

Cognitive And Biological Explanation Of Schizophrenia

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Schizophrenia is a complex mental illness, and from intracellular processes to the level of observable behavior, it has challenged science. Until now, researchers have been busy finding the single factor that is the cause of schizophrenia, but they have not succeeded. It's a chronic condition with a recurring psychotic illness that generally starts at a young age and, most of the time, lasts for a lifetime (Carpenter & Buchanan, 1994, p. 682).

The key features of schizophrenia include paranoia, hallucination, delusions, and cognitive dysfunction. These defining features produce abnormalities in a number of areas, including emotions, thoughts, and cognitions. The psychotic symptoms of schizophrenia have an unknown onset with associated features, including customary association and failure to logic and reality. Psychosis is not the loss of these functions. Rather, it's malfunctioning.

Exploring this disorder shows that researchers have worked in different domains to explore the causes of schizophrenia. The major areas explored by researchers include the role of genes in causing schizophrenia, the chemical activities influencing brain chemistry and distortion in the brain of schizophrenics. So to explain the causes of schizophrenia it is important to discuss cognitive and biological explanations of schizophrenia (APA, 2007).

Cognitive Explanation Of Schizophrenia

Schizophrenia is characterized by distortions in thoughts, attention, language, and perception. According to the cognitive school of thought, these are the causes of this disorder rather than the consequences of schizophrenia. This school of thought explains that different features of schizophrenia appear when the individual experiences them. When any person is confronted by any sort of delusions or hallucinations, he turns to some close one, but when it is denied by them, then the patient thinks that they are hiding the truth from them. Individuals started to reject all sorts of feedback and began to think that they were being persecuted. In other words, we can say that schizophrenics follow a rational path to madness (Comer & Whitford, 1996, p. 473).

Perceptual Errors

Researchers have added the literature that schizophrenics do experience perceptual errors in the case of hallucinations and delusions. However, the misinterpretation of such sensory experience produces the syndrome of schizophrenia.

Drury, Robinson, and Birchwood (1998) found that people with schizophrenia have difficulty interpreting the intentions and beliefs of others. This explanation is also supported by the theory presented by Frith, who was in view that schizophrenics have difficulties in the meta-representation of thoughts.

Neuropsychological Model Of Schizophrenia

According to Hemsley, one of the major root causes of schizophrenia is the breakdown of already stored information in the minds of schizophrenics and upcoming new information from their surroundings.

According to this theory, the schemas of schizophrenics are affected due to sensory overload and inculcate in the mind of schizophrenics that all the new information is highly relevant and thus explains the delusions. Although it does not explain schizophrenia yet, it provides explanations of how the symptoms originate.

Information Processing Overload

It was thought that the reason for poor performance by people with schizophrenia is their lack of theory of mind, but later Drury, Robinsons, and Birchwood found that the cause of poor performance in schizophrenics is due to overload of information processing because of the complicated nature of the task. This perspective rejected the concept of FRith's meta-representation and suggested that these people have difficulty in attending to the relevant information and filtering it, which is selective attention. Hemsley's theory related to poor perception and memory integration is also strengthened by the cognitive explanation that suggests that people with schizophrenia mistook their own voices and inner speech for that of some other person.

Cognitive Dysfunction

A cognitive explanation suggests that this disorder is not a domain-specific deficit. Rather, it is an impairment related to the complete integration of brain function. Such impairment decreases the likelihood of individuals dealing with stress in life and also maximizes the individual vulnerability to the aversive life experiences that lead to dysfunctional behaviors of individuals. Reality testing decreases, and cognitive dysfunction increases in people with schizophrenia who develop some dysfunctional cognitive schema that is manifested by hallucinations and delusions.

The cognitive explanation of schizophrenia is not comprehensive. Rather, it only explains the origin of symptoms, so this explanation must combine with the biological one to explain this disorder better.

Biological Explanation Of Schizophrenia

The biological explanation of schizophrenia explains that schizophrenia has an organic cause, although it does not deny the importance of another school of thought, yet it provides an explanation for its causes. It involves genetic and brain chemistry in explaining schizophrenia. A single generalization can be drawn that explains genes are responsible for causing schizophrenia. Although it is not a single gene rather multiple genes are involved. For this purpose family, twin, and adoption studies provide strong evidence (Comer & Whitford, 1996, p. 473).

