Section 10: Organic Brain Disorders

Section overview

In the first part of this section, we provide an understanding of the causes and symptoms of organic brain disorders and the treatment options for these disorders. The second part of this section provides an understanding of mental retardation, the different types and levels of mental retardation, as well as discussing several childhood developmental disorders.

Objectives

By the end of this section, you should be able to:

• identify the causes and symptoms of organic brain disorders
• examine the treatment of organic brain disorders
• define mental retardation
• identify the types and levels of mental retardation
• discuss the symptoms of childhood developmental disorders
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Activities

There is one activity in this section. Activity 10.1 asks you to list some of the ways that organic brain disorders might differ from other disorders.

Textbook


Please read Chapter 14: Developmental disorders.

Readings

There are two readings for this section. You will find them in the readings pack for this module:


Self-Assessment

Please complete the self-assessment questions at the end of this section to test your understanding and knowledge against the objectives stated in this section.
Introduction

Costello and Costello (1992) suggest that all human behaviour has its basis in the activities of the nervous system – whether the behaviour is normal or abnormal – and the most crucial part of the nervous system is the brain.

The brain affects the development of abnormal behaviour in two different ways. These fall into two broad categories:

- organic disorders, which are the mental disorders known to be caused directly and primarily by pathology in the brain itself
- functional disorders, which result from abnormal life experiences imposed on a normal brain – brain trauma caused by falls, accidents, blows to the head, or penetration of the brain by a foreign object such as a bullet – which generally result in either concussion, contusion or laceration

It has been thought that functional disorders can result from vulnerabilities that grow out of organic defects. Costello and Costello (1992) also claim that psychosocial aspects of the environment may affect behavioural symptoms of organic disorders.

Carson, Butcher and Coleman (1995) suggest that certain problems arise due to gross structural defects in the brain tissue. These defects impair the normal physiological functioning of those parts of the affected brain, such as thought, feeling and action.

Activity 10.1

1. List some of the ways you think that organic brain disorders might differ from the disorders studied so far in this module.
2. List a few reasons why it is important for you to understand organic brain disorders.
3. What would you guess is the proportion of mental health issues attributable to organic brain disorders? How might you go about checking your estimate?

Diagnosing organic brain disorders

Organic brain disorders are clustered into three groups according to their symptoms:

- defects in basic mental activities – including memory loss, loss of orientation, having no awareness of the date or season, and being unable to report self-identity
- impairment in higher intellectual functioning – including trouble in making decisions, gross errors in financial matters, slowness and inaccuracy in calculating, and loss of knowledge of common items
- certain types of affective disorders – these can include the individual shifting suddenly from one emotion to its opposite when tired or emotionally upset. The
necessity to make a decision or solve a simple problem can be too much for the individual.

Costello and Costello (1992) suggest that diagnosis of organic brain disorders can be a problem, and mistaking a functional disorder for an organic disorder can block effective treatment. Some delays in treatment of organic brain disorders can result in death. They recommend a thorough physical examination before diagnosis is made. This ensures that physical causes are excluded before psychological causation is diagnosed.

**Causes and symptoms of organic brain disorders**

Costello and Costello (1992) suggest that there are seven principal causes of brain damage. These are:

- degenerative processes in the brain
- brain tumours
- brain trauma
- cerebral vascular accidents
- nutritional deficiency
- endocrine disorders
- epilepsy

Each of these causes is discussed in more detail below.

Costello and Costello (1992) state that these agents of brain damage may result in:

- acute symptoms, which last only a few months, such as a stroke
- chronic symptoms, which may handicap the individual’s functioning, such as neurosyphilis

The extent of behavioural disruption and the specific nature of the symptoms depend on the amount of brain damage and the location of the damage. Brain damage which is localised may only affect specific functions, such strokes which affect speech and/or mobility. In degenerative disorders, extensive areas of the brain are affected and this can cause generalised debility and disorganisation of functioning.

Although damage to the brain is generally a negative effect, as there is impairment in the functioning of the affected area, there may be a compensatory increase in the activity of an adjoining area. This effect, however, may still be disruptive. Epilepsy, for example, is thought to be caused by increased brain activity.

