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Theoretical Approaches Explaining Stuttering

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Abstract

Stuttering represents one of the most common language disorders among children, and it affects the flow and stream of speech, thus leading to a disruption in its smoothness such as repetitions, blocks, and pauses. There are accompanying disorders like fear and confusion, feelings of embarrassment, and avoiding talking to others, along with the issuance of involuntary body movements.

Many researchers have given scientific explanations for fluency disorder, and therefore in this research, we will try to highlight the most agreed upon and confirmed theories through research and studies. Thus, the most important theoretical approaches in explaining the stuttering disorder will be presented, which can be classified into three main axes: organic factors (biological and neurological), psychological and emotional factors, and environmental and social factors, as follows:

The biochemical theory, the neurological theory, the cerebral dominance theory, the neurotic theory, classical conditioning, the required capacities theory, the behavioral theory, the genetic theory, the anticipatory struggle theory, and finally the theory related to environmental and social factors.

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Introduction

Stuttering represents a disorder in the fluency and smoothness of speech, and it affects the individual's ability to speak fluently. It is characterized by various manifestations such as repetition of sounds, syllables, or words, in-

voluntary pauses during speech, and may be accompanied by other physical symptoms that can create psychological problems for the individual.

Although stuttering usually appears in early childhood and continues into adulthood, its causes are still not fully understood and are subject to many theories and scientific studies.

Research, to the extent of my knowledge, indicates that the causes of stuttering may be a mixture of genetic, neurological, behavioral, psychological, and environmental factors. Genetically, the likelihood of stuttering increases in individuals who have a family history of this disorder. From a neurological point of view, differences have been observed in brain activity in people who stutter, especially in areas responsible for speech production and muscle movement coordination. Psychological and social factors also play an important role, as anxiety, psychological pressure, or difficult social situations can worsen stuttering.

In addition, behavioral factors such as reinforcement and punishment affect the appearance of stuttering, which is considered a learned behavior. Some environmental factors, such as high expectations from the family or school, may contribute to the increased severity of the disorder.

In this article, we will explore in detail the possible factors causing stuttering and discuss the latest scientific theories that attempt to explain this disorder, which contributes to a deeper understanding of its nature and helps in determining the best methods of treatment and support.

Problematic:

Stuttering is considered one of the most common language disorders among children, especially in the preschool age, where the disorder affects verbal fluency or speech flow. It is characterized by repetitions, prolongations, pauses, and hesitations—often at the beginning of the word. Stuttering is accompanied by physical symptoms such as changes in facial parts like trembling, lip pressing, and head movements... It is also accompanied by respiratory problems like the inability to differentiate between inhalation and exhalation, in addition to psychological symptoms such as anxiety, shyness, and withdrawal behavior.

Stuttering occurs at the age of six in about 80% to 90% of affected individuals, the disorder may appear gradually or suddenly, and usually, fluency difficulties begin gradually with repetition of phonemes, syllables, and the first words of the sentence. The child may not be aware of the fluency difficulties at first, but as the disorder progresses and develops, the child becomes aware of the speech difficulty and may develop mechanisms to avoid these difficulties.

Fluency disorder can also be accompanied by motor movements, for example: eye blinking, tics, trembling of the lips or face, head movements, breathing movements, and hand clenching. Children who suffer from early-onset fluency disorder show a set of linguistic abilities. (Awda & Fakiri, 2016, p.70)

According to the ***Ooreka*** website, stuttering is a speech disorder characterized by difficulty in pronouncing or sequencing certain syllables without affecting the vocal organs. Stuttering disrupts speech fluency (normal speech speed is supposed to be around 90 words per minute). This speech disorder is a communication disorder and generally appears when a person tries to speak in front of an audience, whereas when alone, he or she does not stutter. The disorder also disappears in cases of whispering, singing, or imitating an accent.

