

Effective public speaking positively influences group communications (Spohr, 2009), occupational success (Burrus et al., 2013), and job interviews (Stocco et al., 2017). Among behavior analysts, clear and fluent speaking is a necessary competency for presenting information during meetings, delivering consultation, conducting supervision, and disseminating research via oral presentation (Friman, 2014; Heinicke et al., 2021).

Research

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Habit Reversal and Speech Disfluencies 5

effects that were generally maintained post-training and, in some cases, generalized to other speech disfluencies and nontraining settings. These results occurred with combined AT and CRT as well as AT alone that was implemented with video recordings and in vivo. There are several interpretations of this research which have practice implications and suggest future areas of inquiry.

First, habit reversal was the only method of training that received experimental evaluation. The similarity between filled pauses during public speaking and habit disorders such as motor and vocal tics (Miltenberger et al., 1998) is one reason habit reversal has been the dominant training approach. Also, habit reversal trains speakers to self-manage speech disfluencies which can promote generality and improve speaking long-term. Additionally, the component analyses of habit reversal demonstrated that training can be economized by implementing single components such as response description (Ortiz et al., 2022) before advancing to the full training package (Montes et al., 2021). It remains to be seen whether training methods other than habit reversal are equally or more effective. Therefore, two directions for research would be to evaluate interventions that are not comprised of habit reversal components and to compare those interventions against different habit reversal combinations.

It is notable that all of the participants were college students. This population certainly can benefit from training and evaluation outside of simulated conditions such as oral presentations during classes among peers and instructors (Perrin et al., 2021), but this

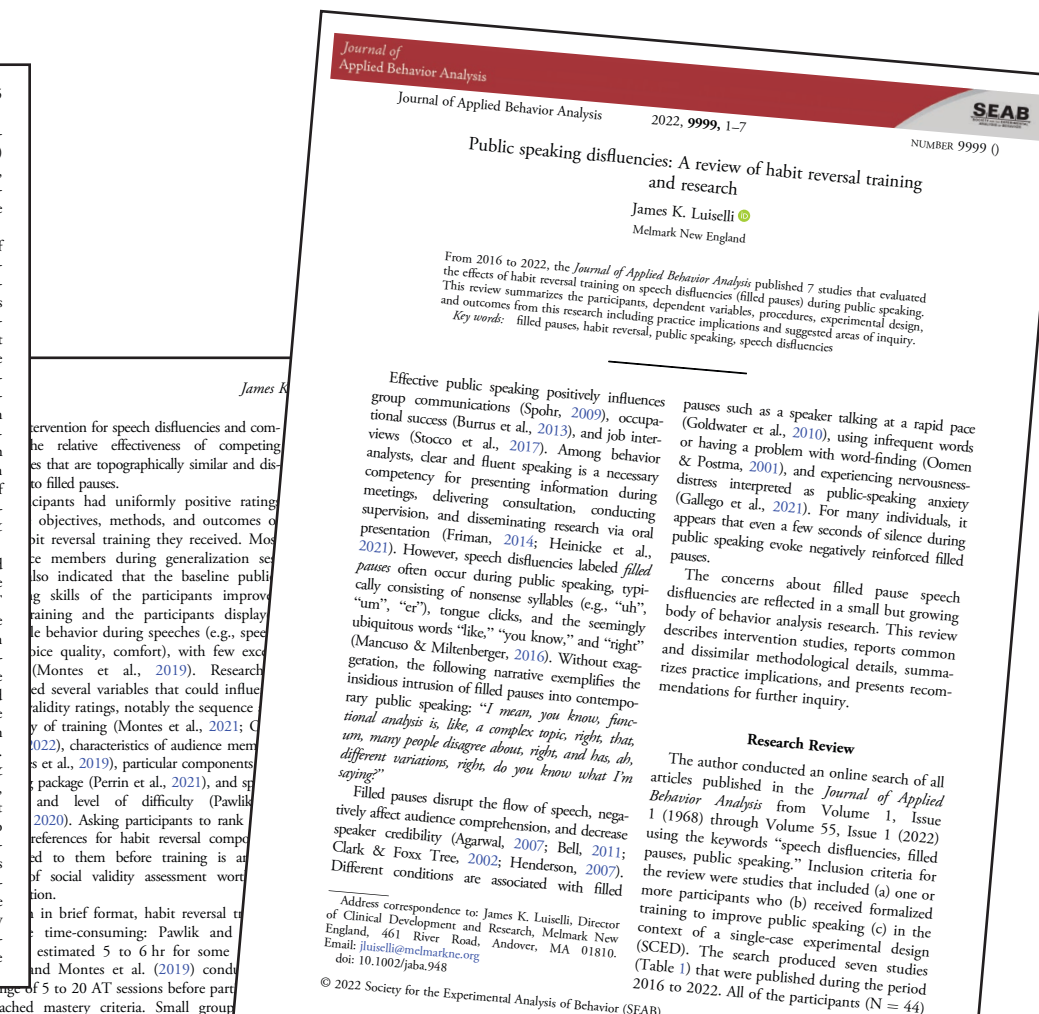
acquire fluent public-speaking skills as a requisite professional competency (Friman, 2014) that can be demonstrated during training, supervisory, and consultation activities; classroom instruction; seminars; and conference presentations.

