



Imagery Agnosia: what goes on in my head?

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Aim: Imagery agnosia is an important but yet little explored condition showing that even higher cognitive functions are mostly processed in unconscious way.

Methods: Neuropsychological case study. Agnosia is usually associated with the bottom-up processing stream, inability to extract relevant information from the sensory data. Top-down processes help to establish conscious percepts that need sensory cortex to re-create qualia in various modalities. The Vividness of Visual Imagery Questionnaire (VVIQ) measures the ability to re-create visual experiences, but similar questionnaires for other sensory modalities have not been developed. Statistics on how many people are visual non-imagers is still controversial. The vividness of imagery for sounds, tastes or tactile experiences should be positively correlated with the strength of top-down projections in the brain. Significant number of people have no conscious access to visual or auditory details of their experiences, although rich perceptual information may be encoded in their memory. This general condition may be called “imagery agnosia”, as subjects may show all kinds of symptoms typical for agnosia when required to perform some tasks based on imagery.

Results: This study is focused on auditory imagery agnosia, or imagery amusia, the inability to consciously imagine sounds, including pitch, timbre and melody. This condition seems to be different from associative auditory agnosia (1). People with vivid auditory imagery show Evoked Response Potentials (ERPs) and BOLD fMRI activation in the auditory cortex for imagined sounds, filling in the missing sounds in well-known melody using their imagination. In people with imagery amusia no auditory ERP response should be expected, the only way to know that a melody runs in their head is by humming or playing. A case study of subject WD (male, 55) with sensory agnosia (auditory and visual) is reported. He describes his experiences with playing music to be similar to the experiences of people suffering from blindsight, maneuvering blindly in the auditory space, without the ability to imagine results of next move (hitting piano key). Yet after a long period of learning WD is able to improvise, surprising himself with correct cadencies, with no conscious influence on what he is playing. For him the only way to know what goes on in his brain is to act it out.

Conclusion: Imagery agnosia may be rather common, but rarely acknowledged situation, of great importance to education. Tests for different type of talent in architecture, design or music should include evaluation of imagery agnosia. Investigation of people with this condition may elucidate relations between conscious and unconscious processes in implementation of higher cognitive functions.

References:

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