

## The Smile of The Cheshire Cat: Splicing The Split Mind

*By Eyitemi Egwenu*

*Dreaming, while sleeping,  
Permits each of and everyone of us, to be quietly and safely schizophrenic,  
Every night of our lives.*

--William C, Dement  
(rephrased)

### INTRODUCTION AND DEFINITION

When the Cheshire cat, in Lewis Carroll's *Alice in Wonderland*, gradually disappeared, nothing was left of it, except a smile – a most enigmatic smile. It is left to the observer, to determine if this smile was there to reassure us, as we plumb the mysteries in the science of life and living or to grin mischievously at our ignorance and mock our efforts.

Schizophrenia is just as enigmatic as the eery smile of the Cheshire cat. Schizophrenia is a psychosis; it is a psychiatric condition, which describes a form of mental illness, in which there is a distortion of how reality is perceived and/or expressed. This distortion, takes the form of a disorganization of thought, hallucinations and delusions.

The term “schizophrenia” was first coined by Eugen Bleuler, a Swiss Psychiatrist, and its etymology is rooted in two Greek words, “schizo” (to split) and “phreno” (mind). Literarily put, Schizophrenia means, “a split mind”; this alludes, to the disorganization of thought and speech which avidly labels this condition and not to the phenomom of “multiple personalities” as many might be wont to think. This distortion could be severe enough to disrupt normal social functioning.

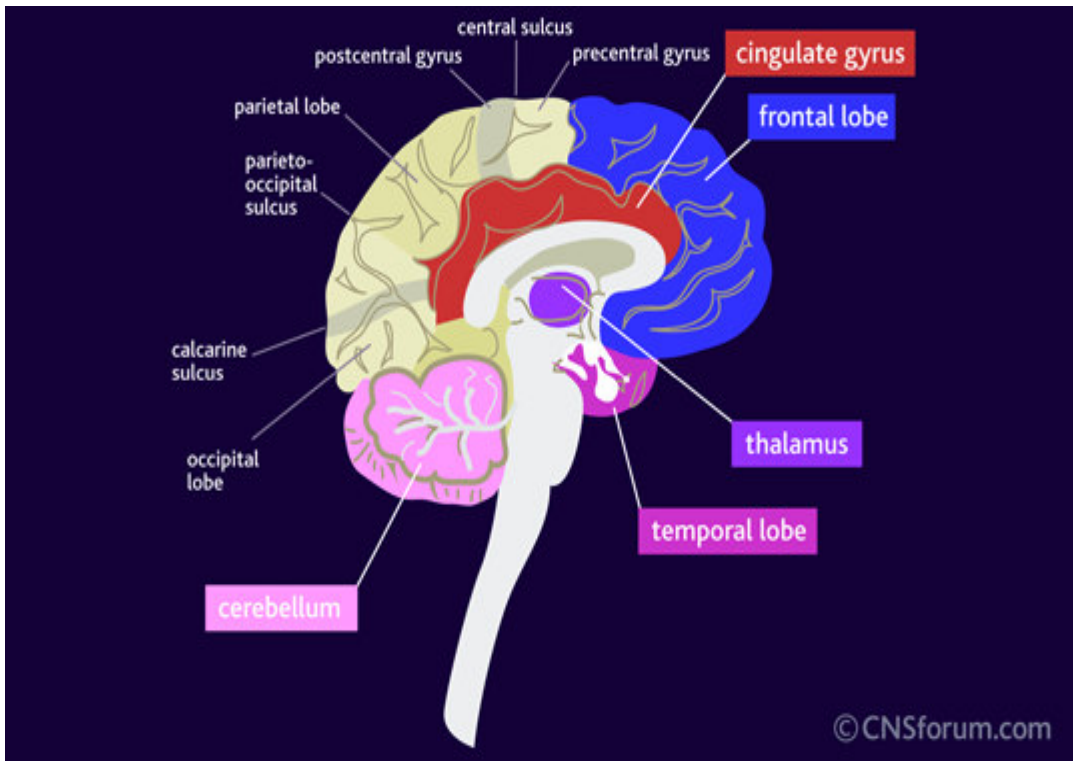


Fig 1: Area of the brain affected by schizophrenia

## AETIOLOGY

Environmental, psychosocial, genetic and neurobiologic factors have all been implicated in the trigger of schizophrenia. Living in the urban areas and with negative social stressors, such as poverty, has been found to be risk factors for schizophrenia. A definite causal link has not been established between schizophrenia and substance abuse, but the clue of thread that connects both, becomes more obvious still, when one considers that, long term use of marijuana increases the risk for schizophrenia. Schizophrenia can also be set off by hallucinogenic drugs. Increased levels of dopamine have been implicated in the symptoms of schizophrenia and amphetamines can worsen the symptoms of schizophrenia, because they increase the amount of dopamine in dopaminergic neurons.

