ALZHEIMER’S PATIENTS’S COMPULSIVE IMITATION IS NOT TUNED BY THE PRESENCE OF A HUMAN AGENT

A. Bisio\textsuperscript{1}, M. Casteran\textsuperscript{2}, Y. Ballay\textsuperscript{2}, P. Manckoundia\textsuperscript{2,3}, F. Mourey\textsuperscript{2}, T. Pozzo\textsuperscript{1,2}

\textsuperscript{1}Robotic, Brain & Cognitive Sciences, Istituto Italiano di Tecnologia, Genova, Italy, \textsuperscript{2}Motricité-Plasticité, INSERM U887, \textsuperscript{3}Médecine Interne Gériatrie, CHU de Dijon, Hôpital de Champmaillot, Dijon, France

In a previous study (Bisio et al., 2011 submitted) we characterized the motor response of Alzheimer’s disease patients (AD) after the observation of a dot whose kinematics had biological origin, describing AD’s uncontrolled imitation of the observed stimulus.

Here we wished to test to what extent the presence of a human agent moving in front of AD influenced their actions and how this contamination differed from those induced by a simple dot.

To do that, a human demonstrator made vertical pointing at different velocities in front of the patients, who were instructed to look at his motion and then to reach his final position with their arm. Patients' reaction time and velocity were considered as outcome and compared with those of a control group, and with those obtained after dot observation.

In agreement with our previous results, AD initiated the motor response before the stimulus stopped, and their actions were contaminated by the velocity of the demonstrator. No differences appeared when comparing the contagion effect induced by the dot and by the human agent.

Therefore, while the uncontrolled motion initiation would indicate deficiency in frontal inhibitory mechanisms, the automatic imitation would suggest an intact matching between action and perception. Furthermore, the similarity between the implicit contamination exerted by a computer generated stimulus and a human agent opens new clinical perspectives where computerized techniques could be coupled with the therapist's assistance during training programs.