



## Treatment Advocacy Center Briefing Paper

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### Schizophrenia and bipolar disorder are diseases of the brain

It has been suspected for over a century that schizophrenia and bipolar disorder (manic-depressive illness) are diseases of the brain. In 1837, Dr. W.A.F. Browne, the best-known English psychiatrist of his generation, wrote: "Insanity, then, is inordinate or irregular, or impaired action of the mind, of the instincts, sentiments, intellectual, or perceptive powers, depending upon and produced by an organic change in the brain."

In that same year, Dr. Amariah Brigham, one of the founders of American psychiatry, also wrote that insanity "is now considered a physical disorder, a disease of the brain."

It would be 150 years, however, before these statements could be proven. Since the early 1980s, with the availability of brain imaging techniques and other developments in neuroscience, the evidence has become overwhelming that schizophrenia and bipolar disorder are diseases of the brain, just like multiple sclerosis, Parkinson's disease, and Alzheimer's disease. The brains of individuals with these diseases are measurably different from individuals who do not have these diseases, both structurally and functionally.

- Individuals with schizophrenia and bipolar disorder, including those who have never been treated, have enlarged ventricles in the brain, as demonstrated in over 100 studies to date.<sup>1, 2, 3</sup>
- Individuals with schizophrenia, including those who have never been treated, have a reduced volume of gray matter in the brain, especially in the temporal and frontal lobes.<sup>4</sup>
- Individuals with manic-depressive disorder have an enlarged amygdala and increased numbers of white matter hyperintensities.<sup>5, 6, 7</sup>
- Individuals with schizophrenia and bipolar disorder, including those who have never been treated, have more neurological abnormalities, as shown in more than 25 studies.<sup>8, 9</sup>
- Individuals with schizophrenia and manic-depressive disorder, including those who have never been treated, have more neuropsychological abnormalities that impair their cognitive functions, including information processing and verbal memory.<sup>10, 11, 12</sup>
- Individuals with schizophrenia, including those who have never been treated, show decreased function of the prefrontal area, an area of the brain that we use for planning and thinking about ourselves.<sup>13, 14</sup>

Approximately 50 percent of individuals with schizophrenia and bipolar disorder, including those who have never been treated, have impaired awareness of their own illness. This is a clinical symptom called anosognosia that has been shown in at least 50 different studies. Such individuals do not realize that they are sick, and they will, therefore, usually not accept treatment

voluntarily. Studies suggest that this impaired awareness is probably related to the decreased function of the prefrontal area. These individuals are thus similar to some patients who have had a stroke and, because of brain damage, are unaware of their disability and deny it. The lack of awareness of illness in individuals with schizophrenia and manic-depressive disorder is the most common reason that they do not take their medication.<sup>15, 16, 17</sup>

## ENDNOTES

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