The likelihood that schizophrenia is inherited, does not exhibit the classic Mendelian pattern. Twin studies, however, have shown a high probability that it can be inherited, perhaps, through some more complex mechanisms.

Neural mechanisms, which increase the activity of dopamine in the synapse, have been strongly implicated in schizophrenia (Dopamine hypothesis of schizophrenia. See Fig. 2). This impression has received corroboration from the fact that certain drugs that are used to treat schizophrenia, with beneficial outcomes, are antidopaminergic in their activity.

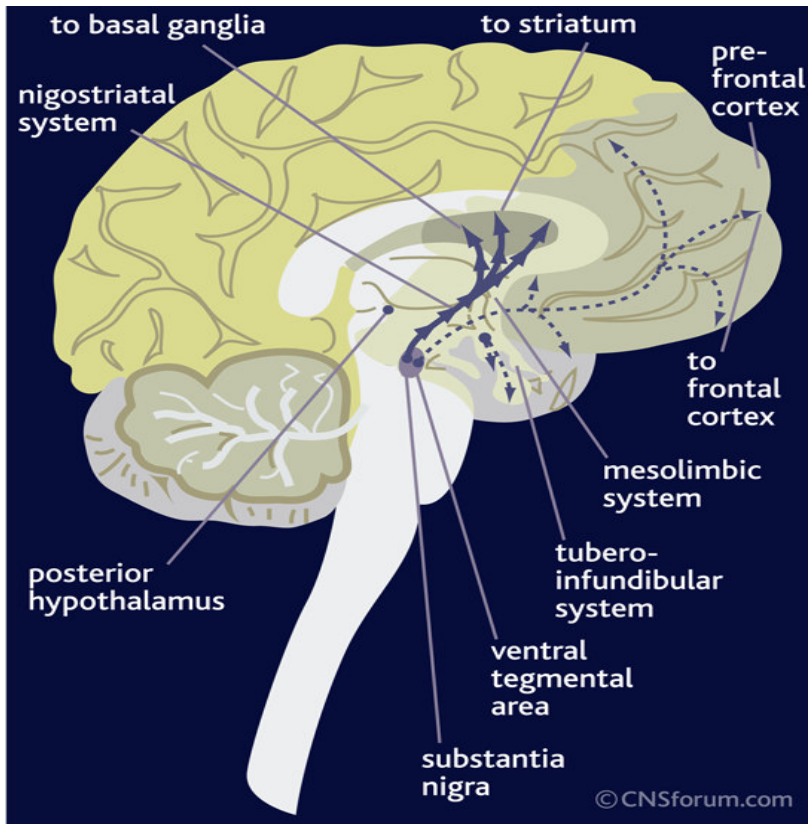


Fig 2: Dopamine pathway in schizophrenia

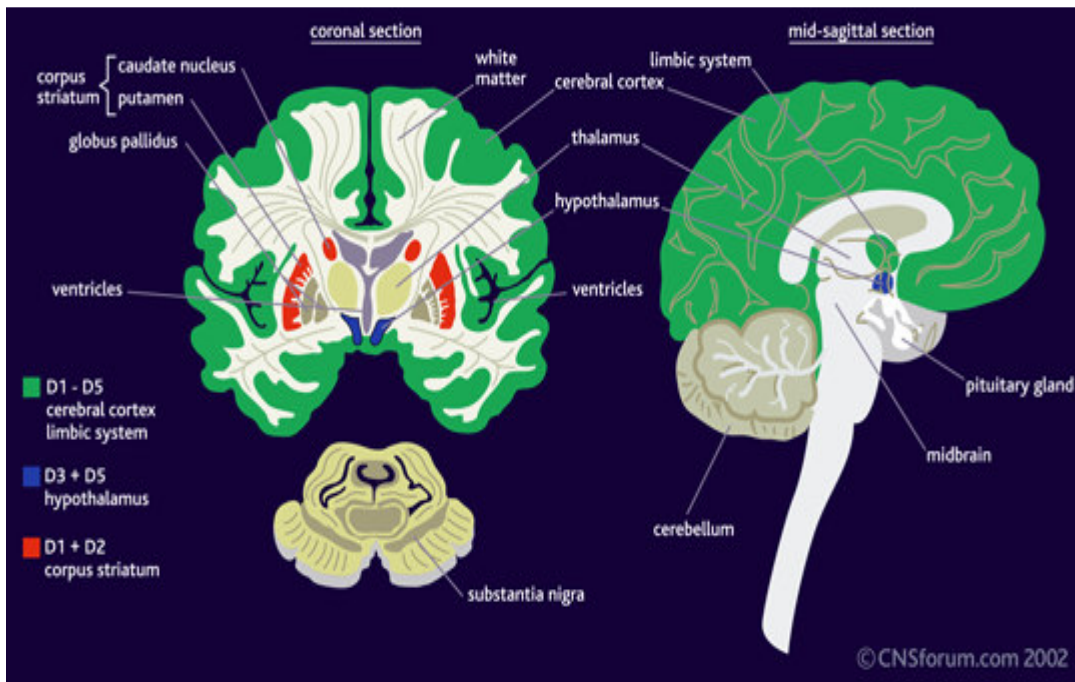


Fig 3: Distribution of subtypes of dopamine receptors. These range from the D1 – D5 subtypes

Low levels of glutamate in the central nervous system and serotonin up-regulation, are also culpable neurochemical participants in this mental illness; glutamate, a neurotransmitter in the central nervous system, is observed to be hypoactive in individuals with schizophrenia. ( see Fig 4 and 5 )

