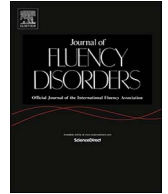




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## Letter to the Editor

### Response to Letter to the Editor

We welcome this opportunity to respond to this Letter to the Editor that raises issues about our recent study (Brown et al., 2016). We are pleased that our report has prompted further interest in the topic of the role of phonation in speech restructuring treatments for stuttering. Exchanges such as this can only lead to better understanding of how treatments work and hence the development of more effective and efficient interventions for those who stutter. We will respond to the Letter in broad terms first, and then address specific issues raised by the author. In our view, discussion of broader issues relating to cause is needed in order to clarify the scientific reasoning underpinning our study. In our view, this is critical to understanding how approaches to scientific reasoning differ between the authors of the letter (Davidow & Ingham, 2017) and ourselves.

### The scientific reasoning underpinning the Brown et al. (2016) study

As we said in our 2016 report, the aim of the study “...was to investigate the effects of speech-restructuring treatment on the distribution of PIs in the spontaneous speech of adults who stutter” (p.15). Our interest in this topic was raised by recent reports of a behavioral treatment for stuttering developed by Ingham and colleagues (Ingham, Ingham, Bothe, Wang, & Kilgo, 2001; Ingham et al., 2015)<sup>1</sup> known as the Modification of Phonation Intervals (MPI) program. In this program, participants reduced their stuttering to low levels by reducing the frequency of short intervals of phonation (PIs) by 50% or more, with biofeedback. In the MPI program, then, reducing the frequency of short (below 150 ms) intervals of phonation is the independent variable and it can therefore be deduced that this is sufficient to cause stuttering frequency to reduce to very low levels. Specifically, our interest was in whether reducing the frequency of short PIs is in fact necessary for stuttering to reduce to very low levels. By way of rationale for the study, we repeat this statement by Davidow and colleagues; “measuring PIs during and upon completion of different treatment techniques could inform us as to whether an altered PI distribution may be associated with fluency during treatments that do not focus on PIs.” (Davidow et al., 2009; Davidow, Bothe, Andretta, & Ye, 2009, p. 201). If reductions in short PIs are not necessary for reductions in stuttering, then there must be other factors operating (for further discussion of necessary and sufficient causal conditions see Packman & Attanasio, 2017). Davidow and Ingham (2017) take issue with our conclusion—which we stand by—that while a reduction in the frequency of short PIs may be sufficient to reduce stuttering to low levels, it is not necessary.

In our study, then, we measured stuttering (percent syllables stuttered, %SS) and PIs in 5-minute conversational speech samples for seven adults, before and immediately after a traditional speech-restructuring treatment program. In this intensive group program, participants used prolonged speech to reduce their stuttering, starting at a slow speech rate. They then systematically increased speech rate to as close to normal as possible, while still maintaining stutter-free, or near stutter-free, speech. While extended voicing is part of speech restructuring, no mention is made during the program of short PIs. The post-treatment recordings for our study were made in the clinic immediately upon completion of the intensive phase. We stress, as we did in our original report, that this was a laboratory study, not a clinical trial or data based case report. We were interested in determining whether speech restructuring results in stutter-free speech by reducing the frequency of short PIs, as occurs in the MPI program. In other words, is it necessary to reduce the frequency of short PIs in order to achieve fluency? To control for the possibility that moments of stuttering may contain short PIs and hence confound the comparison of pre- and post-treatment recordings, we removed moments of stuttering from all speech samples prior to our analyses.

Our study showed that it is not necessary to reduce the frequency of short PIs in order to reduce stuttering to very low levels. Specifically, three of our participants had very low levels of stuttering in their post-treatment recordings without a concurrent

<sup>1</sup> There are two reports of the MPI program; however the data for the five participants in the 2001 report are included in the data set in the 2015 report.

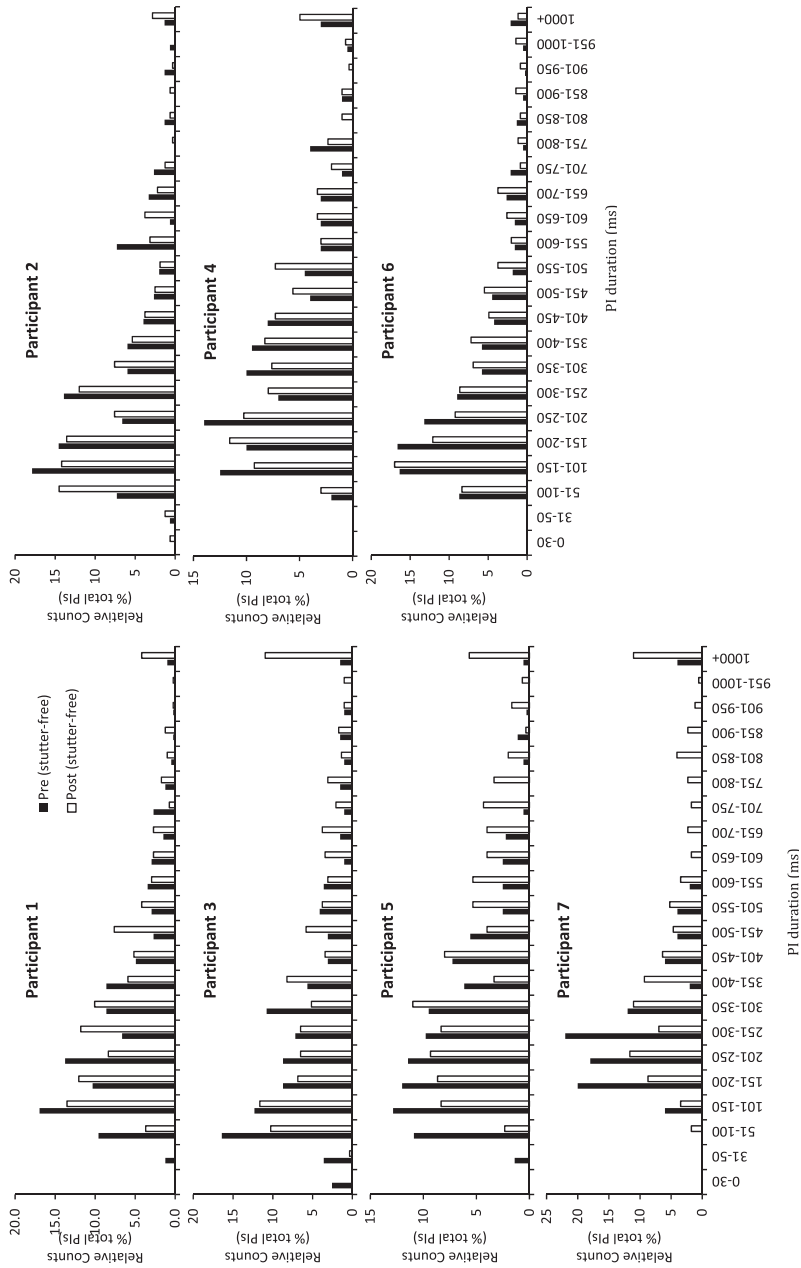


Fig. 1. The distribution of the percentage of all PIs, pre- and post-treatment, for the seven participants.

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