**Brain degeneration**

Virtually from birth, our organs begin to wear out. When we are young, cells are replaced by new growth but, as we age, this replacement process slows down and cells gradually begin to degrade. As with other organs and parts of the body, the brain is affected. Certain changes in intellectual functioning, such as memory lapses and a reduced ability to handle or process complex information, appear.
Dementia is a condition that develops in an increasing percentage of the population over the age of 65 years. Dementia is a progressive loss of higher mental processes. Dementia creates disabilities, such as:

- jumbled thoughts
- distress and agitation
- short-term forgetfulness
- loss of independence
- withdrawal from social situations
- concentration on the negative
- paranoia
- depression and loneliness

According to Snowden (2000), medications can help to preserve the ability to relate to others and to think clearly, avoiding conflicts and arguments. The side effects are few and minor. However, for those with high blood pressure, medication may help or hinder their cognitive improvement and may precipitate paranoid thoughts and depression. Drug combinations, therefore, need to be carefully monitored.

Two types of common dementia are:

- Alzheimer’s disease
- multi-infarct dementia

There are also a number of other degenerative disorders.

**Alzheimer’s disease**

There are two patterns of symptoms in Alzheimer’s disease:

- simple deterioration
- a system of paranoid thinking

Genetic defects are said to be the cause of brain damage in people with Alzheimer’s disease. Another cause is said to be high levels of aluminium in the blood. There is however, no firm or definite reason that has been directly attributable to the development of Alzheimer’s disease.

**Multi-infarct dementia**

Multi-infarct dementia can result from the same symptoms as Alzheimer’s disease, but this disease is not age-related. Multi-infarct dementia is a vascular (blood vessel) disease and brain degeneration can result from the cumulative damage of multiple small strokes, caused by a blockage in the supply of blood to a specific area of the brain.
Other degenerative disorders

Huntington’s chorea is an organic disease transmitted by a dominant and defective gene of either parent. Characteristic symptoms include spasmodic jerking of the limbs, bizarre behaviour and loss of bodily functions.

Parkinson’s disease results in a degeneration of the neurones. Symptoms include muscular rigidity, tremors and a mask-like fixedness of facial expression.

Brain tumours

A brain tumour is an abnormal growth of body tissues. Some tumours are benign and generally only affect the individual because of the pressure they exert. If the tumour is removed, the symptoms generally disappear. Malignant tumours can cause death unless they are removed in time.

There are two main types of brain tumour – primary tumours and secondary tumours. Primary tumours originate in the brain. Secondary tumours are usually cancerous and may originate in other parts of the body but are carried to the brain through the vascular system. The pressure of the tumours can cause a series of physical and behavioural symptoms and eventually death.

Symptoms of brain tumours can initially be headaches, visual problems or a brief loss of consciousness. As the tumour grows, it can affect other parts of the brain and therefore symptoms can increase and seriously affect the health and mental functioning of the individual.

Brain trauma

Brain traumas generally result from falls, accidents, blows to the head, or penetration of the brain by a foreign object, such as a bullet. These can result in either concussion, contusion or laceration.

Concussion occurs:

…when the brain is momentarily jarred and shifted from its position. This results in a brief loss of consciousness, lasting from only a few seconds to a minute or two. The longer the period of unconsciousness, the more severe and longer lasting the symptoms will be (Costello & Costello, 1992, p302).

Contusion is:

…a more serious jarring of the brain, forcing it out of position and pressing it against the skull. Brain tissue on the cerebral cortex may be damaged. The result will be more serious symptoms than those that occur from concussion, sometimes lasting for days. The individual may experience convulsions and speech impairment when coming out of the coma (Costello & Costello, 1992, p302).

