

# Misconceptions on Behavioral Cough Suppression Therapy for Pediatric Nonspecific Cough: A Response to Weinberger and Buettner's Commentary on Fujiki et al.

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## **Misconceptions on Behavioral Cough Suppression Therapy for Pediatric Nonspecific Cough: A Response to Weinberger and Buettner's Commentary on Fujiki et al.**

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**Abstract/Summary :** This commentary responds to Weinberger and Buettner’s critique of Fujiki et al.’s study on behavioral cough suppression therapy (BCST) for pediatric chronic cough. While acknowledging their contributions, it addresses inaccuracies and clarifies key aspects of BCST. The commentary highlights discrepancies in terminology, challenges assertions regarding diagnostic evaluations, and emphasizes the need for controlled trials to assess treatment efficacy.

In their engagement with the study by Fujiki et al.<sup>1</sup>, Weinberger and Buettner<sup>2</sup> bring attention to critical aspects of behavioral cough suppression therapy (BCST) and pediatric chronic cough treatment. While their contributions are valued, it is imperative to address certain inaccuracies and clarify key aspects of the study and BCST provided by specialized speech-language pathologists (SLPs).

Firstly, Weinberger & Buettner inaccurately state that Fujiki et al. identified the children as having “behavioral cough.” The term “behavioral cough” in the paper was used only in the context of “*behavioral cough* suppression therapy,” describing the treatment rather than the children’s cough diagnosis. The authors, in fact, used the term “nonspecific cough/tic cough” in accordance with current CHEST and ERS guidelines<sup>3-5</sup>. Weinberger & Buettner’s assertion that “historical evidence and current practice support “habit cough” as the appropriate diagnosis” lacks substantiation and contradicts contemporary CHEST guidelines<sup>5</sup>. We are particularly puzzled by Weinberger & Buettner’s advocacy for the term habit cough when Dr. Weinberger is listed as an author on a 2015 CHEST guidelines publication that explicitly advises against the use of these terms, deeming them “out of date and inaccurate”<sup>5</sup>.

Weinberger & Buettner also criticize the use of extensive evaluations for the children in the sample, arguing that “habit cough” can be diagnosed based on clinical presentation alone—specifically in the presence of a barking or honking cough and absence of the cough during sleep. Interestingly, the same CHEST guidelines, of which Weinberger is an author, specifically cautions against using the diagnostic terms of “psychogenic” or “habit cough” solely based on a barking or honking sound or the absence of cough during sleep, stating that these three clinical presentations lack specificity<sup>5</sup>. A barking or honking cough can occur with other diseases such as tracheomalacia or bronchiectasis<sup>6</sup>; and it is well documented that sleep inhibits the cough reflex in adults even when an organic disease process is identified<sup>7; 8</sup>. Without evidence to the contrary, it is should be assumed that sleep similarly suppresses cough in children. Further, the purpose of Fujiki et al.’s paper was to examine whether BCST improves cough in children and to describe cough characteristics and comorbidities, not to advocate for extensive assessments. Although, it is noteworthy that laryngoscopy

revealed structural laryngeal pathology in several cases, challenging Weinberger & Buettner’s assertion that the described assessments were unjustified.

Regarding the treatment described in Fujiki et al., Weinberger & Buettner characterize BCST as an “alternative to suggestion therapy.” This overlooks that BCST instructs in strategies to suppress cough, akin to his “suggestion therapy.” Therefore, it seems that BCST is not necessarily an alternative but rather a similar therapy with a different name. This overlap emphasizes the need for clarity in terminology. Importantly, in adults with chronic cough a loss of centrally (brain) mediated cough suppression has been demonstrated using functional brain imaging<sup>9</sup>. Although empirical data in children is not available, it seems conceivable that similar mechanisms may be in operation, providing a neurobiological basis for why cough suppression training is often beneficial and supporting the use of terminology that emphasizes this aspect of the therapy.

Additionally, Weinberger & Buettner’s argument that 45 pediatric pulmonologists “already indicate they readily diagnose habit cough and successfully treat with suggestion therapy,” implies a stance against SLP treatment. However, considering there are thousands of pediatric pulmonologists in the U.S. alone, the sample size of 45 falls short of substantiating the claim that “many” pulmonologists universally adopt this approach or that additional clinicians, such as SLPs, are unnecessary to assist these patients effectively. The argument lacks robust evidence and fails to account for the role of additional clinicians, such as SLPs, to address pediatric chronic cough effectively. Further, a substantial proportion of children in Fujiki et al.’s sample presented with phonotraumatic lesions (e.g., vocal nodules), which SLPs are specifically trained to address through behavioral treatment.

