

Title:

The effects of a single silent initiating speech gesture on stuttering frequency.

Purpose:

While stuttering behaviors can be temporarily ameliorated, it remains unclear exactly how or why fluency is enhanced in those who stutter. Previous research investigating a proposed common invariant found within fluency enhancement measured the effects of approximated (speech-related) cognitive initiation on stuttering frequency, but found it less efficient than fluency derived from a second speech signal (SSS). Subsequently, it is suggested that exposure to an initiating speech gesture itself (such as those embedded within a SSS) may serve as a common invariant found within efficient fluency enhancement. While research documents the fluency enhancing effects of the SSS, it remains unknown if fluency enhancement via initiating speech gesture results from exposure to phonation, or the inherent cognitive initiation associated with the production of the (unphonated) gesture itself. Consequently, the purpose of this research is to test the effects of silent initiating speech gestures on stuttering frequency.

Method:

This study employed one control and four experimental speaking conditions, including a self-generated initiating silent speech gesture without visual feedback (SGISG), a self-generated initiating silent speech gesture with visual feedback (SGISG w/ VF), an externally-generated initiating silent speech gesture with visual feedback (EGISG w/ VF), and a self-generated initiating silent speech gesture simultaneously co-occurring with an externally-generated initiating silent speech gesture providing visual feedback (SGISG + EGISG w/ VF). A head-mounted video camera (Audi-See) provided visual feedback when needed. Participants employed an initiating speech gesture on all initial speech gestures of every breath group. The reading passages used in this study have been used in previous peer reviewed research.

Result:

Study results reveal a 55%, 77%, 73%, and 76% reductions of stuttered syllables occurred in the production of an SGISG, SGISG w/ VF, EGISG w/ VF, and SGISG + EGISG w/ VF, respectively. A significant main effect of an introduced initiating silent speech gesture was found [$F(4,28) = 8.263$, Greenhouse-Geisser $p = .018$, $\eta^2 = .541$]. Post hoc orthogonal single df comparisons revealed a significant difference between the control and experimental speaking conditions ($p < .0001$). Post hoc orthogonal single df comparison contrasting speaking conditions employing (and not employing) visual feedback revealed a trend toward significantly reliable differential reductions in stuttering frequency ($p = .0658$). All subsequent post hoc orthogonal single df comparisons did not reveal significance.

Conclusion:

Results indicate that perception of a fluency enhancing stimulus (rather than self-generation) remains the most effective and efficient method of reducing stuttering frequency. This finding may support the notion that a dual-premotor-system, or mirror neurons, may be associated with efficient fluency enhancement.

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