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ARE ANIMAL MODELS OF COGNITIVE DEFICIT RELEVANT FOR MAN? TRANSLATIONAL PROBLEMS IN SCHIZOPHRENIA

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Since long working memory deficit has been considered as one of the major cognitive dysfunction encountered in schizophrenia. Working memory is critical for human reasoning, judgment and decision and depends upon the integrity of prefrontal and cingulate circuitry. As a consequence coupling pharmacological (amphetamine sensitization, subchronic phencyclidine administration, neurodevelopmental insult) and behavioral approaches of prefrontal functions in animals seems to be a cue totally appropriate for elucidating the mechanisms of this dysfunction in man (Castner,2004).
In rodent models aberrant dopaminergic and glutamatergic signaling in medial prefrontal cortex has undoubtedly an impact on memory and learning, But the analogy between these deficits and a true working memory deficit in man is not obvious. Due to the higher degree of homology between human and non-human primates behavioral tests in apes seem to be more relevant but once again they can not be considered as reflecting strictly the consequences of working memory dysfunction in schizophrenia. Another approach is to extend the insights gained from the study of normal brain organization in animal models to better understand the neural basis on which working memory functions are based (Tanaka, 2006). Dissecting the cellular and circuit basis of prefrontal and cingulate cortices can give an idea how direct and indirect intercellular mechanisms are modulating working memory Nevertheless the behavioral part of this type of study remains non conclusive. It seems in fact that working memory itself is probably not a good candidate and that contextual-binding tasks (which explore encoding and retrieval) are more appropriate (Boyer,2007).

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