Lastly, Weinberger & Buettner suggest that conducting a controlled trial for suggestion therapy is impractical due to the reported low frequency of referrals. We disagree that the size of the population is a valid argument for not conducting a randomized controlled trial. A control group is needed to robustly assess the efficacy of any treatment, particularly in the case of cough interventions which are particularly vulnerable to placebo effect<sup>10; 11</sup>. Weinberger & Buettner suggest that it would be unethical to withhold suggestion therapy for the sake of a randomized clinical trial; however, one could easily design a study that allowed for those randomized to a control treatment to be eligible for suggestion therapy upon completion of the control arm. Given Dr. Weinberger’s data suggests suggestion therapy eliminates nonspecific/tic cough in less than one week, such children would need to wait no more than one to two weeks before becoming eligible for suggestion therapy and it should be possible to demonstrate such a substantial effect in a relatively small number of subjects in a randomized controlled trial.

We agree with Dr. Weinberger that SLP skills vary. As is the case with any clinical discipline, there are many subspecialties in the field of speech-language pathology and varying levels of skill and expertise within those subspecialties. BCST training is not standard in SLP training programs, and, therefore, requires special training.

In conclusion, we think these clarifications underscore the importance of understanding Fujiki et al.’s paper in its correct context, and will advance a more nuanced and informed discussion on pediatric cough disorders and BCST’s role in treatment. We acknowledge Weinberger & Buettner’s contribution to pediatric cough management. The data reported in this letter and other publications<sup>12; 13</sup>, although anecdotal, suggests that behavioral treatment focused on cough suppression is effective. Given this, we encourage Weinberger and Buettner to complete a randomized controlled efficacy trial. If the data confirms efficacy, the study would significantly elevate the legitimacy of the treatment, increasing its use by other practitioners and benefitting pediatric patients with chronic cough.

## REFERENCES

1. Fujiki RB, Wright ML, Fujiki AE, Thibeault SL. 2023. Factors influencing behavioral cough suppression therapy in children with nonspecific chronic cough. *Pediatr Pulmonol.* 58(12):3466-3477.
2. Weinberger M, Buettner D. 2024. The habit cough syndrome. *Pediatr Pulmonol.* 59(2):260-262.

3. Chang AB, Oppenheimer JJ, Irwin RS, Panel CEC. 2020. Managing chronic cough as a symptom in children and management algorithms: CHEST guideline and expert panel report. *Chest*. 158(1):303-329.
4. Morice AH, Millqvist E, Bieksiene K, Birring SS, Diepinigaitis P, Domingo Ribas C, Hilton Boon M, Kantar A, Lai K, McGarvey L et al. 2020. ERS guidelines on the diagnosis and treatment of chronic cough in adults and children. *Eur Respir J*. 55(1).
5. Vertigan AE, Murad MH, Pringsheim T, Feinstein A, Chang AB, Newcombe PA, Rubin BK, McGarvey LP, Weir K, Altman KW et al. 2015. Somatic cough syndrome (previously referred to as psychogenic cough) and tic cough (previously referred to as habit cough) in adults and children: CHEST guideline and expert panel report. *Chest*. 148(1):24-31.
6. Spinou A, Lee KK, Sinha A, Elston C, Loebinger MR, Wilson R, Chung KF, Yousaf N, Pavord ID, Matos S et al. 2017. The objective assessment of cough frequency in bronchiectasis. *Lung*. 195(5):575-585.
7. Lee KK, Birring SS. 2010. Cough and sleep. *Lung*. 188 Suppl 1:S91-94.
8. Power JT, Stewart IC, Connaughton JJ, Brash HM, Shapiro CM, Flenley DC, Douglas NJ. 1984. Nocturnal cough in patients with chronic bronchitis and emphysema. *Am Rev Respir Dis*. 130(6):999-1001.
9. Ando A, Smallwood D, McMahon M, Irving L, Mazzone SB, Farrell MJ. 2016. Neural correlates of cough hypersensitivity in humans: Evidence for central sensitisation and dysfunctional inhibitory control. *Thorax*. 71(4):323-329.
10. Eccles R. 2009. Central mechanisms iv: Conscious control of cough and the placebo effect. *Handb Exp Pharmacol*. (187):241-262.
11. Eccles R. 2010. Importance of placebo effect in cough clinical trials. *Lung*. 188 Suppl 1:S53-61.
12. Lokshin B, Lindgren S, Weinberger M, Koviach J. 1991. Outcome of habit cough in children treated with a brief session of suggestion therapy. *Ann Allergy*. 67(6):579-582.
13. Weinberger M, Hoegger M. 2016. The cough without a cause: Habit cough syndrome. *J Allergy Clin Immunol*. 137(3):930-931.