fMRI, who showed similar voxel-wise correlations ($r \geq 0.6, n = 11,581$) in functional maps between modalities. This suggests that fMRI provides comparable results to older, better validated, but more invasive techniques. Finally, we present a pilot fMRI study of four schizophrenic subjects showing prefrontal cortical activation in the working memory task.

146. NEURAL NETWORK SIMULATIONS OF SCHIZOPHRENIC PERFORMANCE IN A VARIANT OF THE CPT-AX

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We describe a neural network model of a task (a new variant of the CPT-AX) that simultaneously examines inhibitory and working memory functions, both of which are thought to be disturbed in schizophrenia. The model is an extension of our previous work, in which schizophrenic deficits in a number of cognitive tasks are accounted for in terms of an underlying deficit in the processing of context that impairs both memory and inhibition. Simulation results are reported which make the novel prediction that the performance of schizophrenics on the task will be doubly dissociated with that of controls. Specifically, schizophrenic subjects are predicted to perform significantly worse on a condition of the task which relies on the integrity of both memory and inhibitory functions. Conversely, they are predicted to perform better than controls on the condition in which these functions actually hamper performance. Data bearing on the first of these predictions, from a completed study of medicated and unmedicated patients, is described in a separate abstract presented to this conference. Preliminary data bearing on both the first and second predictions will be presented from a new study that directly tests the model’s validity in a different population of schizophrenic patients.

147. THE STABILITY AND INTERRELATIONSHIPS OF CPT-AX AND STROOP PERFORMANCE IN SCHIZOPHRENIA

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We examined the performance stability of patients with schizophrenia in novel variants of the Continuous Performance Test (CPT-AX) and the Stroop task. Previous research suggests that deficits on both of these tasks in patients with schizophrenia may reflect a disturbance in the processing of contextual information. We used variants of the CPT-AX and Stroop designed to assess the maintenance of contextual representations by manipulating the delay between context and response. We predicted that delay-related performance decrements would be the most sensitive and stable measures of schizophrenic deficits on these tasks. Performance was assessed in a sample of clinically stable outpatient DSM-III-R schizophrenic subjects at three testing sessions, spanning up to 2 years. Our results indicated that decreases in performance from short to long delays on both tasks were stable across testing sessions. In general, these difference measures were more stable across testing sessions than absolute performance levels in any individual condition. In addition, there was a trend for performance decrements from short to long delays to be related across the CPT-AX and Stroop tasks. These results suggest that absolute levels of performance may be more subject to practice effects or state differences across testing sessions than measures of delay-related performance impairments. Thus, as predicted, performance deficits related to the inability to maintain contextual information across delays may tap a more stable deficit in individuals with schizophrenia.

148. PREPULSE INHIBITION OF STARTLE-INDUCED REDUCTIONS OF ACCUMBENS Dopamine

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Schizophrenia patients exhibit deficits in the prepulse inhibition of startle, an operational measure of the sensorimotor gating dysfunctions that may contribute to cognitive disorganization. In rats, activation of mesolimbic dopamine (DA) receptors (e.g., apomorphine, amphetamine, or intra-accumbens DA) produces similar disruptions of prepulse inhibition. These pharmacological manipulations provide useful models of the similar deficits in schizophrenia. Little is known about the dynamic responses of dopaminergic systems within the nucleus accumbens (NAC) to startling stimuli. These studies used in vivo microdialysis techniques to monitor extracellular levels of DA in the NAC of rats while they were being exposed to startling acoustic stimuli. Nine rats were prepared with guide cannulae into which 23 gauge dialysis probes were inserted 1 day prior to testing. 2–3 hr after the start of the perfusion, rats were placed into the startle chamber and exposed to a continuous 70 dB[A] background noise. Dialysate samples (0.2 μL/min) were collected at 6 min intervals. Startle pulses (120 dB[A] noise) were presented in blocks of 20 trials (each block lasted 5 min). In some blocks, an 86 dB[A] prepulse preceded each of the 20 pulses by 100 msec; 3–6 sample periods (with only background noise) intervened between stimulus-containing blocks. The order of presentation of pulse-alone or prepulse+pulse blocks was counterbalanced between animals. Monoamine and metabolite levels were measured using HPLC and electrochemical detection. During the 5-min presentations of startling stimuli, DA levels in the NAC decreased (~28 ± 20%) relative to the immediately preceding 10-min baseline. This decrease in DA was maintained for only one additional sample period (~16 ± 14%). By contrast, the 5-min presentation of prepulse+pulse trials failed to affect dialysate levels of NAC DA during (11.5 ± 18.8%) or immediately after (0.1 ± 16.4%) the stimulation. These effects were independent of the order in which the stimulus blocks were presented. Thus, startling acoustic stimuli produce significant and transient decreases in dialysate levels of DA in the NAC. Furthermore, prepulse stimuli effectively inhibit these effects of startling stimuli. Hence, in vivo microdialysis in awake rats can be used to explore the dynamic relationships between regionally specific monoamine release and both startle reactivity and prepulse inhibition.

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