

Letter: Cognitive remediation in schizophrenia

Dr. Green (Am.J.Psychiat., 1993;150:178-187) drew attention to the neglect of cognitive remediation in the literature. His treatment of the successes and failure and his recommendations emphasize the study of groups - a necessity for a research strategy. I suggest that a recipe with a chance of therapeutic success must be individually tailored. A feature that he does not highlight is the increasing *feasibility of imaging brain areas with anomalous activity during specific task performance*.

I recommend moving away from a program based on tenuous theoretical links between task performance and brain structure. Rather, one should individually determine brain areas with impaired activity related to specific cognitive abilities. My experience with young schizophrenic patients is that most welcome an hour a day with "computer games". These periods can have both a general goal of exercising the relevant brain area and the specific training of the deficient ability associated with the biological measure.

The following examples of "psychobiological" links illustrate the reasoning. Disorganized schizophrenic patients with thought disorder, rather than other subgroups, have problems with the incompatible condition of the Stroop test and hypoperfusion of the cingulate. This region is specifically activated in healthy subjects (Liddle et al., 1992). Normal left mesial fronto-cingulate activation during performance of the "Tower-of-London" game was attenuated in schizophrenic patients with negative symptoms independent of medication, compared to studies of frontal and hippocampal areas and card-sorting (Andreasen et al., 1992; Weinberger et al., 1992). Less expensive than tomography is ERP topography. Temporal asymmetries of P300 (McCarley et al., 1993) and difference negativity depend on handedness or active paranoid symptoms (Oades et al., 1994); frontal attenuation of mismatch negativity in tone discrimination is another example (Oades, 1995).

*Once reduced left prefrontal activity is determined from ERP measures, for example, games with a general goal may include the "Tower-of-London" or "20 Questions". Specific training, related to the original method of determination, may include stimulus discriminations or responding to the wrong note in a familiar melody. Care should be taken with feedback: 1) tonal feedback can disturb. (In some tasks, reinforcement could include rock idols or natural scenes, depending on individual preferences.) 2) One should avoid giving too clear a perception of poor performance. (One germane experience of a remedial program showed an improvement of cognition but not of self-ratings.)*

These suggestions can also serve as a research strategy. Not every schizophrenic patient shows reduced P3 amplitude, but those with similar biological measures will accumulate from consecutive admissions. The *costs* of remedial programs seem high for the institution in the short-term, but most calculations of the benefits for the *individual* (independence, constructive role) and *society* (employment, crime, welfare) are not comprehensive.

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