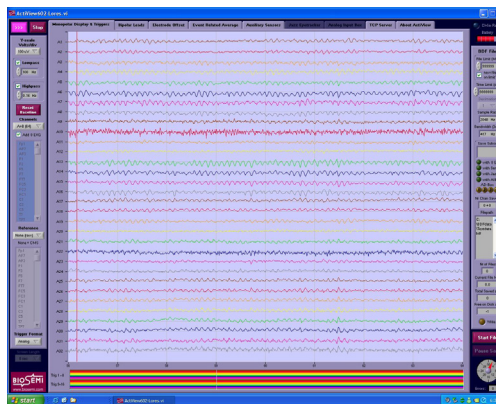


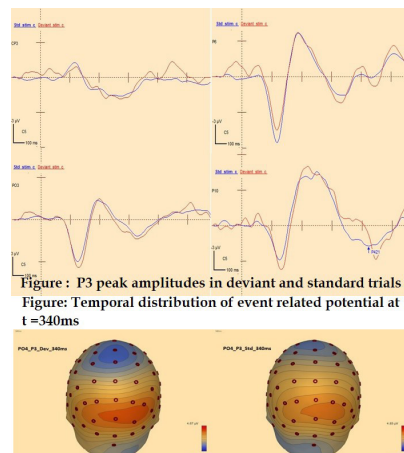
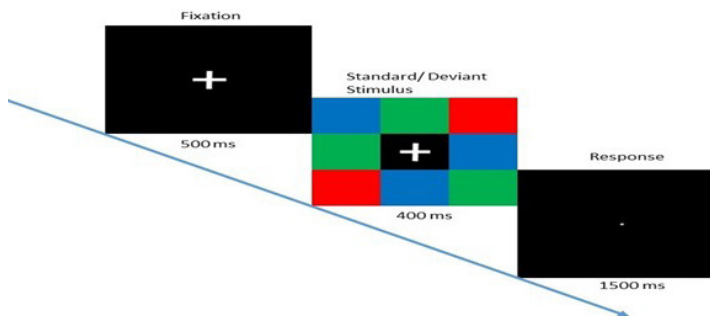
Psychophysiology of cognition

The study of human cognition includes aspects of thinking, memory, decision-making, learning, problem-solving, as well as other basic and executive functions. Such research can include experiments with the general population, to understand how such cognitive functions operate, as well as with clinical samples, to understand how disruptions in normal cognition can facilitate our understanding of the same.



At the Psychophysiology Laboratory, we undertake both basic and applied research using approaches from experimental cognitive psychology, cognitive science, psychophysiology, and neuroscience. The physiological methods of research used include EEG, ERP, galvanic skin response, neuro-feedback, and eye-tracking. Behavioral measurement is also carried out using software like E-Prime, Iowa gambling task (IGT) and time estimation, as well as psychometric tools like the Stroop task and Wisconsin card sorting task.

A high priority is placed on the applied aspect of research and currently the topics under study include learning disabilities, depression, creativity, time perception, driving behavior, and cognitive functions in Parkinson's disease. There is an emphasis on understanding the brain mechanisms underlying these phenomena, so as to use this knowledge to promote healthy living and overall well-being of general and clinical populations.



Developmental dyslexia is a reading disorder, characterised by persistent failure to acquire efficient reading skills despite conventional instruction, adequate intelligence, and socio-cultural opportunity affecting more than 10% of children across cultures. Dyslexics have intact sensory abilities and brain is capable to represent sensory information but at later stage there are processing deficits. Linguistic structure affects information processing among dyslexics. Current comprehensive ERP study is an attempt to investigate possible visual processing deficit in Hindi speaking children.

Many of our actions can be understood as goal directed and goals are realised in the future. The realisation of future goals is as important as recalling past information. Prospective memory is memory for action to be performed in the future like remembering to return the library books on due date, taking medicine on time (Einstein & McDaniel, 1990). Unlike prospective memory, retrospective memory involves the remembering of the past information such as remembering the content of a book. Einstein and MacDaniel (1990) distinguished two types of prospective memory task- event and times based task. Event-based tasks are those in which intended action is to be performed when certain external event occurs (giving someone message when you see somebody). We are working to investigate neural signature of realisation of delayed intention and development of intervention technique to improve prospective memory.