Van Riper described three main stages of stuttering:

- **Initial Stage**: Characterized by easy repetitions at the beginning of words or syllables in sentences, without any emotional signs or psychological pressure. (Specialists do not consider these symptoms as stuttering.)
- **Secondary Stage**: Characterized by the stutterer's awareness of their speech fluency disruption and attempts to correct it. This indicates the beginning of anticipation and fear associated with stuttering.
- **Transitional Stage**: Appears between the previous two stages and is marked by signs of frustration, surprise, resistance, and avoidance of speaking. These are accompanied by efforts during repetitions or prolongations of words and syllables. The development of this stage leads to the transition into the secondary stage. (Al-Zriqat, 2005, p. 24)

Stuttering affects approximately 1% of the general population, with the majority being children. It is more common in advanced or developed societies than in primitive or underdeveloped ones. It also occurs more frequently in males than females, at a ratio of 3 or 4 to 1. (Kashif, 2010, p. 77)

Many theories have attempted to explain the phenomenon of stuttering. Some attribute it to organic and neurological factors, such as the Cerebral Dominance Theory. Other theories point to environmental, social, familial, and educational factors, such as the Diagnosogenic Theory and unrealistic parental expectations. Still, some theories relate stuttering to psychological causes, including the Psychoanalytic Theory, the Behavioral Theory, and the Neurological Theory, while others associate it with genetic factors.

Accordingly, this topic aims to answer the following question:

What are the common theoretical approaches to explaining stuttering disorder?

Numerous theories have attempted to explain stuttering, and they can be categorized into three main areas:

1. **Organic factors** (biological and neurological)
2. **Psychological and emotional factors**
3. **Environmental and social factors**

Each of these areas includes several theories that we will explore in the following sections.

First: Organic Factors (Biological and Neurological): Include the following:

1. The Biochemical Theory:

The theory of Robert West (1958) is one of the theories that attributes the origin of stuttering to organic causes. He believes that the phenomenon of stuttering appears during childhood and that it is more common among males than females. West believes that there are disorders in the metabolic process (which is the process of breaking down and building up the chemical composition of the blood) in people who stutter. Therefore, he considers stuttering a type of convulsive disorder similar to epileptic seizures due to several shared aspects, including:

- Both are convulsive disorders
- Both are more common among males than females,
- Both are affected by intense emotions,
- The importance of genetic and familial factors for both,
- Both are reflections of fear, which leads to the occurrence of the disorders. (Amin, 2017, p. 20)

Therefore, the biochemical factor has an effect on the emergence of fluency disorder.

2. The Neurological Theory:

Several neurological studies have shown that stuttering results from a deficiency in neural processing, including the study by Chang et al. (2011), which showed that the person who stutters suffers from a deficiency in transmitting white matter in the brain regions responsible for language and verbal production. Also, the deficiency in connectivity between the inferior frontal gyrus and the premotor cortex in the left hemisphere is neurologically linked to stuttering.

According to Cykowski et al. (2010), the brain dysfunction in stuttering lies in a deficiency in the formation of the myelin sheath of white fibers in the areas responsible for verbal language. The myelin sheath that surrounds the nerve axons develops during the first years after birth. This growth period explains transient stuttering, while chronic stuttering results from a failure in forming the myelin sheath (Packman, 2013, p. 209).

The process of forming the myelin sheath is the covering of nerve axons with a protective sheath, where it was observed that covered nerve axons can transmit impulses efficiently and quickly to the speech centers in the brain compared to axons that are not fully covered. This leads to speech output characterized by rhythm disturbances, repetition, and fragmentation. (Amin, 2017, p. 21)

Research findings indicate that the brains of people who stutter function differently to those of control participants for speech and language tasks, compared to control participants, people who stutter have over-activation in areas of the right hemisphere and under-activation of some areas in the left hemisphere when performing the same speech tasks. (Nang, 2012, p.15)

We conclude that any changes in brain formation, deficiencies in a specific function, or immaturity in some necessary parts—all of this disrupts speech fluency.

