Research Forum

New Directions for Auditory Training: Introduction

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Purpose: The purpose of this research forum article is to provide an overview of a collection of invited articles on

contemporary issues in auditory training.

The current issue of the *Journal of Speech, Language, and Hearing Research* contains a three-article research forum co-organized by Joe Barcroft and Brent Spehar on contemporary issues in auditory training. With the development of computer-based training programs and the availability of training exercises that use gamelike formats (Henshaw & Ferguson, 2013), the potential benefits of including auditory training as part of a comprehensive aural rehabilitation program have never been greater. Individuals can now train at home on tablet-based devices with the potential to dramatically improve the ease and flexibility of administering auditory training. Gamelike formats can increase engagement with the training exercises, further increasing the likelihood that individuals will maintain their training over extended periods of time.

Despite the overall potential for auditory training, however, many of the same issues that have complicated previous assessments of training efficacy remain. One of the most important of these issues is the extent to which training gains generalize outside the training material. Several studies have reported pretest to posttest gains of 30%–40% (or more) for stimuli that were the targets of training, only to see dramatic reductions in those gains when one or more of the training aspects were changed (Barcroft et al., 2011; Burk & Humes, 2007; Henshaw & Ferguson, 2013). The article by Barcroft, Spehar, Tye-Murray, and Sommers (2016) provides one of the first systematic analyses of this issue by adopting the perspective of transfer-appropriate processing to determine the extent to which overlap in tasks, talkers, or both affect the efficacy and generality of auditory training.

The submission by Tye-Murray, Spehar, Sommers, and Barcroft (2016) further addresses the issue of generalizability of training gains by investigating how training

with the voice of a frequent communication partner affects overall training benefits. If, as suggested by most previous studies on auditory training, the generalizability of training benefits across talkers is relatively low, training might be most effective if it is done using the voice of a specific individual who the trainee wants to understand, such as a spouse or a teacher. Alternatively, given that the trainee likely has had extensive exposure to this individual, one might expect that additional training would produce, at best, only minimal gains.

The contribution by Smith, Saunders, Chisolm, Frederick, and Bailey (2016) investigates the critical issue of predicting individual gains in auditory training. Evidence is emerging from a number of different domains that auditory rehabilitation needs to be tailored to individual sensory and cognitive abilities (Lunner & Sundewall-Thorén, 2007). Establishing a method to predict the likelihood and magnitude of auditory training gains a priori would represent a critical advance in patient counseling and would provide an opportunity to develop individualized training procedures to maximize training gains.

Finally, a theme that runs across all three articles in this research forum is the incorporation of frameworks and approaches from other disciplines. Barcroft et al. have adopted a long-standing perspective from cognitive psychology, *transfer-appropriate processing*, to understand the conditions likely to produce gains and how those gains will be modulated by changing aspects of the training material. The submission of Tye-Murray et al. also has deep roots in cognitive psychology, in this case the role of explicit versus implicit memory in producing gains from auditory training. The contribution by Smith et al. is one of the first to adopt an individual-differences approach, often used in developmental psychology, to understanding factors that predict auditory training benefits. Thus, Smith et al. move beyond the metric of average gain and use individual variability in training gains as a tool to determine what participant factors might affect the degree of training benefits.

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It is an exciting time for research on auditory training. New technologies will provide opportunities for developing novel content and delivery methods for auditory training. Integration of theoretical frameworks and empirical findings from a range of disciplines will allow researchers to move from the question of “Is auditory training effective?” to issues of “What makes training most effective?” and “Who is most likely to benefit from a particular type of training?” The three research forum articles represent the beginning of a paradigm shift in research on auditory training—from early approaches that focused on documenting the benefits of auditory training to more recent perspectives that focus on understanding the mechanism of auditory training.

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