Although most studies found generalization of training effects to novel settings with small audiences present, there was limited evidence of consistent transfer to nontargeted filled pauses (Montes et al., 2019; Ortiz et al., 2022). Accordingly, the implication for practice is that habit reversal training be applied to all filled pause speech disfluencies and perhaps to similarly interfering behavior (e.g., hand gestures, averting eye contact with audience members, fidgeting with objects). While acknowledging setting generalization reported in the studies, additional research needs to evaluate posttraining effectiveness when individuals speak to larger audiences comprised of more diverse listeners and in different public-speaking venues (Montes et al., 2019; Pawlik & Perrin, 2020; Spieler & Miltenberger, 2017).

Another research topic that Spieler and Miltenberger (2017) posited is to identify the behavioral mechanism responsible for AT and AT combined with CRT in decreasing filled pause speech disfluencies. For example, researchers in these reviewed studies hypothesized that participants raising their hands as a form of response detection may have served as a punisher and viewing the same video and delivering the same speech repeatedly was similar to overcorrection (Montes et al., 2019, 2021; Ortiz et al., 2022). Relative to habit

Author	Participants	Measures	Follow-up	Treatment Integrity	Social Validity
Mancuso & Miltenberger (2019)	36 college students	Baseline: $M = 7.4$ per minute; Training: $M = 1.4$ per minute	2-5 weeks post-training	90% of sessions	Assessment of speaking ability and treatment acceptability
Montes et al. (2019)	Four (4) college students	75% decrease in filled pauses across participants	2 weeks post-training	46% of sessions	Assessment of speaking ability, treatment acceptability, and audience ratings
Montes et al. (2021)	Eight (8) college students	Moderate to large decrease in filled pauses across participants	2 weeks-3 months post-training	46% of sessions	Assessment of speaking ability, treatment acceptability, and audience ratings
Ortiz et al. (2021)	Nine (9) college students	75-89% decrease in filled pauses across participants	2-5 weeks post-training	54% of sessions	Assessment of speaking ability, treatment acceptability, and audience ratings
Ortiz et al. (2022)	Nine (9) college students	87-100% decrease in filled pauses across participants	5-21 days post-training	25-53% of sessions	Assessment of speaking ability
Pawlik & Perrin (2020)	Four (4) college students	Baseline: $M = 1.9-11.5$ per minute; Training: $M = 0.3-4.6$ per minute	20-28 days post-training	Not evaluated	Assessment of speaking ability and treatment acceptability
Perrin et al. (2021)	Nine (9) college students	Baseline: $M = 6.7-12.9$ per minute; Training: $M = 1.6-2.2$ per minute	Not reported	33% of sessions	Assessment of speaking ability and treatment acceptability
Spieker & Miltenberger (2017)	Four (4) college students	Concurrent MBD across participants	Not reported	Not reported	Assessment of speaking ability and treatment acceptability

Note. BHR = brief habit reversal, AT = awareness training, CPR = competing response training, MBD = multiple baseline design



Filled pause speech disfluencies are common in public speaking among students, instructors, and professionals from many disciplines, including behavior analysis. Habit reversal training in several formats reduces filled pauses and the recipients of training and listeners recognize the resulting improvement in oral presentation skills.