3. The Psycholinguistic Theory:

This theory was proposed by Perkins, Kent, and Curlee in 1991 regarding stuttering. It is a comprehensive theory that addresses fluent speech production, speech characterized by stuttering, and speech interruptions that are free of stuttering. In general, two components are required for the production of stuttering: the linguistic or symbolic system and the parallel or signaling system. The brain processes each of them separately and then directs them through a shared output system.

For fluent speech to occur, the system must be timed so that there is coordination and integration between the two, transforming them into the familiar system. If there is no coordination between the two systems, a disruption in speech fluency occurs. This disruption manifests as a loss of control—or the actual moment of stuttering—by the speaker only in the presence of time pressure. Time pressure is defined as the need for the individual to begin utterances, continue them, or accelerate them. In the absence of time pressure, the speech produced appears as nonfluency free of stuttering, resembling the experience of most fluent speakers. (Al-Muaigel & Al-Muaigel, 2022, p. 139)

4. The Cerebral Dominance Theory:

The brain is the engine that controls our actions, movements, and speech. Therefore, any defect in its structure or function leads to a language disorder. It is known that one hemisphere of the brain takes the lead in regulating and controlling speech. If certain factors prevent one hemisphere from dominating and controlling language, both hemispheres will attempt to control the function in an uncoordinated and inappropriate way, which leads to the occurrence of stuttering.

This theory was originally proposed by Orton and Travis in the 1920s. The theory essentially explains that in the brains of individuals who stutter, neither hemisphere dominates speech control. (Kashif, 2010, p. 92)

Orton and Travis add that the speech muscles have bilateral innervation, meaning these muscles receive impulses from both cerebral hemispheres. For smooth speech, the impulses sent from the brain to the muscles must be synchronized, which occurs when one hemisphere (usually the left) takes over monitoring. According to Orton and Travis, individuals who stutter have a deficiency in cerebral dominance, which leads to a disturbance in the rhythm of bilateral motor impulses for speech. (Rondal & Seron, 2003, p. 513)

Travis based his theory on a number of facts, including:

- The brain waves of individuals who stutter are bilaterally equal in shape and amplitude,

- EEG recordings showed harmony in brain activity (in both hemispheres) during stuttering, and the opposite occurs during natural speech,

- There is an increase in latent brain energy during stuttering.

Travis explains these facts by stating that when a person stutters, brain waves in both hemispheres appear similar, and when they speak fluently without stuttering, the waves appear different. A child tends to stutter in speech due to the absence of dominance by one side of the brain in controlling the motor activities involved in speech. (Rakza & Al-Hammadi, 2018, p. 12)

It can be concluded that individuals who suffer from stuttering are characterized by a lack of cerebral dominance, meaning there is no control or dominance of one side over the other.

5. Laterality:

This refers to the idea that forcing a left-handed child to use their right hand instead may cause stuttering. This is because the part of the brain responsible for speech is linked to the part that controls hand movements (the left hemisphere of the brain is responsible for language and the right side of the body, and vice versa). If the individual's neurological and physiological nature is contradicted, it can lead to the emergence of stuttering. (Ben Arbia & Chewal, 2016, p. 60)

In the same context, Orton and Travis connect cerebral dominance with hand use. They started from the observation that in non-stuttering individuals, the left hemisphere is responsible for language and the motor aspects of speech. Forcing a left-handed or ambidextrous person to become right-handed leads to stuttering. Based on this, the researchers explained that the majority of people who stutter are ambidextrous, which explains the deficiency in cerebral dominance.(Rondal & Seron, 2003, p. 513)

Williams (1974) also explains that the brain area responsible for speech control is linked to the area that controls hand movements. Therefore, forcing a child to use a hand they have not previously used leads to a disorder in the nervous system related to speech, which contributes to the appearance of stuttering. (Amin, 2017, p. 19)

We conclude that the physiological and neurological nature of the brain determines the preferred hand, and using a different one affects speech fluency.

