

When the brain remembers but the patient doesn't

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Brain damage can cause significant changes in behaviour, such as loss of cognitive skills, but also reveals much about how the nervous system deals with consciousness. New findings reported in the July 2011 issue of Elsevier's *Cortex* demonstrate how the unconscious brain continues to process information even when the conscious brain is incapacitated.

Dr Stéphane Simon and collaborators in Professor Alan Pegna's laboratory at Geneva University Hospital, studied a patient brain damaged in an accident who had developed prosopagnosia, or face blindness. They measured her non-conscious responses to familiar faces, using different physiological measures of brain activity, including fMRI and EEG. The patient was shown photographs of unknown and famous people, some of whom were famous before the onset of her prosopagnosia (and others who had become famous more recently). Despite the fact that the patient could not recognize any of the famous faces, her brain activity responded to the faces that she would have recognized before the onset of her condition.

"The results of this study demonstrate that implicit processing might continue to occur despite the presence of an apparent impairment in conscious processing," says Professor Pegna, "The study has also shed light on what is required for our brain to understand what we see around us. Together with other research findings, this study suggests that the collaboration of several cerebral structures in a specific temporal order is necessary for visual awareness to arise."

More information: "When the brain remembers, but the patient doesn't: Converging fMRI and EEG evidence for covert recognition in a case of prosopagnosia" *Cortex*, Volume 47, Issue 7 (July 2010),

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