

Learning Disabilities: Causes and Treatments

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Received: 02 Jan 2020

Accepted: 20 Jan 2020

Published: 27 Jan 2020

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1. Abstract

The learning disabilities are the neurological problem, in which one or more basic psychological processes are disturbed, which are involved in understanding. There are 5 categories of learning disabilities i.e. dyslexia, dysgraphia, dyscalculia, auditory processing disorder, language processing disorder, nonverbal learning disabilities. The major causes of learning disabilities are inherited cause, genetic cause, neurobiological or brain injury, co-morbid disorders, environmental factors. There are two general approaches of therapies for learning disabilities and mostly clinicians use both i.e. Accommodation based therapies and Modification based therapies. In accommodation therapy, child learns the same material as his/her class fellows learn, for examples, if he/she has difficulty in understanding a text, accommodate the child by giving instructions orally. Student those are far behind from their class fellows points the need to change curriculum. The students are allowed to cover less complex material. In behavior modification observable and measureable behaviors are target to change.

2. Introduction

2.1. History of Specific Learning Disability

As a human being we are blessed by Allah Almighty that he had granted us ability to learn and communicate. Learning is one of the blessings of Allah Almighty. Learning is necessary for our daily living life, because we acquired change in life through learning. Learning helps us to understand basics of life; it helps us to acquire new thing and interpret them. Psychologist defines learning as the relative and permanent change in behavior occurs in the result of experience. Through learning, we acquired new academic skills such as reading and writing. We acquired the knowledge because we need to function in everyday life; failure in learning causes the disabilities in life which may be called learning disabilities. ("National Aphasia Association").

In 1877, the German physician Rudolf described the term dyslexia, for those have great difficulty to interpret symbols. In 1905, first report was published about the children, those have reading difficulties. About 1930s, dyslexia were not commonly used term. In 1963, a Psychologist Samuel A. Kirk used the term learning disabilities in the conference. In 1969, congress assessed the Act for learning disabled children, this was first time federal government supported the specific learning disabled children. In 1977, Pete and Roselle established the national center for learning disabled children, which is now known as foundation of learning disabled children. In 1975, the education

act for all handicapped children was passed by government, which is renewed in 1990 as Individuals with Disabilities Education Act (IDEA). In 2005, Yale University, identified a gene associated with dyslexia that had pattern and variation strongly associated with dyslexia. In 2013, Diagnostic and Statistical Manual of Mental Disorders (DSM-5) elaborated the term specific learning disability.

2.2. Learning

Learning is the process to acquire new knowledge or skill through experiences, study, or being taught.

2.3. Disability

Disability defines as comparison of actual ability to normal functioning. It refers to as impairment in physical, sensory, cognitive, mental health.

3. Learning Disability

The learning disabilities are the neurological problem, in which one or more basic psychological processes are disturbed, which are involved in understanding. A learning disabled person may have difficulty in spoken or written, or may manifest in ability to listen, speak, write or do calculations. This term is used for perceptual handicap, minimal brain injury and developmental dysphasia, and not for those children who have difficulty in hearing, vision, mental retardation, or emotional disturbance, or environmental or emotional

disadvantages.

3.1. Causes of Learning Disabilities

The major causes of learning disabilities are following:

- Inherited cause
- Genetic Cause
- Neurobiological or brain injury
- Co-morbid disorders
- Environmental factors

3.1.1. Inherited Cause: This shows that a member in family having learning disability. This includes the genetic disorders or disabilities like Down syndrome, Fragile X Syndrome; which affects the brain functions and hence decreases learning abilities.

3.1.2. Neurobiological or Brain Injury: It affects the brain functioning or processes involved in learning.

3.1.3. Co-morbid Disorders: The conditions which can be cause of learning disabilities are following:

- Attention Deficit Hyperactive Disorder (ADHD)
- Behavioral problems
- Emotional disorder
- Asperger
- Conduct disorder
- Substance abuse
- Operational Deficit Disorder (ODD)
- Autism Spectrum Disorder (ASD)

3.1.4. Environmental Factors: This includes:

- Poor instruction to child
- Lack of attention
- Impoverished living conditions in life
- Deficit in academic achievement

The inclination of learning disabilities to run in families suggests an association between environmental factors influence on children's early development in life and subsequent achievement in school.

3.1.5. Some Misconceptions about the Causes: People think the learning disabilities are may be due:

- Vision problems
- Hearing loss
- Socio-economic status
- Lack of motivation

These factors are challenging for those, who are suffering with learning disabilities.

Some professionals believe that learning disabilities in all children are due to dysfunction in the central nervous system or may be due to brain injury. National Joint Committee on Learning Disabilities (NJCLD) defined the learning disabilities as "Learning disabilities are presumed to be due to central nervous system damage".Magnetic resonance imaging shows, brain of children, those suffering from language and reading disabilities, show different phonological pattern from non-disable children. This also shows brain structure of learning disable children slightly different from those have no learning disability.

3.1.6. Types of Learning Disabilitie: According to Federal law, under the Individuals with Dishabilles Education Act (IDEA), there are 5 categories of learning disabilities.