6. The Genetic Theory:

There are several viewpoints regarding the relationship between stuttering and heredity—some affirm it, while others deny it. Some believe that stuttering is a genetic predisposition that makes the individual more susceptible to developing it.

According to the CFP website, many studies indicate that individuals who stutter have a family history of the condition. A review of 28 studies by researchers Perez and Stoeckle (2016) estimated that 30% to 60% of people who stutter have a family history, compared to less than 10% in the control group. Male relatives are more likely to be affected than female relatives. Stuttering is associated with changes in the following chromosomes: 9, 10, 12, 13, and 18. Other studies have indicated a link between 9 different genes and stuttering. (Perez, Stoeckle, 2016, p.298)

Regarding twins, stuttering affects identical twins more than fraternal twins.(Rondal & Seron, 2003, p. 514)

In the same context, Espire and Gliford (1983) explain that stuttering occurs due to genetic influence, although this influence ranges from 36% to 65%, especially among first-degree relatives (such as parents and siblings). However, they believe that the hereditary factor is not necessarily based on genetic factors alone, as environmental factors are considered more important. (Amin, 2017, p. 19)

Kang and Drayna (2010) confirm a link between stuttering and genetics, Developmental stuttering appears in recessive genes, particularly on the following chromosomes: 1, 3, 5, 9, 13, 15, 18, and 12. Chromosomes 5 and 15 are associated with persistent forms of stuttering in males, whereas chromosomes 2 and 7 and chromosome 9 are linked to transient stuttering in females. (Monfrais-Pfauwadel, 2014, p.11)

Family studies have identified six candidate causal stuttering genes: GNPTAB, GNPTG, and NAGPA, DRD2; AP4E1; and CYP17A1 However, efforts to replicate these findings in other families or global populations have not yet validated the observed effects. (Below, Polikowsky, Scartozzi, & others, 2023, p.3)

Another study by researchers Riaz, Steinberg, Ahmed, Pluzhnikov, Riazuddin, and colleagues (2005) revealed a strong relationship between genes on chromosome 12 and familial stuttering. In 2006, Wittke-Thompson et al. published a study indicating that chromosome 15 is linked to the persistence of stuttering. Furthermore, stuttering is related to chromosome 7 in males, and to chromosome 15 in females. (Stamurai, 2020)

According to the Diagnostic Manual for Neurodevelopmental Disorders, the risk of developing stuttering among first-degree relatives of individuals with childhood-onset fluency disorder is more than three times higher than in the general population. (Awda & Fakiri, 2016, p. 71)

In 1999, Yairi conducted a study on the information confirming the role of genetic and hereditary factors in the development of speech disorders and stuttering in children. He emphasized that children who stutter are strongly affected by the interaction between age and gender, and that research confirms that a child who stutters is the result of both genetic inheritance and environmental circumstances. Stuttering tends to appear more prominently when there is a family history of the disorder. The researcher rejected the idea of addressing stuttering through spontaneous or natural recovery during childhood. (Kashif, 2010, p. 99)

We conclude that stuttering results from hereditary factors, meaning that the likelihood of developing the disorder varies according to the degree of kinship with the affected individual.

Secondly: Psychological and Behavioral Factors: These include:

1. **Neurosis Theory:**

According to this theory, stuttering is a neurotic disorder that represents a partial personality disorder and is reflected in a speech disorder. Stuttering results from unconscious conflicts, and when the individual attempts to speak, their mouth movements resemble the original breast-sucking movements during infancy. In this regard, Freud states that children have a type of oral behavior, and if they are weaned harshly and early from an emotionally disturbed mother, the child will not naturally satisfy their oral needs. Therefore, those needs remain latent in the form of repression, which later manifests as disguised behaviors such as overeating, fast speech, and other oral forms. (Ben Arbia & Chewal, 2016, p. 61)

