Speech Motor Control: Current Perspectives on Development and Disorders

This issue of *Folia Phoniatrica et Logopaedica* is dedicated to clinical aspects of speech motor control. It was initiated by the IALP Speech Motor Committee in an effort to bring together current research on speech motor development and disorders and to follow up an edition on a similar topic from 2010.

Research dealing with speech motor disorders covers a particularly broad spectrum, reaching into a multitude of progressive and nonprogressive neurological conditions with peaks in different decades of life – from earliest infancy to high age –, into diverse syndromes reflecting impairments on different stages of the speech production process, and into highly individual functional impairments, activity limitations, and participation restrictions that patients experience. One of the major objectives of research is to develop the theoretical basis for these most diverse conditions and to translate this knowledge into valid diagnostic and therapeutic approaches for a specific and patient-oriented clinical management.

The papers included in this special issue highlight selected topics. They deal with the impact of speech motor disorders on life course and social acceptance, with novel, innovative clinical approaches, as well as with the scrutiny of well-established assessment methods. The first four papers address the aspects of speech motor control in the developmental stage. Another six papers focus on speech motor disorders in adults.

The study by Turner et al. is the first to report long-term speech, language, and academic outcomes in an adolescent with childhood apraxia of speech. Observations from a period of almost 12 years give insights into the

clinical course of childhood apraxia of speech and provide hypotheses on developmental interactions with other domains of communication.

Against the background of a comprehensive review of the literature, Terband et al. propose a psycholinguistic framework for a process-oriented approach to the diagnosis and treatment planning of developmental speech disorders.

Pennington and Hustad investigate the construct validity of the Viking Speech Scale, a subjective rating scale for the evaluation of intelligibility in cerebral palsied children. For this purpose, the authors relate Viking Speech Scale results obtained from 79 affected children to quantitative measures of intelligibility for single words and connected speech.

Diepeveen et al. present a standardized computer-implemented protocol for maximum repetition rate assessment in children. Derived from an exceptionally large sample of more than 1,500 typically developing Dutch speaking children between 2 and 7 years, the authors provide norm data and formulate recommendations as to the tasks' use and applicability.

Based on data from 38 speakers with Parkinson's disease and 38 age- and gender-matched control speakers, Karlsson and Hartelius evaluate the predictive accuracy of acoustically quantified articulatory diadochokinetic task performance on speaker group membership (Parkinson's disease vs. healthy control) and on articulatory precision as measured in a speech task.

Ziegler et al. scrutinize the diagnostic validity of well-established maximum performance paradigms. In a study

with 130 patients with neurologic movement disorders, the authors examine whether maximum phonation time and maximum syllable repetition rate are sensitive to the presence of dysarthria. In a further study with 16 healthy volunteers, they investigate intraspeaker variability in maximum performance tasks relative to speech.

The study by Alharbi et al. examines acoustically determined changes of harmonic structure and voice quality in sustained /a/-vowels in nine speakers with hypokinetic dysarthria due to Parkinson's disease before and after Lee Silverman Voice Treatment (LSVT®). Furthermore, the authors report on correlations between those measures and overall vocal intensity.

By applying automated speech recognition (ASR) technology, Jacks et al. transfer current technical advances into the assessment of motor speech disorders. The authors investigate whether and to what extent ASR technology is able to predict human transcription scores for 10 patients with speech sound impairments following stroke and discuss whether ASR technology might serve as a proxy for human listeners.

In a listening experiment including speech data from 8 individuals with dysarthria, Fletcher et al. assess the value of listener reaction time as an objective measurement

of the processing effort listeners need to employ when faced with dysarthric speech. The authors discuss the significance of reaction time measures as an adjunct to the perceptual assessment of motor speech disorders.

The study by Schölderle et al. investigates the impact of overall severity and of specific symptoms of dysarthria on laypersons' attitudes towards adult speakers with cerebral palsy. As a paradigm, they use a listening experiment in which speech samples of 18 individuals with dysarthria and 6 control speakers are presented to 20 listeners previously unfamiliar with dysarthric speech.

We are sincerely grateful to the authors who shared their valuable work and ideas in this special edition on speech motor disorders and we very much hope that the contributions will be interesting, informative, and inspiring to the readers of *Folia Phoniatrica et Logopaedica*.

It only remains for us to thank the Editor of the journal, Michael Robb, for the opportunity to guest-edit this issue and to express our gratitude to the many experts who willingly accepted to review the submitted manuscripts and who provided us with insightful comments and suggestions.

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