Lacerations occur when a foreign object passes through the skull and enters the brain itself. Costello and Costello (1992) suggest that this is the most serious of the brain traumas. The severity of the injury depends upon its location and the extent of damage caused.
Cerebral vascular accidents

Costello and Costello (1992) discuss two cerebral vascular accidents:

- cerebral occlusion
- cerebral haemorrhage

Cerebral occlusion occurs when a blocked blood vessel of the brain can no longer provide adequate support for an area of the brain, causing thrombosis. It can also occur when a cerebral vascular accident produces paralysis or an inability to talk. This suddenly produces an instant clogging of the vessel.

Cerebral haemorrhage occurs when a blood vessel ruptures and blood pours out onto brain tissue, which then limits the brain’s capacity to function. Cerebral haemorrhaging is a serious condition that may cause memory loss, impaired judgement, speech impairment, paralysis, or even death.

Nutritional deficiency

There are certain vitamins which are necessary for brain function. Disorders resulting from vitamin deficiency include:

- Korsakoff’s syndrome
- pellagra
- beriberi

Korsakoff’s syndrome occurs as a direct result of the inadequate diet that accompanies chronic alcoholism. Damage caused is irreversible and includes foolish thinking and talking, generalised weakness, and gross intellectual impairment.

Pellagra results from a diet deficient in niacin and B vitamins. Symptoms include a rash and diarrhoea in the early stages, then serious psychological symptoms, ranging from depression and anxiety to psychosis. Massive amounts of the needed vitamins can correct the disorder.

Beriberi is not prevalent in Western societies, but exists in societies where vitamin deficient rice is a major part of the diet and where thiamin is absent. Symptoms of beriberi include sleep disorders, irritability and loss of concentration.

Endocrine disorders

Oversecretion or undersecretion of the thyroid gland can cause brain disorders. Graves’ disease is caused by oversecretion. Symptoms include sweating, apprehensiveness and hyperactivity. Hypothyroidism is caused by undersecretion and causes sluggishness and depression.

Brain damage from infection

Brain damage caused by infectious diseases includes:

- encephalitis
• meningitis
• neurosyphilis

Epilepsy

Epilepsy manifests itself during childhood and is principally known by the epileptic seizure, which is the most prominent symptom. Acquired epilepsy results from different causes, such as brain tumour or encephalitis.

There are four types of epileptic seizure, which vary in intensity and duration. These are:
• grand mal
• petit mal
• psychomotor
• Jacksonian epilepsy

Treatment of organic brain disorders

A variety of methods are used to treat organic brain disorders. These include:
• skilled and delicate surgery
• pharmaceutical drugs, such as antibiotics
• medical procedures for maintaining the client’s health
• psychotherapy
• neurological treatment

There are three neurological treatment approaches discussed by Costello and Costello (1992):
• to remove or contain the condition causing the damage, such as by surgical removal of a brain tumour; treatment of the infection with antibiotics; or drainage of fluid that is causing intracranial pressure
• to treat the symptoms so that they do not interfere with normal living, such as treating Parkinson’s disease with synthesised dopamine
• to modify the client’s mode of carrying out everyday activities, such as obtaining assistance from family members. The client needs strong motivation for this approach to be successful.

When treating organic disorders, Costello and Costello (1992) suggest that neurologists take into account three characteristics:
• the impossibility of creating new neural tissue
• the recoverability of damaged neurones
• existence of redundant areas

Costello and Costello (1992) suggest that damaged functions can be maintained or shifted due to three possible redundancies in the brain – that is, the presence of multiple cerebral pathways performing the same function. The three redundancies are:
• a surplus of neurones for a particular function – if some neurones are damaged, the function can be maintained by the undamaged remaining neurones
• alternative pathways which are available for some functions – if one hemisphere is damaged, the other hemisphere can then carry on some functions, such as basic biological activities
• behavioural strategies which can compensate for disabilities caused by brain damage, such as a blind person learning to depend on hearing to avoid obstacles

Costello and Costello (1992) suggest that certain issues need to be considered when deciding on the treatment. These include the extent of the damage and its location, the general health of the individual and their energy level, and personality and living circumstances.

