

## Can Neurology Solve the Free Will Paradox?

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One definition of a paradox is a proposition that arises from apparently sound premises leads to a conclusion that seems logically unacceptable. The paradox that arises in relation to free will is that studies of motor control do not obviously reveal the operation of free will, and there is a general view that people do have free will. Free will is a perception that people have that they choose to make (most of) their movements. This perception includes both a sense of willing the movement and self-agency that their act of willing was responsible for the movement that was made. Intrinsic to the perception of willing is the sense that the willing itself drives the movement. It is important to recognize that perceptions are purely passive. A critical question is whether there is any evidence for a “free will force” that plays a role in movement selection. The basic challenge to a relevant free will force is the experiment of Libet et al. (1983) that showed EEG activity well before the time of perception of willing (called W). A series of other experiments, less reliant on subjective and retrospective perceptions confirm this result. Moreover, the timing of W can be influenced by events, such as TMS, after the movement is made. The probable explanation of this is that perceptions must occur after physical events in the real world—consciousness is in the past. Evidence from neuroimaging and brain stimulation studies reveal that the sense of willing likely arises from regions in the brain including the temporoparietal junction area and supplementary motor area. Neuroimaging and brain stimulation studies have also been done investigating the sense of agency and similar regions appear relevant. Physiological studies of movement generation give a fairly clear account of how movement is produced, and a free will force has not been identified nor does it seem necessary. Much of what the brain does is unconscious and only some of its activity becomes passively experienced in consciousness. The brain event underlying the sense of willing is not a driving force. The paradox is solved with the recognition that a person “is” his/her brain. Then free will can be considered to exist if a person’s brain is functioning normally without coercion.