The neurosis theory also explains stuttering as an expression of the anxiety experienced by the person who stutters. Neurotic behavior is characterized by unpleasant feelings, the inability to accept them, or the emergence of behaviors expressing them. Anxiety—which constitutes a large part of neurotic behavior—arises when there is a strong conflict between opposing needs, and the individual cannot resolve this conflict. (Al-Jarwani & Seddik, 2013, p. 70)

Freud's theory of neurosis confirms that all neurotic responses are symptoms of unconscious conflict rooted in psychosexual development during early childhood. A child who does not progress normally through stages such as the oral or anal stage, or who is overly attached to one parent (Oedipus complex), becomes fixated at that stage. For instance, early weaning or traumatic toilet training may cause fixation in the oral or anal stage. Later on, psychological conflicts and frustrations begin to appear, leading the individual to regress to early fixation stages. Since behaviors from these childhood stages are socially unacceptable, individuals repress them. However, the unacceptable drives from those stages, once suppressed, are transformed into acceptable neurotic symptoms such as stuttering, fear, or hysterical responses. (Kashif, 2010, p. 109)

We conclude that stuttering is linked to conflicts arising from deficiencies or disruptions in a previous stage of the child's psychosexual development, and this deficiency leads to a disorder in verbal fluency.

2. Classical Conditioning Theory:

The famous Russian psychologist Pavlov found that classical conditioning occurs when a stimulus (punishment) that naturally elicits a response like anxiety is paired with another stimulus (the speaking situation) that does not trigger anxiety. If the two stimuli (punishment and speaking situation) are paired enough times, the speaking situation alone will begin to elicit an anxiety response. The two-factor theory proposes that people who stutter have been conditioned to experience anxiety in speaking situations. This anxiety leads to a breakdown in fluency, which manifests as repetition of part of a word, prolongation of sounds, etc. (Kashif, 2010, p. 108)

Thus, this theory suggests that stuttering is the result of unconditioned failure in speech due to the speaker's anxiety about speaking. If this happens, the person will stutter in any anxiety-provoking situation. Wolpe (1958) viewed stuttering as a symptom of classically conditioned speech fears. Therefore, he treated stuttering using systematic desensitization based on reciprocal inhibition, through which the anxiety response is replaced with a competing response—relaxation.

Sheehan proposed the conflict avoidance theory to explain and treat stuttering. According to this theory, the person who stutters is seen as experiencing a conflict between the desire to speak and the desire not to speak. When the motivation to avoid speaking is strong, the person remains silent. When the motivation to speak is stronger, they speak fluently. When both motivations are equal, the person experiences conflict—resulting in stuttering. Regardless of which motivation dominates (speaking or silence), the individual reinforces the behavior by reducing anxiety. (Al-Zriqat, 2005, p. 239)

It is a need for oral and anal gratification, a latent expression of hostility, suppression of feelings of threat and fear of castration, aggression, and repressed hostility. It is also a tool for attracting attention and sympathy, and a defensive mechanism against threatening thoughts.

Sheehan (1986) distinguishes five levels of conflict as follows:

- **First level:** the word level – The conflict lies in the desire to say the word or not say it.
- **Second level**: the situational level – The conflict is in whether to enter or avoid the fear-inducing situation.
- **Third level:** the emotional content level – The conflict arises from the emotional content of the words as part of vocal features, and is represented in the unconscious drive to avoid speaking.
- **Fourth level:** the relationship level – The conflict is between the person who stutters and the listener.
- **Fifth level:** ego protection level – Stuttering serves as a lifelong defense mechanism that protects the individual from danger.(Rakza & Al Hammadi, 2018, p. 19)

Brutten (1986) believes that stuttering is a disorder of speech fluency resulting from classically conditioned emotional responses in speech. The resulting anxiety leads to speech avoidance. The problem of stuttering arises when a child speaks in a difficult situation, such as during the father's anger. Therefore, stimuli in the child's context—such as sadness—become negative emotional stimuli that later evoke stuttering or its symptoms. (Al-Zriqat, 2005, p. 239)

We conclude that stuttering is linked to classically conditioned emotional responses, associated with anxiety-inducing situations and negative emotions.

