

Hillside Health Center Ongoing Study 2006

Data Collected by Harry Armytage (Clinic Director Maxwell Fravall D.O.)

The following summary pertains to data collected at Hillside Health Center in Australia, (the accompanying Excel worksheet, minus client identification, is available on request). These data are part of an ongoing study involving pre- and post-measurements on Hillside Health Center clients undergoing DLS listening programs. Pre-testing was typically at assessment – one to six months before treatment, while post testing was 10-12 weeks after the completion of each program – the delay is designed to capture lasting changes in performance. **The following summary covers 4 aspects of auditory performance affected by the DLS programs: visual/auditory processing speed, selectivity, auditory digit span, and right-ear dominance.**

Processing Speed Thresholds – audio and visual (orange column on data worksheet)

Meditech's BrainBoy* device measures auditory and visual processing speed thresholds and compares scores against a same-age norm, based on over 500 clients.

Data from 32 Hillside clients who were tested with BrainBoy twice: once prior to their DLS program and once after. Performance thresholds were measured for both auditory-and-visual processing speed and auditory-only processing speed.

Results: Following treatment, the sample average change was a **108% improvement for both auditory and visual processing**. The change in **audio processing was an 78% improvement**.

Note: The students did not use BrainBoy as part of their treatment; and were only given the tests twice. The time between the 2 tests ranged from 3 to 8 months.

Selectivity Test – one's ability to discriminate between sounds of different frequencies

(pink column on data worksheet)

Selectivity (phonetic differentiation) is a precursor to the sound/symbol relationship, and is necessary to break the code for reading/spelling. This test is performed with an audiometer, and measures the ability to identify closely-spaced tones at various frequency levels (pitch).

Results: Data taken from pre- and post-testing of 41 Hillside clients compares their scores against the norm for their age. **The average change following the DLS program was an 81% improvement.**

Auditory Digit Span – short-term memory (green column on data worksheet)

Auditory Digit Span measures one's short-term memory ability. **Memory practice is not part of the DLS program, and so it is particularly interesting to see change in this area.**

Results: Data from 33 Hillside clients were taken pre- and post-DLS therapy, and measured against age norms. The 3 tests were given twice, once before starting DLS and once after. The time between tests ranged from 3 to 8 months.

In the Number of Digits Scored vs. Ideal Test, the average change was an improvement of 22%.

In the Auditory Digit Span Reverse Test, the average change was an improvement of 17%.

In the Auditory Digit Span Forward Test, the average change was an improvement of 7%.

Cochlear (otoacoustic emissions) Test – measuring right-ear dominance

(tan-colored columns on data worksheet marked "r dom pre" and "r dom post")

In 95% of the human population the speech center of the brain is in the left hemisphere. Studies (Singer 2004) have shown that right-ear dominant kids have significant advantages in the classroom, including faster processing and better comprehension. One of the core components of the DLS program is to strengthen the right ear listening capability.

Results: Pre and post data from 44 Hillside clients showed that the average number of frequencies heard with right ear dominance **increased by 17%** following completion of the DLS program.