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English 126

July 16, 2023

Stumbling on Words

Introduction

Do you know what it is like to have your thoughts trapped behind a wall of stuttered words? For those who stutter, the simple act of speaking can feel like an insurmountable challenge. However, beyond the struggle lies a depth of character and determination that can promote inspiration to those who stutter. Stuttering is a speech disorder that affects the fluency and rhythm of speech, and it has been a subject of curiosity and study for many years. It is characterized by disruptions, repetitions, or prolongations of syllables, sounds, or words, leading to communication difficulties for those who experience it.

Stuttering can manifest in different forms, such as developmental stuttering that emerges during childhood, neurological stuttering caused by brain damage or disorders, or psychogenic stuttering influenced by psychological factors. While the exact causes and mechanisms of stuttering remain complex and multifaceted, various therapeutic approaches and interventions have been developed to support individuals in managing their symptoms and improving their overall communication skills.

Research Significance

Understanding stuttering and its impact on individuals is crucial for fostering empathy, providing appropriate support, and promoting inclusive communication in society. Stuttering affects people of all ages, genders, and cultures. It is estimated that approximately 1% of the world's population stutters (“Stuttering”, *Michigan Medicine*). Although stuttering is often associated with anxiety and low self-esteem, it is important to remember that stuttering does not reflect a person's intelligence or ability to communicate effectively. With the right support and treatment, people who stutter can learn to manage their symptoms and communicate with confidence.

According to “Stuttering”, *Michigan Medicine*, Repetition of sounds, syllables, or words and the prolongation of sounds are primary symptoms of this speech disorder. Therefore, it is important to pay attention when these signs are repeated in children, especially if they are accompanied by secondary symptoms such as eye blinking and hand movements. Stuttering is a complex speech disorder that originates from physical, psychological, or a combination of causes. If left untreated, it can lead to a range of negative effects on an individual's social life, career prospects, and mental health. However, these effects can be mitigated through timely intervention, with speech-language therapy (SLT) being one of the primary treatments (“Stuttering”, *Michigan Medicine*).

Stuttering

As indicated in “Stuttering in Children”, stuttering is a speech disorder that affects the fluency of speech, impacting overall communication skills. It is classified into three types: developmental, psychogenic, and neurogenic stuttering. The most common type is developmental stuttering, also referred to as childhood-onset stuttering, because it typically occurs during childhood. The cause of developmental stuttering is believed to be a combination of genetic and environmental factors;

however, the exact cause remains unknown. This type of stuttering often resolves on its own without treatment, although speech therapy can help reduce its impact and improve communication skills ("Stuttering in Children"). According to Perez and Stoeckle, "Up to 90% of children who stutter (CWS) will naturally recover during childhood" (479). Developmental stuttering can temporarily affect communication as these children may repeat sounds or words, stretch sounds, or experience speech blocks.

Psychogenic stuttering is another type of stuttering caused by psychological factors such as anxiety or stress. This form of stuttering can result from trauma, emotional distress, or psychological disorders like anxiety and depression ("Stuttering, *ASHA*"). According to "Treatment for Stuttering", individuals with psychogenic stuttering often notice that their symptoms become more pronounced in certain situations, such as public speaking or during moments of high stress.

Neurogenic stuttering, sometimes referred to as acquired stuttering, occurs following brain or nerve injuries, such as a stroke or other neurological damage. The onset of neurogenic stuttering typically happens later in life and is often marked by sudden increases or worsening of symptoms. It is characterized by disrupted speech, where individuals may repeat letters or syllables or experience prolonged speech blocks. This type of stuttering may also be accompanied by neurological deficits, depending on the underlying cause ("Stuttering in Children").

While all types of stuttering can be frustrating and disruptive to daily life, various treatments, including speech therapy and counseling, are available to help individuals manage their symptoms and improve their communication skills ("Stuttering, *ASHA*").

Table 1: Types of stuttering

Characteristic	Developmental Stuttering	Neurogenic Stuttering	Psychogenic Stuttering
Time of onset	Childhood	Adulthood	Adulthood
Type of onset	Maybe gradual or sudden	Usually, sudden	Usually, sudden
Circumstances at onset	Variety of situations	Neurological impairment	Psycho-emotional distress
Frequency of stuttering	Range from mild to severe	Range from mild to severe	Range from mild to severe
Secondary behavior	Difficulty with eye contact is common	Secondary characteristics are not common; for example, maintains normal eye contact	Secondary behavior not common; for example, maintains normal eye contact; may display bizarre behavior unrelated to speech

(Source: "Stuttering, ASHA")

Risk Factors

Stuttering refers to conditions that disrupt the ability to produce fluent speech. It is a neurodevelopmental disorder that commonly manifests in early childhood, typically between the ages of 2 and 5 (Costa 5225). While stuttering is often associated with anxiety and low self-esteem, it is important to recognize that it does not reflect a person's intelligence or capacity to communicate effectively. With the right support and treatment, individuals who stutter can learn to manage their symptoms and communicate with confidence.

