

## Premorbid Intellectual Functioning in Bipolar Disorder and Schizophrenia

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**Objective:** Premorbid intellectual impairment has been consistently described in schizophrenia but little is known about premorbid intellectual functioning in bipolar disorder or other psychoses. The aim of the study was to investigate the premorbid intellectual ability in individuals later diagnosed with bipolar disorder, schizophrenia or other psychoses.

**Methods:** The results of verbal, arithmetic, and visuospatial reasoning tests were obtained from apparently healthy 195,019 male subjects conscripted into the Finnish Defense Forces during 1982 – 1987 (mean age 19 years). Linkage with the Finnish Hospital Discharge Register data (mean follow-up time 7.1 years) identified those conscripts who had later been diagnosed with bipolar disorder (N = 100), schizophrenia (N = 621) and other non-schizophrenic, non-affective psychoses (N = 527).

**Results:** Poor visuospatial reasoning test performance at age 19 was associated with an increased risk for all three disorders: ( $p < 0.0001$  for linear trend in all categories). The odds ratios (OR) between the lowest and highest of 9 performance categories were 34.7 (95% CI 4.1 – 296.4) for bipolar disorder, 13.8 (95% CI 5.5 – 34.5) for schizophrenia and 4.3 (95% CI 2.1 – 8.8) for other psychoses. In contrast, the higher the score in the arithmetic test at age 19, the greater was the risk of bipolar disorder ( $p = 0.008$  for linear trend). A high score in the arithmetic test was associated with over a 12-fold risk for bipolar disorder. Performance in the verbal test score was not associated with increased risk for psychiatric disorder.

**Conclusions:** These results show the first evidence indicating that premorbid visuospatial reasoning is impaired in bipolar disorder and schizophrenia, and, to a smaller extent, also in other psychoses. This suggests that a subtle neurodevelopmental aberration is involved with the etiology of both bipolar disorder and schizophrenia. High arithmetic test performance may be associated with an increased risk for bipolar disorder.

**References:** Tiihonen J, Haukka J, Henriksson M, Cannon M, Kieseppä T, Laaksonen I, Sinivuo J, Lönnqvist J: Premorbid intellectual functioning in bipolar disorder and schizophrenia: results from a cohort study of male conscripts. *Am J Psychiatry*, accepted for publication, 2005.