3.Behavioral Theory:

Proponents of this theory view stuttering as a learned behavior, either through reinforcement or imitation (a conditioned stimulus: other people's speech). Young children (aged 3–4 years) experience speech fluency disruptions during their early speech practice because they are unable to articulate sounds properly and have a limited vocabulary.

Johnson believes that disfluency coupled with negative listener reactions is the true cause of stuttering. In other words, when a child speaks and stutters, and is harshly criticized by others, this reinforces the disorder and supports its reoccurrence—this is known as the interaction theory.

Behaviorists attempted to explain stuttering as a learned behavior. Some attributed it to its association with a conditioned stimulus (other people's speech), which extracts the stuttering response from the individual. Others attributed it to the reinforcement resulting from stuttering itself, such as drawing attention or concern from others. Still others see it as an avoidance behavior from an undesirable stimulus that causes painful emotions and negative responses such as shyness, tension, or anxiety. As a result, the individual stutters as a way to avoid the pain they experience. (Al-Jarwani & Seddik, 2013, p. 54)

Therefore, it is essential to ensure the development of appropriate behaviors that promote healthy language, focusing on positive aspects of speech and avoiding mistreatment of the child, as punishment, intimidation, and yelling can reinforce negative behaviors, including stuttering.

4. Stuttering Anticipation Theory:

Wischner (1956) focused on studying one of the most prominent observations related to the modification of stuttering, known as the **anticipated effect**.

George Wischner developed his theory based on the following assumptions:

First: Stuttering behavior is reinforced due to its association with a relative decrease in tension and anxiety that accompanies the reduction of fear of speaking. He hypothesized that a word that evokes fear triggers a state of anticipation (anxiety), and the occurrence of stuttering on that word is reinforced due to the decrease in tension once the feared word is completed.

Second: The person who stutters displays different patterns of avoidance behaviors. These behaviors are often closely tied to specific words, meaning that the individual intentionally develops a broad vocabulary and, when encountering a feared word, substitutes it with an alternative word.

Third: The anticipation phenomenon in stuttering behavior implies the belief that the person who stutters possesses a mechanism that is built and reinforced not based on reduced anxiety and tension, but on confirming the accuracy of the anticipation. In this case, the mechanism is perceived in the imagination of the person who stutters as self-confirmation of the anticipated stutter.(Amin, 2017, p. 24)

Wischner indicated that a child, due to the negative and incorrect evaluation of their lack of fluency, begins to feel anxious about their speech. This anxiety ultimately becomes conditioned to a specific sound or word, the act of speaking, or specific speaking situations, leading to avoidance behaviors known as stuttering. The main issue in Wischner's theory is the difficulty in explaining how a parent's inappropriate reaction to a child's natural disfluency can trigger a chain of events that leads to anxiety and avoidance. (Kashif, 2010, p. 107)

Murray et al. (1987) were among those who emphasized the idea of anticipation as an important and influential factor in the onset of stuttering. He stated that the idea of stuttering itself leads to its occurrence, as the individual, when expecting speech difficulties, becomes anxious about speaking, which in turn results in stuttering—this is referred to as the vicious cycle. (Amin, 2017, p. 24)

Third: Environmental and Social Factors:

Environmental and social factors play an active role in causing a disruption in speech fluency. Conture (1982) believes that the environment in which children grow up, especially the internal and external family surroundings and the pressures a child is exposed to, affects their linguistic abilities. The researcher adds that the child's social and home environment, particularly the parents, do not cause stuttering themselves, but they contribute to its maintenance and development from its initial stages to the stage of real stuttering. (Amin, 2017, p. 27)

