient’s judgments on the caregivers’ empathy. The first perspective may be conceptualized as the primum movens of clinical empathy, and is thought to involve an ability to understand the patient’s situation, perspective and feelings as well as acting in a helpful way. As stated by Hojat et al., “In terms of patient care, empathy is defined as a cognitive attribute that involves an ability to understand the patient’s experiences, pain, suffering, and perspective, combined with a capability to communicate this understanding and an intention to help” (pg.1564, 2002). Some authors as Decety referred to the social neuroscience framework in an attempt to naturalize the neurocognitive components allowing this process, recognizing that empathy in its general sense, as a motivator of human’s caregiving behavior such as nurturing (2012).

Complicating any conceptualization attempt, the empathetic attitudes of the professionals are observed and interpreted by the patients from their own perspective. As a specific instance of cognitive empathy, this process may be impaired in chronic mental health conditions. Focusing on the patient’s stance within the context of therapeutic relationships, authors proposed different tools aiming at measuring clinical empathy in order to identify the determinants of improved caregiving. For instance, Mercer and colleagues (2004) published the Consultation and relational empathy questionnaire (CARE) that contained items about the “doctor’s interest” in the patient’s concern, his/her concern and compassion, and his/her help to take control and to make a plan of action. The latter items appear of particular interest for the present work as they raise the question of how one might recognize helping intentions in others on the basis of their emotions, paroles and actions.

While physicians are responsible of adopting comprehensive and technically sound attitudes, the ability to recognize that specific form of empathy is strongly challenged in psychiatric patients suffering reduced emotion recognition and theory of mind skills, or exaggerated interpretation biases. Such a pattern of cognitive impairments is found in conditions such as autism and schizophrenia (Eack et al., 2013) and lead to impaired functional outcome and mental handicap (Fett et al. 2011). Recognizing a helping intention is required in order to avoid misunderstandings, intrusion and persecutory feelings during interactions with physicians, caregivers or other supports. Unfortunately, such abnormal thoughts are not uncommon within the physician’s office, all the more since the patient suffers severe delusional symptoms. The development of social cognitive remediation therapies aims at reducing social handicap as well as facilitating relationships with caregivers.

Affective Agents as a New Means to Explore Helping Behavior

These different elements forming the overall context of the present research, it appears that innovation in virtual reality techniques and especially in affective agents are promising for achieving two goals: 1) the design of ecological but reproducible paradigms focusing on the emergence of helping behavior and intentions attribution, 2) the design of therapeutic settings to help the patients recognizing such behaviors and intentions. Here, we will focus on the former objective, which is a prerequisite of the latter.
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