What Causes Stuttering?

The Science Behind Speech Fluency

Genetics

Genetics play a key role:

Stuttering can run in families.

- Inherited genetic mutations affect the way the brain's speech networks are formed

Brain Timing & Coordination

The basal ganglia (in green) is involved in timing and sequencing speech.

- In people who stutter, there is greater variability in speech timing and more difficulty coordinating speech movements.

Dopamine plays a role in movement and learning.

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Dopamine plays a role in movement and learning.

- In people who stutter, excess levels of dopamine can over-activate the speech network, leading to disrupted speech.

White Matter Connectivity

White matter connects brain regions and helps them communicate.

Stuttering is a neurological condition with genetic and biological roots.

Understanding these causes can reduce stigma, increase support, and guide treatment.

Neurofluency INITIATIVE