1. Diagnostic Error Theory:

This theory suggests that stuttering begins with the diagnosis made by parents, particularly the mother. Most children often experience disfluency during early stages of development, and the parents misdiagnose this normal disfluency as stuttering. The parents' anxiety reflects onto the child, who begins to focus on the way they speak

and starts avoiding talking out of fear of mockery or punishment. Here, normal disfluency becomes pathological stuttering due to the parents' hasty misdiagnosis. Thus, one might say that stuttering is born in the mother's ear, not in the child's mouth. (Al-Jarwani & Seddik, 2013, p. 76)

Johnson emphasizes that stuttering is an avoidant reaction characterized by anticipation, fear, and intense tension. He explains that the onset of stuttering in children arises from a misjudgment of normal disfluency. Almost all children stumble in speech occasionally, but parents who wrongly interpret these disfluencies as stuttering and show excessive concern about their child's speech may transmit this anxiety to the child. Once the child becomes aware of the parents' anxiety regarding their speech, they begin to feel anxious themselves and fear speaking situations—leading to stuttering. Emotional states, anxiety, and fear become associated with speaking situations and generalize to similar situations, becoming a chronic tendency and a habitual pattern in the child. (Amin, 2017, p. 22)

2.Demands and Capacities Theory – Starkweather (1987): According to the two researchers, stuttering occurs when the environmental demands exceed the child's fluency capacities. These capacities include motor, cognitive, and linguistic knowledge necessary for normal speech.(Rondal & Seron, 2003, p. 514)

3. Other Environmental Factors:

Morley adds that there are environmental and personal factors that may lead to stuttering, such as:

- **Sudden trauma:** Records of some individuals who stutter show a correlation between severe trauma or frightening experiences during childhood and the development of stuttering.

- **Speech awareness:** Self-awareness related to speech may trigger the onset of stuttering—for instance, being asked to tell a story in front of strangers or at a school event. Comments on the child's speech—whether praise or ridicule—can lead to excessive self-consciousness in some children, impairing their fluency.

- **Correction of expressive flaws:** Attempts by parents or others to correct the child's speech errors during language development can lead to feelings of frustration and constant fear of failure in speech.

- **Imitation:** A young child is rarely aware of verbal disfluency, so they may unconsciously imitate the stuttering of another child or a parent with speech disfluency, especially when there is a genetic predisposition. (Amin, 2017, p. 28)

Among the environmental factors within the family and school context, Al-Jarwani and Seddik (2013) mention the following:

- Parents rushing their children to speak during the early years without considering their limited speech abilities.

- The use of fear and physical punishment when the child exhibits any speech deviation.

- The child reverting after the age of four to infantile speech patterns, encouraged by the parents as a result of overindulgence.

- Neglect by the parents and the child's lack of affection, love, and parental care.

- Teaching the child multiple languages at the same time.

- The teaching methods used by the teacher, whether by avoiding calling on the child to spare them embarrassment or by interrupting them because of delayed responses due to stuttering.

- Academic failure, which can contribute to the development and reinforcement of stuttering. (Al-Jarwani & Seddik, 2013, p. 58)

Commentary on Theories Explaining Stuttering:

We have previously presented a comprehensive analysis of stuttering theories, where we reviewed a wide range of explanations that interpret the causes of stuttering from different angles, including organic, neurological, psychological, behavioral, genetic, and environmental factors.

Stuttering, then, is a disorder that affects the flow and fluency of speech. It is also known as a fluency disorder or verbal fluency disorder. It is easy to diagnose, especially since its symptoms are clear, but accurate diagnosis depends on the skills of the speech-language pathologist, as it includes several systematic steps aimed at measuring the quality of fluency in terms of repetitions, pauses, and time duration. The person who stutters typically shows repetitions, blocks, prolongations, and speech blocks that hinder the completion of speech effectively. These signs are accompanied by other physical symptoms that vary from person to person, such as eye blinking, tics, lip or facial tremors, head movements, arm movements, breathing irregularities, clenched fists, and facial redness.