According to Strohmer and Prout (1994), it is important that counsellors do not view mental retardation and intellectual limitations as defects, or their therapeutic efforts will be of limited value. People with intellectual limitations can attain self-confidence, self-esteem, socialise, and improve their quality of life experiences through a person-centred approach. Counsellors need to develop intervention strategies that are appropriate for the client’s cognitive and developmental levels. For example, they may need to provide a language using words and gestures to communicate thoughts, feelings and concerns that provide avenues and activities to encourage expression.

**Mental retardation**

As with other mental health issues, mental retardation is more complex than a single definition can describe. According to the DSM-IV-TR (2000), the following features must be present for a diagnosis of mental retardation:

• significantly subaverage intellectual functioning (an IQ of 70 or below)
• concurrent deficits or impairments in present adaptive functioning
• onset before 18 years of age

Costello and Costello (1992) also identify two types of mental retardation:

• cultural/familial retardation, caused by a combination or interaction between normal genetic variation and an impoverished and unstimulating environment
• organic retardation which is the result of some physical condition that limits the development of the brain

**Common misconceptions about mental retardation**

Dudley (1992, in Costello and Costello, 1992) identifies five common misconceptions about mental retardation. These are:

<table>
<thead>
<tr>
<th>The misconception</th>
<th>The reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>The mentally retarded have little or no understanding of their limitations.</td>
<td>Most retarded individuals have a sense of awareness of their limited capacities and admit that they are not as fast as others.</td>
</tr>
<tr>
<td>The mentally retarded are all alike.</td>
<td>The mentally retarded vary in their physical</td>
</tr>
</tbody>
</table>
They have little or no feeling about what people call them. They prefer the term ‘slow’ for themselves.

They have little or no understanding of how their limitations affect them in everyday life. Most retarded people ask for assistance and advice, and slowly approach new situations or problems.

They are dangerous. The mentally retarded are not dangerous and do not tend to assault others. They train easily in property rights. If their behaviour is criminal, Costello and Costello (1992) suggest it is a direct result of what they see in the behaviour of others around them.

The mentally retarded put up with thinly veiled sympathy and pity, unspoken questions and sudden silences. They have feelings and can usually understand what is being said or what is unspoken. It makes sense that they will have emotional reactions just like a normal person. And, according to Strohmer and Prout (1994), they can experience the same type and range of emotional disorders as normal people.

Levels of mental retardation

The DSM-IV (1995) recognises four levels of mental retardation on the basis of IQ:

<table>
<thead>
<tr>
<th>Type of mental retardation</th>
<th>IQ level</th>
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<tbody>
<tr>
<td>Mild</td>
<td>50-55 to 70</td>
</tr>
<tr>
<td>Moderate</td>
<td>35-40 to 50-55</td>
</tr>
<tr>
<td>Severe</td>
<td>20-25 to 35-40</td>
</tr>
<tr>
<td>Profound</td>
<td>Below 20-25</td>
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</table>

Mild mental retardation may not be diagnosed until the child is three or four years old, or soon after the child commences school. They can learn academic skills to Year 6 level. They usually develop social skills and occupational skills sufficient to provide some portion of their own support.

People with moderate mental retardation are trainable, not educable. They can be trained in simple communication skills, but not sufficiently to obtain occupational skills. They generally work in sheltered workshops or unskilled or semi-skilled jobs.

Severe mental retardation is evident at an early age, as there is poor motor coordination and meaningless speech. Speech skills can be acquired in perhaps monosyllables and the basic habits of hygiene can be acquired. Employment is generally only possible in highly protective environments, where the person may undertake simple tasks.
Profound mental retardation is notable during the preschool years when the individual demonstrates little sensorimotor capacity. The person requires constant aid and supervision and may learn some useful self-care habits. They are generally dependent on others throughout their lives.

**Causes of mental retardation**

The causes of mental retardation may be organic or environmental.

Organic factors include:

- chromosomal anomalies
- metabolic disturbances
- congenital disorders
- drug and other toxins
- physical trauma

According to Alloy, Acocella and Bootzin (1996), a poor environment can prevent the full development of intellectual abilities limited by organic factors. Some of these environmental factors include cultural-familial retardation and environmental deprivation.

