Schizophrenic patients have abnormal sense of agency. The patients who sometimes attribute their own actions to the intentions of others may perceive themselves as causing events which they do not in fact control, when they feel they are in voluntary movement [1]. Jeannerod et al. hypothesized that frontal inhibition may alter the attribution but its mechanism was not clearly demonstrated [2]. The purpose of this study is to propose a model which describes the discrepancy of over-attributed or under-attributed actions. We propose a model based on Blakemore et al. [3] (Figure). We tested three cases of motor control and sense of agency. The first is of normal subjects (a). The initiation system activates the efferent copy system and the command generation system. Actual sensory feedback and predicted sensory feedback are compared at the comparator. The system causes normal sense of agency. The second is of schizophrenia subjects in voluntary movement (b). The initiation system activates the efferent copy system and the command generation system but inhibits the comparator. Therefore, the output of the comparator is small, which causes the over-attribute of movement. The third is of schizophrenia subjects in involuntary movement (c). Abnormal input triggers the command generation system. In this case, there is no predicted sensory feedback and no inhibitory input from the initiation system to the comparator. This causes large sensory discrepancy and under-attribution of movement. The proposed model successfully described the discrepancy of attribution in schizophrenia.


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