Repetition of sounds, syllables, or words, as well as the prolongation of sounds, are primary symptoms of stuttering. According to "Stuttering, ASHA", repetitions such as "look at the b-b-

baby" or "let's go out-out-out" are key indicators of this speech disorder. In addition to these primary symptoms, secondary signs, such as unusual eye and body movements, can also suggest a speech disorder in children. Stuttering can significantly affect various aspects of a child's life, including communication skills, family dynamics, and developmental progress.

Research indicates that 70-80% of children who stutter recover naturally, as noted by Yairi and Ambrose (70). However, external factors, such as high parental expectations, may increase the risk of stuttering. For example, pressuring a child to speak in groups or on the phone can lead to symptoms such as head and eye rolling, eye blinking, and mouth muscle stiffness ("Stuttering", *Family Doctor*).

Gender also plays a significant role in stuttering, with males being more likely to stutter than females. Yairi and Ambrose highlights that the male-to-female ratio in older children and adults is approximately 4:1 or even higher (69). However, Costa et al. believe that there is no conclusive evidence of significant differences between genders in speech traits or other associated characteristics of stuttering, apart from its higher prevalence among males (4). Nonetheless, understanding the multifaceted nature of stuttering, including its symptoms, contributing factors, and demographic patterns, is essential for developing effective interventions and providing appropriate support to those affected.

Table 2: Studies between-group comparison (Casto et al. 4).

	CSC (n = 217)	CNSC (n = 200)	p-Value
Age, in years—mean (\pm SD)	6.5 (\pm 2.6)	6.5 (\pm 2.9)	0.951
Sex—n (%)	Male	88 (44.0%)	0.001 *
	Female	112 (56.0%)	
Presence of Family History of Stuttering—n (%)	67 (30.9%)	0 (0.0%)	-

CSC: children with stuttering complaints; and CNSC: children with no stuttering complaints.

The study found that there is a significant difference in gender and family history of stuttering between children with stuttering complaints and those with no stuttering complaints. The age of the children, however, did not show any significant difference.

Causes of Stuttering

There are many theories and popular beliefs about the causes of stuttering, but according to “Treatment for Stuttering”, four main causes are commonly identified. The first is family history and genetics. Frigerio-Domingues and Drayna note that "no single gene serves as a major cause of stuttering in the overall population" (96). To explore this relationship, they conducted studies on twins and adoption to examine the interplay between genetic and environmental factors in stuttering (Frigerio-Domingues and Drayna 95). Their twin study revealed a higher concordance for stuttering in identical twins compared to fraternal twins who share only 50% of their genes (Table 3).

Table 3: Twin studies of stuttering

Study (year)	Language	Number of individuals	Estimated heritability
Howie (1981)	English	60	Na
Dworzynski et al (2007)	English	12,892	60
Rautakoski et al (2012)	Finnish	2289	82

Source: (Domingues et al. 1)

In a second study on adoption, there was no evidence to suggest a direct relationship between parents who stutter and the likelihood of their children developing the disorder (Frigerio-Domingues and Drayna 95). The third cause of stuttering is traumatic situations, such as brain injuries. If the injury affects the frontal lobe, the area responsible for speech and language, it will almost certainly impact speech production (“Stuttering”, *Michigan Medicine*). The final cause is a defect in articulation. This refers to an issue with the muscles responsible for articulation, which may become either overly tense or too relaxed, affecting speech fluency (“Childhood Apraxia of Speech”).

Symptoms of Stuttering

Stuttering symptoms can vary significantly from person to person. Common symptoms include repeating sounds or words, prolonging sounds, and experiencing blocks on words or sounds. The severity of these symptoms may fluctuate based on factors such as stress, fatigue, excitement, or social situations (“Stuttering”, *Mayo Clinic*). According to “Fluency Disorder”, “They may repeat parts of words (repetitions), stretch a sound out for a long time (prolongations), or have a hard time getting a word out (blocks).”

One of the most apparent symptoms of stuttering is the repetition of sounds, syllables, or words. Perez and Stoeckle (481) note that individuals who stutter often repeat certain sounds or words, such as "c-c-c-cat" or "I-I-I want." These repetitions can occur at the beginning, middle, or end of words and may be accompanied by tense facial or body movements as the person struggles to produce the desired sound. Another common symptom is prolongation, where a person extends the duration of certain sounds or syllables. For instance, they might stretch out the sound in "ssssnake" or "mmmmore." Prolongations often create a sense of tension or blockage in speech, which can lead to frustration or embarrassment.