Many scholars have attempted to explain stuttering using various theories. Some attributed it to biochemical factors, associating it with blood chemistry composition and considering it a type of convulsive disorder. Others attributed it to neurological factors related to the axon of the nerve cell, where a deficiency in myelin (the myelin sheath) leads to disruption in fluency. Another group showed that stuttering occurs in the absence of cerebral dominance, where fluent speakers are distinguished by dominance of one brain hemisphere over the other—a trait absent in people who stutter.

The same idea was further developed by researchers linking it to the dominant brain hemisphere, which determines hand dominance. They explained stuttering as a result of violating the brain's physiological nature—for example, forcing a left-handed child to use the right hand.

Another group viewed stuttering as an internal conflict, where the person who stutters becomes a victim of a struggle between the desire to speak and the desire to remain silent. The result is a sense of helplessness and fear about speaking, making fluent speech extremely difficult.

Some researchers believed stuttering results from anxiety and fear, which arises from parents' incorrect assessment of their child's fluency. They mistakenly interpret normal disfluency as stuttering and express excessive concern about their child's speech. This anxiety can be transferred to the child, resulting in a fluency disorder.

Other scholars linked stuttering to genetic factors, highlighting the role of family history, twin studies, and male gender, all of which increase the likelihood of stuttering. They also identified specific genes responsible for the disorder.

The behavioral theory highlights its role and relationship with stuttering by explaining it as a learned behavior. Negative behaviors can lead to the emergence of the disorder. On the other hand, the neurotic theory interprets stuttering as a suppression of certain oral needs due to not being fulfilled during early stages—i.e., the infant being weaned early and abruptly, which creates an unmet need for breast sucking. As a result, oral movements remain suppressed and re-emerge later in the form of a fluency disorder.

Stuttering is also linked to numerous environmental factors at home and school, such as reprimanding and mocking, parenting styles, imitation, correcting expressive defects by parents, bilingualism, sudden trauma, and forcing the child to use language beyond their capabilities.

Based on what has been previously discussed, it becomes clear that multiple factors contribute to stuttering. Many theories have tried to explain fluency disorders, and various researchers have presented their modern scientific perspectives. Although stuttering has multiple causes, it shares common diagnostic criteria through its clear and consistent symptoms.

This study presented a scientific review of the theoretical approaches explaining stuttering, showing that it is a multifactorial disorder that occurs as a result of a complex interaction between:

- **Organic factors** (genetic, neurological, biochemical)
- **Psychological factors** (anxiety, unconscious conflicts)
- **Environmental factors** (family stress, misdiagnosis)
- **Behavioral factors** (learning, imitation, conditioning)

Therefore, effective treatment requires a comprehensive understanding of these contributing factors and the theories explaining them.

Conclusion:

From what has been presented above, we conclude that stuttering is a disorder of speech fluency, characterized by repetitions, prolongations, pauses, and other accompanying symptoms. We understand in our conclusion that no single theory can fully explain all cases of stuttering, which highlights its complex nature. Instead, multiple theories complement one another, including: the biochemical theory, the neurological theory, the psycholinguistic theory, the cerebral dominance theory, the neurotic theory, the classical conditioning theory, the demands and capacities theory, the behavioral theory, the genetic theory, the anticipatory struggle theory, and finally, the environmental and social factors theory. All of these theories are used to develop various treatment approaches, and thus, a better understanding of the causes of stuttering is essential to provide more effective support for individuals affected by it.

In light of the explanatory theories of stuttering and the multiple influencing factors, the following recommendations can be made to improve diagnosis, treatment, and support for people who stutter:

- Conduct more longitudinal studies to understand the development of stuttering and its relationship to genetic and neurological factors.
- Strengthen research on the interaction between psychological and biological factors in the emergence of stuttering.
- Develop accurate diagnostic tools using modern technology for early detection of the disorder.
- Raise awareness among families and teachers about stuttering and how to manage it appropriately.
- Provide psychological, social, and educational support for individuals who stutter to ensure healthy development.

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