Challenging conventional diagnoses using Electropalatography (EPG): a case of velar fronting

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This paper investigates a 9 year old boy who was referred by a community speech and language therapist to a specialist speech clinic with a diagnosis of persistent velar fronting. The referrer reported that whilst the child was able to produce velars correctly at the word level no carry over beyond this level was possible. At phrase and sentence level the child was not considered to have a contrastive velar stop. All other speech and language skills were considered within normal limits.

Simultaneous EPG and acoustic recordings of a detailed word list containing alveolar and velar stop targets plus eight repetitions of the minimal pairs 'cop' 'top', 'cap' 'tap' presented in a random order were collected. Preliminary analysis of the EPG data revealed increased variability of velar productions, inconsistent fronting, and distorted spatial patterns. Perceptual analysis was frequently at variance with the more objective EPG data. The results of a wider perceptual experiment are currently being analysed and will be presented. Quantifiable EPG measures will also be presented: a centre of gravity measure that detects whether the speaker produces a significant difference between /t/ and /k/ targets and a variability index to quantify stability of productions.

Following three 45-minute EPG treatment sessions using a portable training unit (PTU) to provide visual feedback, perceptual analysis suggested the speech difficulties had resolved. Accurate productions of velar articulations were confirmed through on-line visual inspection of the PTU. Measured changes in the accuracy and stability of linguapalatal contacts were confirmed post therapy through EPG recording and analysis of the same data set as pre-therapy.

This case highlights the need for a more detailed data set than is afforded by commonly used assessment procedures in the clinical setting and supports Kirk and Vigeland (2015) view that error patterns tend to be under-represented across tests. It also highlights the need for more objective assessment measures which inform differential diagnosis in children with persistent speech errors which have not responded to conventional therapy. The short intervention period reported compared to previous input received emphasizes the cost effectiveness of

instrumental techniques that have often been considered too expensive. Finally, a number of factors are felt to have contributed to the success of intervention in this case, specifically age, self awareness and motivation.

KIRK, C. and VIGELAND, L., 2015. Content coverage of single-word tests used to assess common phonological error patterns. *Language, Speech and Hearing Services*. January, vol. 46 (1), pp. 14-29.