Blocks are another characteristic symptom of stuttering. During a block, the person experiences a momentary pause or hesitation before producing a sound or word. It may feel as though the speech mechanism is temporarily "stuck," and the person may struggle to force the words out. Blocks are frequently accompanied by visible tension in the facial muscles or other physical signs of effort.

Interjections, such as "um" or "uh," are also commonly observed in individuals with stuttering. These filler words often appear as if the person tries to gather their thoughts or overcome a moment of stuttering. Interjections can serve to mask or distract from the underlying struggle with speech, allowing the individual a brief pause to regroup and continue speaking.

Lastly, avoidance behaviors are commonly associated with stuttering. As individuals become more aware of their speech difficulties, they may develop strategies to avoid specific words, sounds, or speaking situations that they find particularly challenging. This may include substituting words, avoiding eye contact, or withdrawing from social interactions. Such avoidance behaviors can contribute to feelings of isolation and negatively impact on the individual's social confidence and communication skills.

Therefore, stuttering is characterized by a range of symptoms, including repetitions, prolongations, blocks, interjections, and avoidance behaviors. These symptoms can significantly affect a person's speech fluency, communication, and social interactions. Approaching stuttering with understanding and support is crucial, as early intervention and appropriate therapy can help individuals manage their symptoms and improve their quality of life (Perez & Stoeckle 479). The table below provides a summary of the symptoms of stuttering mentioned above.

Table 4: Symptoms of stuttering

Symptoms of stuttering	Definition	Example
Repetition of word	Repeating the whole word	“How -How is my mother ?”
Repeating of part – word	Repeat the sound or syllable	“H-H-How is my mother ?”
Repetition of phrase	Repeats the whole phrase	“How is – how is my mother? “
Prolongations	Continues a sound for extend period	“How is my mmmmmm-mother?”
Blocks	Stoppages of airflow or sound production	“How is my (block) mother ?”
Interjection	brief pause or distraction	“How is ummmm my mother ?”
Broken words	Gives pauses within the words	“How is my mo-(pause)-ther?”

Source: (Al -Humaidi)

Effects on Children

Yates et al. (1-3), stuttering can affect children's academic performance because they may avoid speaking up in class or participating in group discussions due to the anxiety caused by their stuttering. This avoidance leads to lower participation rates, which can negatively impact their learning experience. Children who stutter may experience reduced academic engagement and lower self-esteem, which can further affect their educational outcomes. Studies show that children with stuttering are more likely to face academic difficulties, encountering challenges in literacy and language skills (Yates et al. 5).

As indicated by “Stuttering, *ASHA*”, stuttering can also have profound psychological effects on children, influencing their future potential and overall well-being. These effects may include stress, social anxiety, and depression. Yates et al. highlights that children with social anxiety often struggle to connect with friends or feel comfortable in group settings (2). This can lead to isolation and low self-esteem, which negatively impact cognitive and emotional development. Social challenges, such as difficulties in forming relationships and avoiding communication with peers, can exacerbate feelings of isolation.

Additionally, stuttering can contribute to psychological problems, including heightened anxiety and depression. These issues, combined with the social challenges faced by children who stutter, often affect their academic life, resulting in lower self-esteem and reduced social interaction. Addressing stuttering through appropriate support and interventions is essential to help children overcome these challenges and achieve their full potential.

Testing & Diagnosis

As mentioned by “Stuttering, *ASHA*”, testing and diagnosing stuttering involve a comprehensive assessment conducted by qualified professionals, such as speech-language pathologists (SLPs). The process begins with gathering a detailed case history. The SLP interviews the individual or their parents to collect information about the onset and progression of stuttering, the frequency and severity of symptoms, and any contributing factors. For instance, parents may be asked questions such as, "When did you first notice stuttering symptoms?" or "Have there been times when the stuttering worsened or improved?" As “Stuttering, *ASHA*” notes, the SLP may also inquire, "Does your child's stuttering affect the way they play with others or make it harder for them to participate in school?" This stage often includes exploring family history and emotional stressors. Such insights provide a foundational understanding of the individual's experiences, guiding the diagnostic process.