Family Studies

There are a number of researchers who provide evidence that schizophrenia runs in families, which is an indicator of the fact that it is genetically inherited. Most of the available literature on families suggests that there are greater chances for an individual to be diagnosed with schizophrenia if the person already has someone diagnosed with this disorder in the family (Gottesman, 1978). According to Gottman (1978) if the prevalence of schizophrenia in the general population is 1% then there are 12% chance of schizophrenia in first-degree relatives, and if both parents are having schizophrenia then the chances will exceed 40% for the child. Still, it is debatable whether schizophrenia in families is due to nature or nurture, as all of them share the same environment.

Twin And Adoption Studies

Twins and adoption studies have also shown evidence that schizophrenia tends to run in families rather than have an influence on the environment. According to Heston (1970), if a monozygotic has developed schizophrenia, then there is are 90% chance that the other twin will develop some sort of mental illness. But again, recent findings have suggested that the environment strengthens the effect of genetics. So, still, there is a need to explain the biological causes of schizophrenia to better understand it.

Brain Structure

The latest Imaging technologies, CAT and MRI, have contributed a lot in explaining the brain structure in relevance to schizophrenia. According to Weinberger (1978), schizophrenic persons have enlarged cerebral ventricles. The size of the cerebral ventricle is non specifically responsible for cerebral dysfunction. With the advent of structural imaging technologies, volumetric differences have been observed in schizophrenics as compared to non-schizophrenics. According to some laboratory findings, decreased volume of the superior temporal gyrus has been observed during the episodes of illness. Furthermore, a reduction of size in the medial temporal cortex, including the hippocampal cortex, has also been observed. Although the size reduction has accounted for 5% of the population, it

has consistently over the research.

Brain Function

Researchers have observed brain dysfunctioning due to reduced neural activity in prefrontal regions with an impact of negative symptoms in the inferior parietal and prefrontal.

Cortex (Heckers et al., 1999, p. 1118). Studies have provided evidence about the increase in the functioning of basal ganglia along with changes in delimited cerebral areas and the decrease in the regional cerebral blood flow (CBF) and metabolism in the middle frontal and anterior cingulate gyrus. However, conflicting findings were observed in the case of rCBF, as some findings suggest no alteration in the schizophrenics when compared with normal subjects. At the same time, another study conducted on the auditory recognition task has shown that normal populations and schizophrenics differ only in the ACC/medial frontal cortex.

Dopamine Hypothesis

Evidence shows that drugs that are known to increase dopamine, which is an agonist, cause an increase in schizophrenic symptoms, whereas when drugs that are antagonists known to decrease dopamine are given to patients, this decreases the symptoms of schizophrenia. Based on these observations, it has been theorized that an overactive secretion of dopamine causes schizophrenia, as when antipsychotic drugs are given to patients with schizophrenia, it reduces their psychotic symptoms by blocking dopamine receptors in the brain.

Neural System

Long tract pathways were observed by DeLong (1990, p. 283) between subcortical and frontal cortex areas through which the functioning of the frontal cortex was influenced by the thalamus and basal ganglia. Basal ganglia contain a wide variety of modulators and neurotransmitters that are richly innervated by the structure of the brain, so if any alteration occurs in the basal ganglia, then this could change the frontal cortical function via these long tract pathways (Nolen-Hoeksema & Rector, 2015, p. 766).

Neuro-Developmental Factors

Evidence has been provided that the neural networks subserving schizophrenia mature after the late teens produce symptoms of schizophrenia. Although not much work has been observed in this case scenario, still this framework is important.

Prenatal And Perinatal Influences

Evidence has suggested that the prenatal and perinatal environment is somehow involved in the development of schizophrenia. When a fetus is exposed to any infection, virus, pregnancy, or delivery complications, these environmental conditions influence the child to later develop schizophrenia. The use of Marijuana by pregnant mothers also seems to be a cause of later-on schizophrenia (Nolen-Hoeksema & Rector, 2015, p. 766).

Conclusion

The report provides evidence of cognitive and biological explanations of schizophrenia. It is inferred that there is no definite cause of schizophrenia that has been diagnosed until now, but there is evidence that genes interact with the environment to produce and strengthen the symptoms of schizophrenia. Furthermore, no single school of thought is enough to explain this disorder. Rather, an integrated approach is required that explains the probable causes of schizophrenia.

References

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