Craniofacial morphology as a clinical implication for intelligibility-based speech therapy in adults with Down Syndrome

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Reason for Research
This review seeks to identify literature pertaining to poor speech intelligibility as a component of communication deficits in adults with Down Syndrome. The purpose of the review is to identify craniofacial morphology as a clinical implication for intelligibility-based speech therapy, and to identify literature pertaining to the positive outcomes of this therapeutic aspect.

Introduction
Down Syndrome (DS) is the most frequent genetic cause of mild to moderate intellectual and developmental disabilities (Coppens-Hofman, Maassen, van Schoorstein Lantman-de Valk, & Snik, 2012). It is associated with anatomical and physiological differences that may affect speech intelligibility by disrupting speech movements (Bunton & Leddy, 2011). Many individuals with Down Syndrome experience communication breakdown due to poor speech intelligibility as it is crucial for effective communication (Terband, Coppens-Hofman, Refeltrath, & Maassen, 2018).

Methods
Nine peer-reviewed articles were identified and located using SUNY Plattsburgh’s Feinberg Library Database and Google Scholar. The keywords used included Down Syndrome, intellectual disabilities, adults, speech intelligibility, and speech therapy.

Down Syndrome and Communication
• The development of communication skills has not been investigated in-depth in adults with Down Syndrome due to the notion that they reach a plateau in language-learning by adolescence (Terband et al., 2018).
• The communicative interventions that exist until adolescence mainly focus on the improvement of expressive and receptive language skills rather than speech intelligibility (Terband et al., 2018).
• It is also believed that speech and language difficulties in this population will persist throughout adulthood if unresolved through early intervention (Terband et al., 2018).
• Adults with DS may benefit from therapeutic interventions that focus on speech production (Coppens-Hofman et al., 2016).
• The development of assessments and interventions to improve speech intelligibility is imperative for these adults and effective speech therapy may improve their quality of life (Coppens-Hofman et al., 2016; Terband et al., 2018).

Discussion
These data support the significance of focusing on speech intelligibility-based intervention in adults with Down Syndrome as well as the need for further research regarding this treatment method.

Clinical Implications
• It is determined that speech therapy treatments that improve speech intelligibility facilitate clinically meaningful improvements in communication effectiveness and spoken language (Bunton et al., 2007).
• Examination of the individual differences in structure and speech characteristics in individuals with Down Syndrome is needed in order to provide individualized clinical intervention programs (Bunton et al., 2007).
• Intelligibility in individuals with Down Syndrome facilitates their participation in society; moreover, the denial of speech therapy services due to low cognition is a violation of their fundamental human rights as stated in Article 19 under the Universal Declaration of Human Rights (Rvachew & Folden, 2018).

Figure 2: Photograph: (Sur, Thompson, & Cornfoot, 2010)
Labels: (Roberts, Price, & Milliken, 2007)
Not pictured: large, protruding tongue (Roberts et al., 2007)