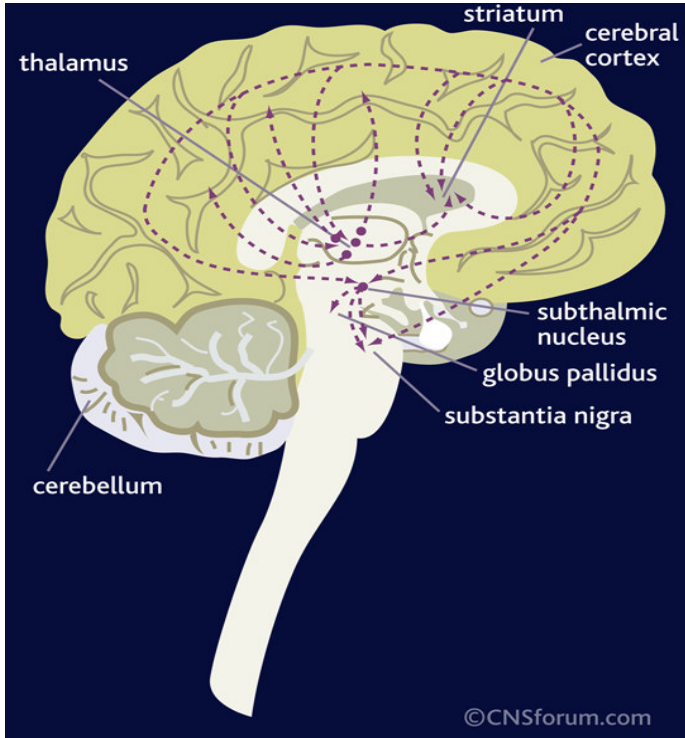


Fig 4: Glutamate pathway in schizophrenia

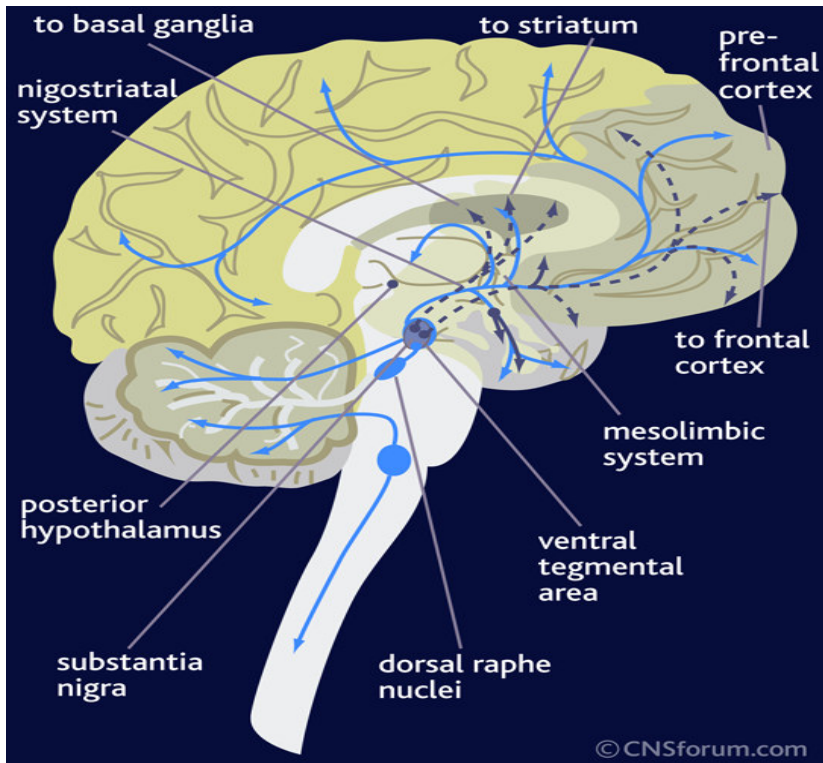


Fig 5: Serotonin pathway in schizophrenia

## SYMPTOMS, SIGNS AND DIAGNOSIS

Schizophrenia has its peak onset in early adulthood. The person might hold on to a false belief, rigidly, in spite of evidence to the contrary (delusions), may perceive sensory modalities that are in reality, non-existent (hallucinations; which may be auditory or visual), and have a distorted and disorganized thinking process (thought disorder). These are regarded as positive symptoms, because they are a distortion of normal function. The negative symptoms include, social withdrawal, blunting of the affect and a slow thought process and represent a reduction or loss of normal function.

The diagnosis of schizophrenia is usually made, based on the person's own account of experiences, the account of others (if they are available for questioning) and the Doctor's own assessment. The criteria for the diagnosis of schizophrenia, depend on both the presence of the appropriate symptoms/signs and the duration for which they have been present.

A very popular diagnostic criteria, is the Schneiderian rank symptoms, or more specifically, Schneider's First Rank Symptoms. These symptoms include:

- Thought insertion ( *The person feels thought are being put into his head* )
- Thought broadcast ( *He feels people can hear his thoughts* )
- Thought withdrawal ( *Thoughts are being removed from his head* )
- "Third person" Auditory hallucination or "hearing" voices ( *the voice comments on the individual's activities in the third person* )

Delusions experienced in schizophrenia are usually of a paranoid or bizarre nature.

## TREATMENT / MANAGEMENT

*“All the King’s men, and all the King’s horses, could not put Humpty Dumpty, together again”.*

For schizophrenia, as for Humpty Dumpty, how does one put the “broken pieces” together again? How does one reassemble a split mind, or in the words of the inimitable Shakespeare,

*“...how does one minister to a mind, diseased, and pluck the memory of this rooted sorrow?...”*

Is there any chance of splicing the split mind?

A definite cure is not achievable for schizophrenia, but there are methods for measuring the degree of effectiveness of schizophrenia treatment. One of such methods is based on the two types of symptoms found in schizophrenia and is called the positive and negative syndrome scale (PANSS). These symptoms/signs can be managed and social functioning improved.

The spearhead for the treatment of schizophrenia, is antipsychotic medication. The older generation of antipsychotics, which are also referred to as the typical antipsychotics, such as Phenothiazines ( Chlopromazine) and Butyrophenones (Haloperidol), are anti-dopaminergic in their activity ( See Fig 6 ).

