6. Neuropsychology

COGNITIVE AND SOCIAL FUNCTIONING IN SCHIZOPHRENIA

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The relationships between deficits in social functioning and the symptoms of schizophrenia and the relationship between symptoms and cognitive functioning have long been recognized. As yet little attention has been paid to testing relationships between deficits in social behavior and performance on measures of cognitive function. This cross-sectional study examined the relationships amongst cognitive and social functioning in a sample of 80 outpatients with DSM-III-R schizophrenia. The cognitive battery included measures of verbal ability, verbal and visual memory, verbal fluency, executive functioning, visual-spatial organization, and sustained and selective attention. A range of social behaviours were assessed using the Social Functioning Scale (SFS), the Quality of Life Scale (QLS), and a video-based test—the Assessment of Interpersonal Problem-Solving Skills. Social functioning assessed by the SFS was unrelated to cognitive functioning. The QLS was related only to executive functioning ($r=0.30$, $p<0.001$). All these aspects of problem solving skills—receiving, processing and sending were significantly related to verbal memory ($r=0.39$, $p<0.001$), verbal ability ($r=0.53$, $p<0.001$), verbal fluency ($r=0.43$, $p<0.001$), and executive functioning ($r=0.40$, $p<0.001$). Results of this study have implications for the assessment of social functioning and for cognitive retraining in schizophrenia.

NEUROPSYCHOLOGICAL DEFICITS OF FIRST-EPISODE AND CHRONIC SCHIZOPHRENIC PATIENTS

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This prospective study examines by means of a neuropsychological battery cognitive and visomotor functioning of first-episode schizophrenic patients (until now $n=43$) at the time of their best remission compared to chronic schizophrenics ($n=41$) and healthy controls ($n=40$). The probands are balanced for age, gender, parental socioeconomic status, and educational level. Medication and side effects are documented as well as the course and outcome of the clinical treatment.

These first results of the ongoing study show an overall lower level of cognitive functioning for both clinical groups compared to controls. The profile of cognitive functioning is different between patients and controls as well as within subjects in both schizophrenic groups (SAS PROC GLM). Inpatients with a first episode of illness demonstrate a malfunctioning in verbal learning (Wechsler-Memory-Scale-R: Word Pair Associations and Munich-Verbal-Memory-Test) that exceeds their impairments in other cognitive functions significantly. In chronic schizophrenics, their executive (Wisconsin Card Sorting Test and STOOP-Tests: Color and Color-Word Interference) and concentration/speed functioning (Trail-Making: A and B, WAIS-R: Digit-Symbol) reveal the most pronounced and significant deficits.

Since performance in tests measuring attention/vigilance (Span of Apprehension Test and Continuous Performance Test) was better than the profile mean, attentional dysfunctions seem unlikely to contribute to the above mentioned deficits. The effects of anticholinergic drugs on verbal learning which may influence test performance cannot be ruled out so far. Therefore, our findings tentatively sugget more pronounced neuropsychological deficits in chronic schizophrenic patients, these being more accentuated in tests measuring frontal dysfunctions.

LEXICAL PRIMING IN SCHIZOPHRENIA: THE EFFECTS OF ANTI-PSYCHOTIC MEDICATION

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We examined lexical priming in 75 medicated and 25 unmedicated DSM-III-R schizophrenics, 10 depressed controls, and 28 normal controls. Our sample populations and experimental design were chosen to address medication and methodological issues related to lexical priming in schizophrenia. Word naming was used instead of lexical decision to provide more precise measures of automatic processing, given its status in previous theorizing about schizophrenic language deficits. We used five SOAs to systematically examine the time course of priming among schizophrenics. Our results indicated that at shorter SOAs (200, 300 ms), medicated schizophrenics displayed enhanced priming compared to other groups, while priming among unmedicated schizophrenics was similar to normal and depressed controls. At longer SOAs (700, 950 ms) unmedicated schizophrenics displayed less priming than normal or depressed controls. Medication dosage was positively correlated with priming at all SOAs other than 950 ms. These results suggest that previous reports of enhanced priming among schizophrenics may have been influenced by medication effects and that automatic components of priming appear to operate normally in unmedicated schizophrenics. The decreased priming displayed by unmedicated schizophrenics at longer SOAs suggests

that it may be more relevant to focus on disturbances in strategic or higher level components of language processing.

THE RELATIONSHIPS BETWEEN LANGUAGE PRODUCTION AND THOUGHT DISORDER IN SCHIZOPHRENIA

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Numerous theorists have argued that disturbances in language production contribute to thought disorder. However, relatively little empirical work has attempted to directly measure language production (LP) processes and their relationship to specific aspects of thought disorder. Therefore, we examined the association between LP processes and thought disorder using methods derived from cognitive and psycholinguistic research and theory. Thirty-nine DSM-III-R schizophrenic subjects completed tasks measuring discourse planning, monitoring and grammatical-phonological encoding, as well as an interview used to rate thought disorder. We found that different LP processes were differentially related to different thought disorder subtypes. Most strikingly, word-approximations-neologisms were strongly and specifically associated with grammatical-phonological encoding performance. In addition, incompetent references were selectively associated with discourse planning performance. These results have important implications for understanding the multi-faceted nature and etiology of thought disorder. We propose that variability in the expression of thought disorder subtypes and their relationships to LP processes is due to differences in the cognitive mechanisms associated with different LP processes. Specifically, disturbances in different LP processes may be associated with disturbances in either: (1) different information processing mechanisms; or (2) different representational content domains.

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 tasks may reflect a disturbance in the processing of contextual information in patients with schizophrenia. 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 at three testing sessions, spanning up to two 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 tasks. These results suggest that absolute levels of performance may be more subject to practice effects or state differences across testing sessions. As predicted, performance deficits related to the inability to maintain contextual information across delays may tap a more stable deficit in individuals with schizophrenia.

KETAMINE IMPAIRS LEARNING, BUT NOT PROCEDURAL EXPRESSION, ON THE WISCONSIN CARD SORTING TEST

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The Wisconsin Card Sorting Test is sensitive to impairment in frontal cortical function. We have previously shown that ketamine, an antagonist of the NMDA subtype of glutamate receptor produces dose-related impairment in performance on this task. The purpose of the current study was to evaluate the effect of prior experience on the Wisconsin Card Sorting Test on the ketamine-induced performance impairments.

Methods: Healthy subjects ($n=18$) completed three test days during which placebo, ketamine 0.1 mg/kg, and ketamine 0.5 mg/kg were infused over 40 min. A computerized version of the Wisconsin Card Sorting Test was administered on each test day. This report will focus on data collected on the first two test days. Because there were no significant differences between placebo and the low ketamine dose, these groups are collapsed.

Results: On the initial test day, ketamine 0.5 mg/kg increased the number of perserverative errors relative to the group receiving placebo or ketamine 0.1 mg/kg. On the second test day, there were no significant differences between the groups.

Implications: Ketamine increased perseverative errors on the Wisconsin Card Sorting Test when subjects learned the test, but not when expressing a previously learned matching rule. These data suggest that ketamine selectively interfered with