

*From our reporter at the 5th international symposium of the Kittay Scientific Foundation in New York*

## **Mental illness: A cognitive approach**

Jean Piaget, the Swiss psychologist, has spent years documenting and explaining how children's thought processes differ from those of adults and how children progress through distinct cognitive stages before they reach the level of formal, logical thinking. This same cognitive approach can also be applied in attempts to understand the thought processes of mentally disturbed individuals, says George Serban, medical director of the Kittay Scientific Foundation. "Cognitive defects in the development of mental illness" was the title of this year's symposium. Participants concentrated on the cognitive aspects of schizophrenia and childhood autism.

## **Schizophrenic speech patterns**

The verbal behavior of schizophrenic patients is probably one of the best clues to their cognitive functioning, and for almost 20 years Louis A. Gottschalk of the University of California at Irvine has been studying the speech of schizophrenic patients. Using a standardized procedure, Gottschalk asks subjects to speak for five minutes about some interesting or dramatic personal experience they have had. The speech samples are then analyzed for style and content and scored according to an elaborate scale devised by Gottschalk and his colleagues. The scores have been found to be useful in measuring the severity of schizophrenia. In addition to acute and chronic schizophrenic patients, speech samples have been taken from nonschizophrenic psychiatric patients, general medical patients, patients with brain damage, subjects who have been given various psychoactive drugs (including LSD), subjects who have been exposed to sensory overload (a prolonged cacophonous and chaotic color movie) and normal subjects, including children.

The verbal cognitive defects that especially typify schizophrenia are: remarks that are inaudible or not understandable; illogical or bizarre statements; incomplete phrases and clauses; and repetition of words, phrases and clauses. These same defects have also been found in the speech of brain damaged individuals, drug-intoxicated individuals and certain nonschizophrenic psychotic patients. But among the schizophrenic patients, these cognitive deficits were highly associated with verbal content signifying psychosocial alienation. Cognitive deficits, as would be expected, were found in the children, but the deficits decreased with age and were not associated with verbal expressions of alienation. Temporary cognitive deficits and some aspects of psychosocial alienation have, however, been found in the nonschizophrenic subjects after exposure to sensory overload.

In addition to measuring the severity of schizophrenia and helping to define its cognitive aspects, the speech analysis technique can be used to measure the effectiveness of therapeutic procedures. Speech samples of schizophrenic patients have been taken before and after the administration of phenothiazine derivatives (the drugs most often used to treat schizophrenia). Cognitive defect and social alienation scores decreased significantly after only 24 hours of medication.

## **Schizophrenic eye movements**

Turning one's attention inward, from the outer world to an inner, private one, is believed to be a trait of schizophrenia. Robert Cancro of New York University Medical Center has monitored eye movements as an indication of inner- and outer-directed attention. Skin electrodes on the face are used to count rapid eye movements, blinks and fixation time. These measures, says Cancro, are an indication of the amount of information

entering the eye during any particular time interval, with fixation time indicating outer-directed attention and blinking time indicating the distribution of attention between internal and external stimuli.

Fifty control subjects and 50 schizophrenic patients were monitored in a three-part experiment. During the free scan or at rest condition subjects sat quietly while eye movements were measured. Under the second monitoring condition subjects were presented various visual stimuli, some of which they just looked at, some of which they knew they would have to answer questions about and some of which required reading. The third condition, or the cognitive task condition, involved solving mental problems. In all three conditions the schizophrenic patients showed a higher blink proportion and blink frequency than did the controls. The schizophrenic subjects performed at rest as if they were performing a mental task. In other words, the schizophrenics appear to be more interested in their own mental activities than in external sources of stimulation. The fixation proportion in all three conditions showed that the schizophrenic patients took in significantly less information about the environment than did the normals. Although these findings are preliminary, says Cancro, if they are borne out by subsequent studies we would have evidence that some sensory deprivation exists at least during certain phases of the schizophrenic illness.

## **Cognition and psychiatric impairment**

How are cognitive functioning and intelligence related to mental disturbance? Mary Mitterman, Zena Stein, Mervyn Susser and Lillian Belmont of Columbia University and the New York State Psychiatric Institute have an answer. They arrived at it by comparing scores on intelligence tests with ratings of psychiatric fitness in a population of 400,000 19-year-old men in the Netherlands, where systematic records are kept. When subjects were classified by category as psychiatrically fit to unfit, the unfit had lower mean scores on intelligence tests than the fit, both overall and within each social class and demographic category. Does this mean that some pathology of the brain causes both reduced intelligence and psychiatric impairment, that psychiatric disorder is the result of lower intelligence or that psychiatric disorder retards mental performance? The answer isn't in yet, but the researchers say that preliminary statistical analysis favors the third hypothesis.

## **Autism and the idiot savant**

Childhood autism is one of the most severe forms of mental disturbance. Like schizophrenia, it is a little understood condition. One of the most intriguing characteristics of the autistic syndrome is the high degree of cognitive potential that sometimes accompanies it. Bernard Rimland of the Institute for Child Behavior Research in San Diego described an ongoing study that has already collected more than 5,000 case histories on autistic children. Certain of these children (almost 10 percent, says Rimland) seem to have what are known as idiot savant (wise fool) capabilities and are able to perform intellectual, musical or artistic feats that are described as awesome. How, for instance, can a child who has an IQ of 37 instantly tell you that 6,427 times 4,234 equals 27,211,918; or, in answer to a question, tell you within seconds that in 1993 there will be two months in which the 16th will fall on a Thursday? Rimland can't explain the phenomenon, but he notes that most idiot savant capabilities are related to right hemisphere functions, such as memory, musical ability and mathematics.