**Childhood developmental disorders**

Mental retardation may be more complex when it is associated with other developmental disorders. The DSM-IV-TR (2000) lists three developmental disorders that appear more frequently in the mentally retarded group than in the general population:

- stereotyped movement disorder – a developmental disorder characterised by abnormal gross motor activity, repetitive movements or vocalisations
- infantile autism – a developmental disorder which manifests during the first 18 months of life, is characterised by a lack of responsiveness to others, limited communication skills, and bizarre behaviours
- Attention Deficit Disorder – a developmental disorder which may be accompanied by hyperactivity.

**Reading 20**


This reading criticises the DSM-IV for a lack of cultural consideration in categorising and diagnosing childhood disorders.
‘Tic’ disorders and Tourette’s syndrome

‘Tic’ disorders are an extreme disorder involving multiple motor and vocal patterns. Tics are involuntary, rapid, repetitive and stereotyped movements of individual muscle groups. They are generally divided into categories according to age of onset, duration of symptoms and the presence of vocal or phonic tics in addition to motor tics (Long, 1999).

Common tic disorders begin in early childhood and occur in up to 15% of children, according to Long (1999). Common tics include:

- eye blinking
- nose puckering
- lip pouting
- grimacing and frowning
- squinting
- arm or head jerking
- tooth clicking
- kicking

Tics are especially noticeable with excitement or fatigue. They can be mild, moderate, or severe and they have various levels of frequency and complexity. Transient tics do not persist longer than a year. Chronic tics come and go and may persist for years.

The most debilitating of the tic disorders is Tourette’s syndrome (TS), which is characterised by motor and phonic tics. People with TS have uncontrollable and purposeless motor movements, particularly head movements, and they accompany these movements with vocal tics such as grunts, clicks, hisses, barks, coughs, yelps, sniffs and/or words, often obscenities. Vocal symptoms often occur at the initiation of speech or at transitions in speech, leading to stammering and stuttering.

TS is more frequent among males and is generally identified between the ages of 7 and 14 years. It is possible that TS, which is a neurological disorder, is the result of trauma or disease involving the central nervous system. Symptoms are generally displayed when the person is under psychological pressure, such as self-consciousness or tension in social situations.

Treatment of tic disorders and Tourette’s syndrome

It may be difficult for a clinician to distinguish between TS and Attention Deficit-Hyperactivity Disorder (ADHD) children, because Long (1999) reports that half of the children with TS have attention deficits and hyperactivity. People with TS may also have obsessive-compulsive symptoms.

Behavioural techniques such as self-monitoring and overcorrection can be used to treat the symptoms. Otherwise, Long (1999) reports that medication helps 80% of TS clients.
Infantile autism

Infantile autism is evident when children fail to respond to parental love. The symptoms of autism are:

- disturbance in relating to others and avoidance in interacting with other children and adults
- delayed language development
- the use of speech oddities
- idiosyncratic or odd responses to the environment
- absence of delusions, hallucinations or loosened associations (If these were present, another diagnosis would be made.)

Other characteristics include:

- concern for sameness – autistic children will order and reorder their world to maintain things as they are
- strange movements and play activity, such as tiptoeing around the room, sudden starts and stops, flapping of their arms, body rocking, whirling, head rolling and playing with their fingers pulled up close to their eyes

There are two possible causal factors related to autism:

- psychological, such as parental failure to reinforce pro-social behaviour
- biological, such as inborn defects or defects in brain functioning

Many children diagnosed with this syndrome are unable to lead independent lives.

Treatment of infantile autism

Therapy of a psychodynamic nature has not proven effective for those with infantile autism, but success has been reported with behaviourally-oriented treatment which concentrates on addressing specific deficits in the child’s behaviour, such as teaching specific sounds and identifying them with specific objects. Parental education has also been found to be valuable in assisting the treatment. There is also increasing awareness of the needs of autistic people due to the collective parent action groups who are lobbying for changes in social policy in the area of mental retardation.

