

## **Course Material (E-Content) of Psychology**

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### **The Biological Approach to Clinical Psychology**

The biological approach is based on the view that psychological disorders can be explained in the same way as physical disorders, both have physical causes. A mental illness is similar to a physical illness. The biological approach is also called the medical model because it is based on the idea of diagnosing physical symptoms and providing appropriate treatments, as is done with physical illness. The main concern of this approach is the relationship between mind and body, the effects of mind on body and the influence of heredity on behaviour. Bio-psychologists study many of the same things that other psychologists do, but they are interested in looking at how biological forces shape human behaviours. Some topics that a psychologist might explore using this perspective include:

- Analysing how trauma to the brain influences behaviours
- Investigating how degenerative brain diseases impact how people act
- Exploring how genetic factors influence such things as aggression
- Studying how genetics and brain damage are linked to mental disorders
- Assessing the differences and similarities in twins to determine which characteristics are tied to genetics and which are linked to environmental influences

So, it can be said that Bio- psychologists explain human behaviour on the basis of Genetics and Brain structure and functions.

#### **The influence of genes on behaviour**

It is assumed that genes have a major effect on developing mental illness. Mental illness is the result of an inherited gene or group of genes. Evidence

comes from twin or family studies. Gottesman and Shields (1972) found that concordance rates for schizophrenia in non-identical twins is about 9%, whereas it rises to 42% in identical twins, indicating some environmental influence, but a larger genetic component for the disorder. . A '**concordance rate**' is the extent to which two things are related, in this case how frequently both twins have the same disorder. These genes are thought to influence the development of the nervous system, making it vulnerable to malfunctioning in certain ways that produce the symptoms of the disorder. • Kendler et al. (1985) found that relatives of schizophrenics were 18 times more likely to develop the illness than a matched control group. There is considerable evidence of a genetic predisposition to develop schizophrenia

### Neuroanatomy

The structure of the brain has sometimes been found to be different in people with certain mental disorders. For example, Chua and McKenna (1995) reported that the brains of schizophrenic patients were smaller and had larger ventricles than the brains of normal individuals. Bio-psychological explanations often focus on which brain areas are responsible for which types of thinking or behaviour and how they connect with other functions and brain areas. For example; Broca's area, which controls the production of speech and Wernicke's area, which controls the comprehension of speech. Differences in brain structure (abnormalities in the frontal and pre-frontal cortex, enlarged ventricles) have been identified in people with schizophrenia.

### Biochemical Abnormalities

Neurochemical imbalances in the brain are often associated with abnormal behaviour. Many studies have found abnormal levels of certain neurotransmitters and/or hormones in different mental disorders. For example, depression has been linked to low levels of noradrenaline and serotonin, and schizophrenia has been linked to high levels of dopamine. Some forms of depression are related to disordered hormone levels, such as post-partum depression and pre-menstrual syndrome. Abnormal brain chemistry may be the result of faulty genes – Meyer et al. propose that the unusual form of WKL1 found in some schizophrenics may cause abnormal protein production. Or, abnormal brain chemistry could be the effect of mental illness. Either way, the use of drugs to return neurotransmitters or hormones to normal levels has been shown to be effective.

## Infection

Mental disorders may be caused by a virus or bacteria. For example, general paresis was regarded since the 16th Century as a mental illness, but has since been found to be caused by the syphilis bacterium. Crow (1984) proposed that schizophrenia is caused by a retrovirus, which becomes incorporated into DNA. Barr et al. (1990) found increased levels of schizophrenia amongst mothers who had 'flu' during they were pregnant. • This suggest a possible link between infection and schizophrenia.

## Methods of treatment for Mental Disorders

### 1. Drug Therapy

This method is used to treat psychological disorders with medications. The main drugs used in the treatment of **depression**, anxiety and OCD are mono-amine oxidase inhibitors (MAOIs), tricyclic antidepressants and selective serotonin reuptake inhibitors (SSRIs).

Antipsychotic drugs can be used to treat **schizophrenia** by blocking d2 (dopamine) receptors. There are different generations of antipsychotics:

1. Typical antipsychotics – eg chlorpromazine, block d2 receptors in several brain areas.
2. Less typical antipsychotics – eg pimozide, often used as a last resort when other drugs have failed.
3. Atypical antipsychotics – eg risperidone. Some atypicals also block serotonin receptors.

