

Study to Evaluate the Efficacy of The Listening Program®

for Improvement of Auditory Skills and Speech

for Children With Down Syndrome

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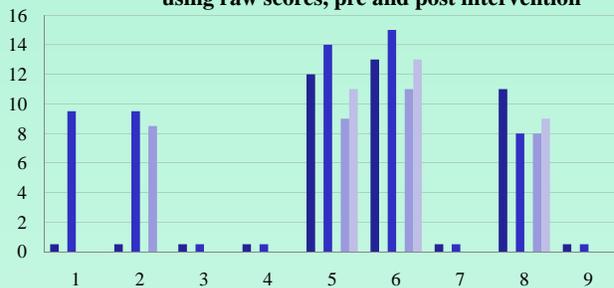
It is well documented that children with Down Syndrome have difficulty with auditory processing and language development. This pilot study was undertaken to trial tests and questionnaires for suitability for use with such children, and to see if any benefit could be established from the use of The Listening Program®: as a prelude to a more formal study.

Since the children are educated in a variety of settings; main stream, special school and part time in both, the testing took place on a Saturday and the children were drawn from the Down Support Group, Nottingham, UK. Nine children between the ages of 5 and 12 years took part, acting as their own controls. Where possible the program was implemented in school, but where this was not possible it was undertaken by parents in the home setting. The Listening Program® (TLP) from Advanced Brain Technologies was used with Sennheiser 555 Headphones. The children listened to the acoustically modified music, through headphones, for two fifteen minute sessions, five days a week, over a ten week period.

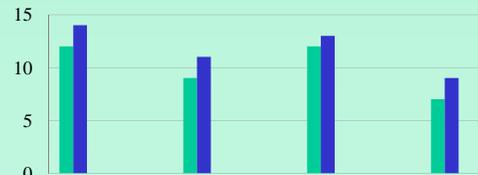
Testing took place pre and post intervention. A battery of tests recommended by specialists in speech and language were carried out pre and post intervention. They included The Mispronunciation Test from Maggie Vance, Sheffield University, where children have to identify whether words are the same or different with and without background noise. Also used were The Rhythm Test where children have to tap out a copy of a rhythm sequence heard, from Dilys Treharne, Sheffield University, Celf Receptive & Expressive Language, Naglieri Non Verbal Cognitive Ability, Renfrew Word Finding and Digit Span. A questionnaire was completed by parents and teachers, if involved, at the end of intervention.

Most of the standardised tests used were not found to be successful for use with these children for reliable pre or post testing. The questionnaires from teachers showed a very positive improvement in clarity of speech and active listening, highlighting the discrimination of sounds in words, particularly at the ends (auditory closure) and the use of a greater number of words and connectives. Parental questionnaires showed particular improvements in communication and attention skills. The Mispronunciation Test from Maggie Vance was beyond the comprehension of many of the children but those able to attempt it showed improvements in the ability to discriminate sounds in words and some were able to attempt the test after intervention, where previously this was not the case which, is of significance in itself.

Chart To show progress on Mispronunciation test, using raw scores, pre and post intervention



Scores Child 5, Mispronunciation Test, Pre and post intervention



Parental survey responses (out of 9)

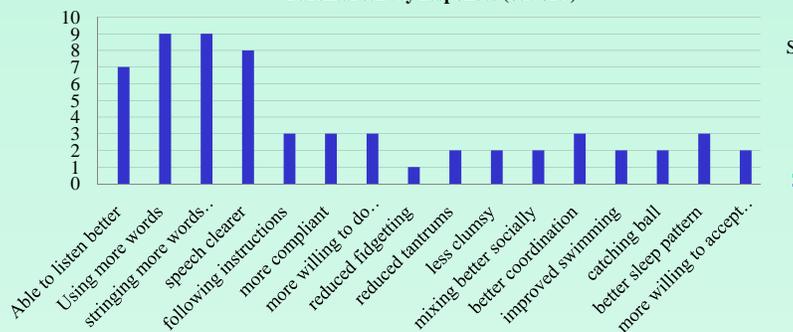
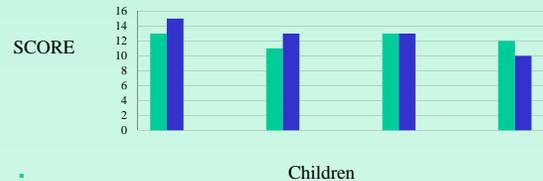


Chart to show progress child 6 pre & post intervention mispronunciation Tests



In conclusion :

The children in the study have shown improvements from the use of TLP. They have clearer speech, more extensive vocabulary and are using greater utterances (more words which are strung together better.) In the school setting the child's improved auditory discrimination gave rise to a greater attention span, with resulting improved communication with their peers and the school staff. At home parents and relatives are better able to understand their children, which reduces the frustration which can be felt by all parties.

The results mirror those found in research studies using The Listening Program® with typically developing children. The recommended duration for TLP is typically two back to back ten week cycles, or a total of fifty hours of listening, and we would expect continued progress if the full program had been carried out.

Our study also highlighted the fact that more appropriate tests need to be developed for children with Down Syndrome. We would recommend that a larger and more formal study be carried out by interested parties.