

The origins and outcomes of persisting speech impairment

Problems making and using the sounds of speech in conversation is the most common reason for referral to speech and language therapy. Children may have difficulties with this aspect of their development for a variety of reasons – for example hearing impairment, cleft palate or cerebral palsy.

However the majority of children with speech sound difficulties have no observable cause to explain their problems. In such cases, children may have limited articulation skills and ability to make the precise movements needed for speech at the rate which is needed for conversation. Alternatively, they may have a phonological impairment where the child is able to make the full range of speech sounds but does not have an intact system for organising their speech sounds at a cognitive level. As a consequence, certain sounds are substituted by others or omitted altogether.

Given that this is a broad group of children, we need to understand more about the risk factors associated with them in order to identify those children who may develop problems with their speech. We also need to understand the features which characterise these children as a group in order to target their needs effectively in the home and school environments. Finally, we need to know more about the outcomes for this particular group of children in order to plan effectively for them.

This [Medical Research Council](#) funded project used data from the ALSPAC ([Avon Longitudinal Study of Parents and Children](#)) to consider these issues. Recordings of children's speech were made when the children were 8 years old which were analysed to identify which children had persisting difficulties with their speech. We then compared this group to those children with typically developing speech to identify differences in their early development, their progress in school and their later skills in speaking and confidence.

Additional funding was provided by [North Bristol NHS Trust](#) small grants scheme to look at sub-typing within this group. The aim of this study was to use information from ALSPAC to identify patterns of speech production in sub types of children at age 8. Statistical analysis of the data showed that children could be broadly grouped into those showing mild articulation errors which are unlikely to impact on long term outcomes; children with a greater range of speech difficulties which may or may not affect their intelligibility but which is associated with poor life outcomes (SDiff group) and the rest of the cohort.

Speech samples from the SDiff group and a control sample from the rest of the cohort were compared on a number of measures of speech in three different speech

conditions: single word production in which children were asked to name pictures; connected speech production in which children were asked to describe pictures or explain actions; and non-word repetition in which children were asked to repeat twelve nonsense words containing three, four or five syllables.

Comparison between the SDiff group and the controls showed that they differed in the number of substitutions and distortions of speech sounds produced in single word tasks, the number of vowels and stress patterns produced correctly and the number of sounds omitted and percentage of vowels correct in connected speech samples in the connected speech and non-word repetition samples.

Secondary analysis split the SDiff group into two subtypes based on severity: those with greater difficulty (>-1.2 standard deviations behind the controls) and those with more mild features. These two groups were compared with the group showing mild articulation errors and the controls on demographic and speech measures. This showed that the two SDiff subtypes were more alike than the mild articulation group and the controls in terms of gender, socio-economic status, non-verbal IQ and non-word repetition. The mild articulation group and the SDiff subtype with greater difficulty were more similar on rapid movements for speech however.

Funders:

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Publications:

Roulstone, S., Miller, L.L., Wren, Y. & Peters, T.J. 2009. The natural history of speech impairment of 8-year-old children in the Avon Longitudinal Study of Parents and Children: Error rates at 2 and 5 years. *International Journal of Speech-Language Pathology* 11(5), 381-391. DOI: <http://dx.doi.org/10.1080/17549500903125111>

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