Attention Deficit-Hyperactivity Disorder (ADHD)

Attention Deficit-Hyperactivity Disorder (ADHD) is commonly referred to as ‘hyperactivity’. It is generally maladaptive behaviour that interferes with effective task-oriented behaviour in children. Children with ADHD are generally impulsive, demonstrate excessive motor activity and have an inability to pay attention.

Hyperactive children show excessive or exaggerated muscular activity, are easily distracted and do not follow instructions or respond to demands placed on them. Hyperactive children do not show deficits in intelligence, but are socially uninhibited and immature.
Treatment of ADHD

There are three main treatment approaches for ADHD:

• medication – the most common form of treatment
• cognitive-behavioural therapies, such as the token economy system
• dietary modifications, which focus on removing food additives and sugar from the child’s diet

It is currently believed that ADHD is a form of bipolar disorder. Although treatment is generally pharmacological, the long-term side effects of medications are unknown. According to Begley (1998), some argue that psychiatrists and physicians are dispensing drugs to treat symptoms, rather than causes.

The US Surgeon General Report (2000) states that psychotherapy is showing positive outcomes as a treatment. It is helping people to learn psychological techniques for controlling their anxiety.

The website of the Behavioural Neurotherapy Clinic provides additional information about ADHD and other forms of developmental disorders.

Case Study: ADHD

The subject was referred to a community clinic because of overactive, inattentive, and disruptive behaviour. She was a problem to her teacher and to other students because of her hyperactivity and uninhibited behaviour. She would impulsively hit other children, knock things off their desks, erase material on the blackboard and damage books and other school property.

She seemed to be in perpetual motion – talking, moving about and darting from one area of the classroom to another. She demanded an inordinate amount of attention from her parents and her teacher, and she was intensely jealous of other children, including her own brother and sister. Despite her hyperactive behaviour, inferior school performance and other problems, she was considerably above average in intelligence.

Nevertheless, she felt ‘stupid’ and had a seriously devaluated self-image. Neurological tests revealed no significant organic brain disorder.

Reading 21


This reading provides information on this controversial area of ADHD treatment.

Other disorders associated with mental retardation

Carson et al (1995) provide a list of other disorders and their symptoms that are sometimes associated with mental retardation:

- Tay-Sach’s disease – hypertonicity, listlessness, blindness, spastic paralysis, convulsions
- Turner’s syndrome – webbing of the neck, sexual infantilism and increased carrying angle of forearm in females only
- Klinefelter’s syndrome – presence of small testes after puberty in males only
- Niemann-Pick’s disease – onset usually in infancy with loss of weight, dehydration and progressive paralysis
- bilirubin encephalopathy – abnormal levels of bilirubin in the blood and frequent lack of coordination in motor skills
- rubella, congenital – visual difficulties, deafness, and anomalies in the valves and septa of the heart

Conclusion

We began this section by defining organic brain disorders as mental disorders known to be caused directly and primarily by pathology in the brain. Next, we discussed the diagnosis of organic brain disorders according to three categories of symptoms – defects in basic mental activities, impairment in higher intellectual functioning, and certain types of affective disorders.

We discussed the causes and symptoms of organic brain disorders, before discussing treatment approaches, including the use of skilled and delicate surgery, drugs, medical procedures for maintaining the client’s health, a course of psychotherapy, and neurological treatment.

Next, we discussed mental retardation. We identified some misconceptions about mental retardation and identified the levels of retardation. Organic and environmental factors in retardation were also considered.
Childhood developmental disorders were then discussed and we considered tic disorders, infantile autism and Attention Deficit-Hyperactivity Disorder, before finishing with a look at some other less common disorders associated with mental retardation.

**Self-Assessment**

Did you achieve the objectives for this section? To test your knowledge, write brief answers to the following questions:

1. Identify the causes and symptoms of organic brain disorders.
2. Describe possible treatment approaches for organic brain disorders.
3. Define mental retardation.
4. Describe the types of mental retardation and compare these to IQ levels.
5. Describe the features of the following:
   - Tourette’s syndrome
   - Autism
   - Attention Deficit-Hyperactivity Disorder.