Anti psychotics have long been established as a relatively cheap, effective treatment, which rapidly reduce symptoms and enable many people to live relatively normal lives (Van Putten, 1981). Between 50 – 65% of patients benefit from drug treatments.

But this method has some weakness :

1. Drugs do not deal with the cause of the problem, they only reduce the symptoms.

2. Anti psychotics produce a range of side effects including motor tremors and weight gain. These lead a proportion of patients to discontinue treatment.

3. Patients often welcome drug therapy, as it is quicker, easier and less threatening than talk therapy.
4. Some drugs cause dependency.
5. Ethical issues including informed consent, and the dehumanizing effects of some treatments.

## 2. Electro Convulsive Therapy (ECT)

Electro Convulsive Therapy (ECT) began in the 1930s after it was noticed that when cows are executed by electric shocks they appear to convulse as if they are having an epileptic shock. The idea was extrapolated to humans as a treatment for schizophrenia on the theoretical basis that nobody can have schizophrenia and epilepsy together, so if epilepsy is induced by electric shock the schizophrenic symptoms will be forced into submission!

It is a procedure, done under general anesthesia, in which small electric currents are passed through the brain, intentionally triggering a brief seizure. ECT seems to cause changes in brain chemistry that can quickly reverse symptoms of certain mental illnesses. ECT is usually given three times a week for up to 5 weeks.

It is generally used in severely depressed patients for whom psychotherapy and medication have proven to be ineffective. It can also be used for those who suffer from schizophrenia and manic depression. However, Sackheim et al. (1993) found that there was a high relapse rate within a year suggesting that relief was temporary and not a cure.

But this method has also some weakness :

1. There are many critics of this extreme form of treatment, especially of its uncontrolled and unwarranted use in many large, under staffed mental institutions where it may be used simply to make patients docile and manageable or as a punishment (Breggin 1979).
2. ECT side effects include impaired language and memory as well as loss of self esteem due to not being able to remember important personal facts or perform routine tasks.
3. ECT is a controversial treatment, not least because the people who use it are still unsure of how it works - a comparison has been drawn with kicking the side of the television set to make it work.
4. There is a debate on the ethics of using ECT, primarily because it often takes place without the consent of the individual and we don't know how it works!

### 3. Psychosurgery

As a last resort when drugs and ECT have apparently failed psychosurgery is an option. This basically involves either cutting out brain nerve fibres or burning parts of the nerves that are thought to be involved in the disorder (when the patient is conscious). It is an invasive medical treatment that involves the deliberate destruction of tiny amount of brain tissue in order to treat mental illness, such as clinical depression.

Surgery is used only as a last resort, where the patient has failed to respond to other forms of treatment and their disorder is very severe. This is because all surgery is risky and the effects of neurosurgery can be unpredictable. Also, there may be no benefit to the patient and the effects are irreversible. Psychosurgery has scarcely been used as a treatment for schizophrenia since the early 1970s when it was replaced by drug treatment.

#### **Strength of Biological Approach :-**

1. One strength of the biological approach is that it is very scientific. This is a strength because the experiments used are measurable, objective and can be repeated to test for reliability.
2. This approach supported by empirical evidence.
3. One strength of the biological approach is that the treatment can be used directly.

#### **Weakness of Biological Approach:-**

1. One weakness of the biological approach is that it argues that behaviour is caused by hormones, neurotransmitters and genetics. One theory is that schizophrenia is genetic, however, twin studies show that it is not completely genetic and the environment has a part to play.
2. The therapies offered by the biological approach can have serious side effects.
3. The main limitation of the biological approach is that it may be useful in dealing with the symptoms of mental illness but it may not be effective in resolving the underlying causes.
4. In many cases, it is not clear whether the physical factor is actually an effect rather than a cause.
5. The medical model may be appropriate for physical illness, but not for mental illness where symptoms are less objective. It overlooks the fact that mental disturbance is often defined in terms of social difficulties. In fact, Clare (1980)

pointed out that many physical illnesses also have a social-psychological component and, therefore, the medical model may be insufficient on its own even for physical illnesses.

6. The medical approach may prevent us understanding the true causes of mental disorders. According to Szasz (1960), the medical model is 'worthless and misleading' and 'scientifically crippling'