- a) Dysgraphia
- b) Dyscalculia
- c) Auditory processing disorder
- d) Language processing disorder
- e) Nonverbal learning disabilities

a) Dyslexia: Dyslexia is characterized by problems with fluent word reorganization, poor decoding of words and poor spelling abilities. Dyslexia is an alternative term used to refer to a pattern of learning disabilities. Dyslexia is also referred as language based disorder, individual's reading, decoding comprehension, recall and writing abilities are affected. In dyslexia, individual reads slowly, may experience decoding error, has trouble to spell the word, difficulty in reading and decoding comprehension and substitute word with another word. Sign and symptoms of dyslexia are

- Impairment in reading accuracy
- Reading rate or fluency
- Reading comprehension
- Impairment in spelling accuracy

- Impairment in written expression of grammar and punctuation accuracy

b) Dyscalculia: Individual with this type of disorder have difficulty in memorizing the symbols of mathematics, formulas and have struggle in organizing numbers. Dyscalculia is an alternatively used for a pattern of difficulties, which are characterized by learning arithmetic facts, performs sequencing mathematical problems and processing numerical information. Signs and symptoms of this disorder are:

- Impairment in memorizing of arithmetic facts
- Have difficulty in mathematical concepts for example caring, borrowing, subtract and addition.
- Difficulty in mathematical word problems
- Exhibits difficulty in sequencing problems or fluent calculation
- Difficulty in understanding concepts of measurement like length, weight, area, space, time, month, day
- Difficulty in fraction understanding and accurate math reasoning

c) Dysgraphia: Individuals with disorder have dirty hand writing, poor spelling, discriminating word shape, poor spacing and organization of word on page and fine motor skills are affected. The signs and symptoms of this disorder are:

- The individuals can have cursive and illegible hand writing.
- Show inconsistent mixture of size and shape in writing.
- Slow hand writing
- Unusual grip of pencil, fell fatigue earlier when they write
- When coping notes, difficulty in thinking and writing simultaneously
- They have no idea what to write due to difficulty in language processing

e) Language Processing Disorder: It is also called auditory processing disorder (APD). In this disorder, receptive and expressive languages are affected. All sounds' interpretation, which are coming from brain are affected. The difficulty in making meaningful sentence from word may exist. The signs and symptoms of APD are:

- Poor reading comprehension

- Difficulty in understand the meaning of spoken words
- May be depressed or sad
- Difficulty in labeling object

f) Non-verbal Learning Disability

Individuals have poor communication skills, difficulty in understanding nonverbal communication like body gesture, facial expression. The signs and symptoms are:

- Have trouble in understanding nonverbal communication like facial expression and body language
- Difficulty in understanding multiple step instruction. ("Learning Disabilities Association of America,")

4. Treatment of Learning Disabilities

There are two general approaches of therapies for learning disabilities and mostly clinicians use both:

- Accommodation based therapies
- Modification based therapies

4.1. Accommodation Based Therapies

In accommodation therapy, child learns the same material as his/her class fellows learn, for examples, if he/she has difficulty in understanding a text, accommodate the child by giving instructions orally.

There are many type of accommodation therapy

- Sitting accommodation
- Time accommodation
- Scheduling accommodation
- Presentation accommodation
- Setting accommodation

a) Sitting Accommodation

In this type of accommodation, students follow the following strategies:

- Allow a student to give test in different setting, where minimal distractions are present.
- Allow a student where he/she can learn best
- Allow a student to sit in special light

b) Time Accommodation

In this type of accommodation, students follow the following strategies:

- give extra time to complete task
- give extra time, in which give oral instruction
- allow to take frequent breaks

c) Scheduling Accommodation

- scheduling the test in different session
- allow extra time
- take test in different sections

d) Presentation Accommodation

- listen recordings and tapes instead of the reading text books
- read material on page with large font size
- also give instructions orally
- give list of written instruction
- firstly, give a complete outline of lesson
- Instead of taking notes, record a lesson
- Test administrator read test items aloud
- Size of answer bubble enlarge
- Cues (arrow and stops etc.) provided on sheet
- Physical assistance provided in classroom or test
- fewer items placed on each page
- Spacing increase between test items

4.2. Modification Therapy

Student those are far behind from their class fellows points the need to change curriculum. The students are allowed to cover less complex material.

In behavior modification observable and measurable behaviors are target to change. In behavior modification therapy following steps are involving

1-using count and description, problem must be defining

2-a way design to change a behavior

3-effective reinforce is identify

4-shape or change the behavior, consistently apply reinforce.

These behaviors are change by using following strategies:

- Giving direct instruction
- Reinforcement techniques
- Time out techniques
- Punishment

5. Conclusion

There are 5 categories of learning disabilities i.e. dyslexia, dysgraphia, dyscalculia, auditory processing disorder, language processing disorder, nonverbal learning disabilities. The major causes of learning disabilities are inherited cause, genetic cause, neurobiological or brain injury, co-morbid disorders, environmental factors. There are two general approaches of therapies for learning disabilities and mostly clinicians use both i.e. Accommodation based therapies and Modification based therapies. In accommodation therapy, child learns the same material as his/her class fellows learn, for examples, if he/she has difficulty in understanding a text, accommodate the child by giving instructions orally. Student those are far behind from their class fellows points the need to change curriculum. The students are allowed to cover less complex material. In behavior modification observable and measurable behaviors are target to change.