The next step involves a comprehensive assessment, as described by “Fluency Disorder”. This detailed evaluation helps the SLP determine the severity, type, and possible causes of the stuttering. During this stage, the SLP closely observes the child's speech across various tasks, such as casual conversation, reading aloud, or engaging in spontaneous speech. These observations allow the SLP to identify the frequency and types of disfluencies (e.g., repetitions, prolongations, or blocks) and accompanying behaviors like facial tension or visible struggle during speech. By examining the individual's speech in multiple contexts, the SLP gains a holistic understanding of their stuttering patterns.

The third step involves selecting appropriate assessment tools and techniques. The tools chosen depend on the child's age and type of stuttering disorder. As highlighted in Assessment Tools, Techniques, and Data Sources, norm-referenced tests are commonly used standardized tools that

compare the child's performance to that of peers of the same age. These tests are valued for their reliability and validity, as they ensure consistency in administration and scoring. However, standardized tests have limitations, particularly for bilingual speakers, as they may not yield accurate results. Additionally, they are inflexible and focus on specific needs and behaviors without allowing repeated use to measure progress, as children may memorize the questions and answers.

Alternatively, informal assessments are less structured, more flexible, and interactive. These assessments allow for open-ended questions and are tailored to the child's unique communication skills and needs. This flexibility makes informal assessments particularly useful for capturing a more accurate picture of the child's abilities and challenges.

In the final step of the diagnostic process, the clinician synthesizes all the gathered information to confirm the type and severity of stuttering, as well as its impact on the individual's educational, social, and psychological well-being. According to Blomgren, this stage also involves planning a treatment plan based on the individual's age, severity, and type of stuttering (9). The plan may include speech therapy focused on specific goals and a family support program to enhance the individual's progress and overall well-being.

Management

As indicated by the Cleveland Clinic, children experiencing communication difficulties may require the assistance of a speech-language pathologist (SLP) to enhance their speaking and language skills. The type of speech therapy needed varies depending on multiple factors, including the child's age, specific health conditions, and the nature of their speech difficulties (“Stuttering”, *Family Doctor*).

Yaruss highlights that support groups are increasingly playing a crucial role in the recovery process for individuals who stutter. Many SLPs now recommend that their clients join such groups to gain emotional and social support during their journey (115). However, limited research exists regarding the demographics of stuttering support group participants and the specific benefits they derive from their involvement.

Cognitive Behavioral Therapy (CBT) is another effective intervention for managing stuttering. Breaking down overwhelming problems into smaller, manageable parts is a key strategy employed in CBT, helping individuals better understand and address their challenges. CBT focuses on five interconnected domains: situations, thoughts, emotions, physical sensations, and actions. These domains influence one another, meaning that an individual's thoughts about a particular situation can affect their emotions, physical sensations, and behavioral responses. By addressing these connections, CBT provides individuals with tools to manage their reactions and improve their overall communication and confidence.

Treatment

According to “Treatment for Stuttering”, there is currently no pharmacological treatment for stuttering, but there are alternative options that may help individuals manage their symptoms. However, it is important to note that a treatment effective for one person may not work for another. As “Treatment for Stuttering” explains, "There is no single technique, device, or medication that will cure stuttering."

As indicated by the “Stuttering, *Mayo Clinic*”, the choice of treatment depends on factors such as the individual’s age, the severity of the disorder, and their life circumstances. One common approach is speech therapy, which focuses on slowing speech to help individuals become more

aware of their stuttering and gain control over their speech patterns. Another option is the use of electronic devices designed to improve fluency. These devices provide delayed auditory feedback, allowing the user to hear their own speech with a slight delay, which encourages slower, more deliberate speech production.

As mentioned earlier, Cognitive Behavioral Therapy (CBT) also serves as an effective treatment option for managing stuttering. By addressing issues such as anxiety, stress, and low self-esteem, which are often associated with stuttering. By focusing on these underlying psychological factors, CBT helps individuals build confidence and reduce the emotional impact of their stuttering.

“Treatment for Stuttering” emphasizes that the success of any treatment depends on the individual’s goals, feelings, and attitudes toward their stuttering. A personalized approach that considers these factors is essential for achieving the best outcomes.

Conclusion

In conclusion, stuttering is a complex speech disorder influenced by a combination of genetic, neurological, and environmental factors. It can significantly impact an individual’s life, affecting their emotions, social connections, and educational experiences. Stuttering often leads to feelings of anxiety, nervousness, frustration, and low self-esteem, which can result in avoiding social situations and limiting communication. However, with proper diagnosis, therapy, and support, individuals who stutter can develop strategies to manage their symptoms and improve their fluency. Through targeted interventions, such as speech therapy and cognitive techniques, they can enhance their speaking abilities and gain confidence. While there are currently no approved pharmacological treatments for stuttering, advances in speech therapy and innovative approaches continue to provide hope for more effective management of stuttering symptoms.

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