



# Schizophrenics Do Not Show Impaired Temporal Attention, Study Finds

Dr. SU Li from the University of Cambridge and Prof. Raymond CHAN from CAS Institute of Psychology have recently questioned a series of studies published over the last 13 years in many highly influential journals over an important issue regarding the temporal attention deficit in schizophrenia.

Previous studies in the literature have supported the view that schizophrenia patients have impaired temporal attention beyond and above their existing perception impairments. These studies all used a classic experimental paradigm called the Attentional Blink, which is designed to probe temporal attention. In those studies, a mathematical method was used in the post hoc analysis trying to remove the influence of the basic perception difference between schizophrenia patients and their controls. This method is called *suppression ratio*. By using this mathematical trick, these studies have claimed that the suppression ratio, which was supposed to remove the visual perception variations, should reflect the pure deficit in attention. As such, they all reported a marked decrease in attention in patients with schizophrenia.

When Dr. SUN and Prof. CHAN revisited the issue, they used a more rigorous experimental design to control the visual perception differences between the schizophrenia patients and the controls, namely matching the perceptual difficulty of the task. In this way, they did not rely on the use of suppression ratio, and found no evidence for an impaired temporal attention. Instead, an increased level of temporal binding error was associated with the schizophrenia patients. Using computational modeling approach and more careful investigation of the mathematical method used in the previous studies, researchers have concluded that the suppression ratio used in almost all previous studies has systematically exaggerated the degree of attentional impairment in schizophrenia. This flaw in methodology explains why the original findings were not replicated.

Although their study failed to replicate previous findings, it demonstrated an unreported but expected impairments in schizophrenia — that is, patients with schizophrenia tend to have poorer temporal binding accuracy. This is illustrated by the fact that when two visual stimuli were presented within a very short time interval (around 100ms), schizophrenia patients have greater difficulty to tell in which order the stimuli were presented.

This finding is consistent with the previous literature on temporal perception deficit in schizophrenia. The authors argue that inability to encode sensory information in the precise order in which they are occurring in the environment can lead to serious problems in both perception and reasoning. To some extent, such a deficit contributes to many symptoms in schizophrenia such as hallucination.

Their paper entitled “Temporal perception deficits in schizophrenia: integration is the problem, not deployment of attentions” has been published online in *Scientific Reports*, a flagship multidisciplinary journal from the Nature Publishing Group.

This study was supported by the Key Laboratory of Mental Health, Institute of Psychology, NIHR Biomedical Research Center and Biomedical Research Unit, NHS Foundation Trust, the National Science Foundation of China, and the Young Scholar Investigator Award and the Knowledge Innovation Project of the Chinese Academy of Sciences.