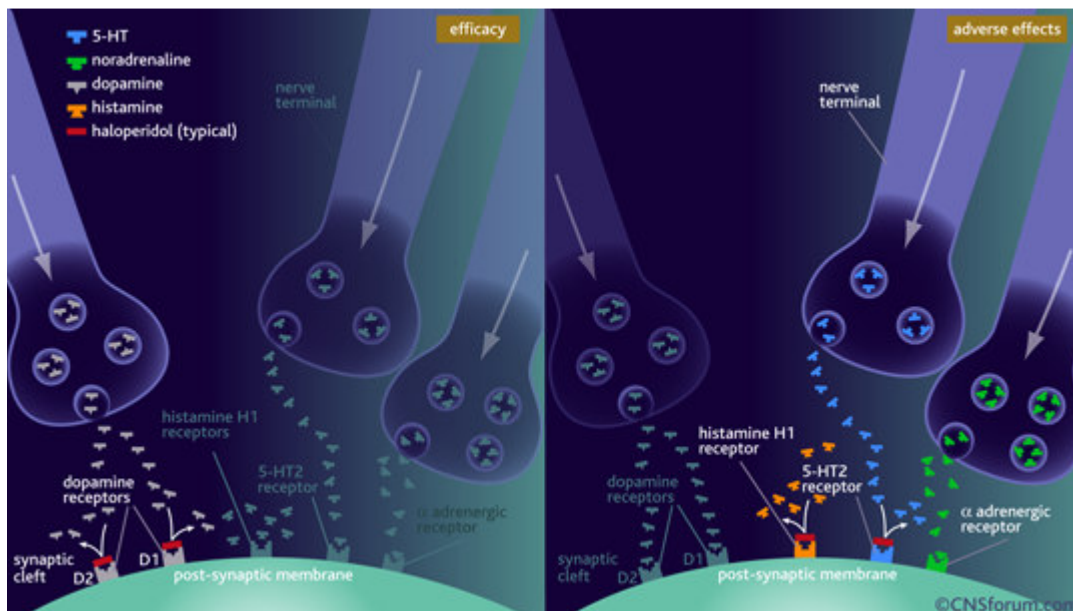


Fig 6: Mechanism of action of first generation neuroleptics. Haloperidol binds essentially to D2 and D1 receptors.

The newer generation or atypical antipsychotics, also affect central nervous system, serotonin activity, by blocking serotonin receptors and dopamine to a less marked degree ( See Fig 7 ). The atypical antipsychotics are preferred, because they are better tolerated, and less likely to produce extrapyramidal side effects such as tardive dyskinesia ( a form of motor disorder, characterized by abnormal postures of the neck, limbs and trunk )

LY2140023, is a new drug that holds some promise in splicing the split mind. LY2140023, targets the glutamate NMDA receptors, rather than the dopamine receptors.

Other treatment modalities for schizophrenia, include, psychotherapy, cognitive behavior therapy and electroconvulsive therapy ( which may be used if other treatments have failed).

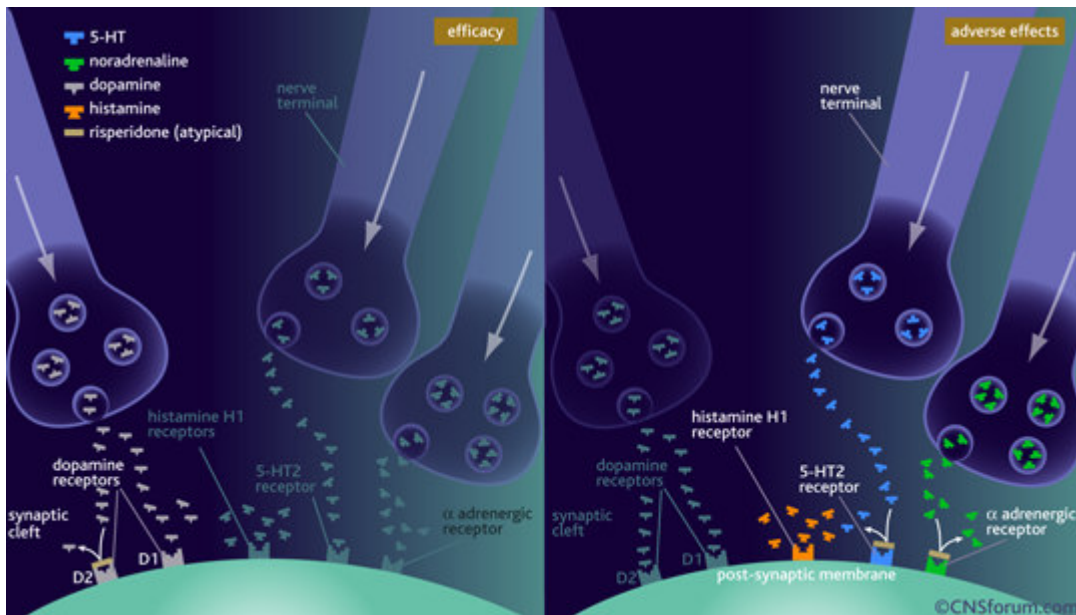


Fig 7: Mechanism of action of second generation neuroleptics. Risperidone binds 5HT2 receptors more avidly than D2 receptors.

## CONCLUSION

The normal human mind is still largely, uncharted territory, and no concrete landmarks or frames of reference, for now, sufficiently explain how the schizophrenic mind *creates* its own reality. The world of the schizophrenic, may be considered to be a highly charged variant, of the so called normal world – a world of fantasy, metaphor and deceit.

At present, there is no Lethe for the schizophrenic mind, but hopefully, a feline smile, still urges us on, on our quest for one.

## REFERENCES

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