

What is Central Auditory Processing Disorder (CAPD)?

- “Deficits in the neural processing of auditory information in the Central Auditory Nervous System not due to higher order language or cognition, as demonstrated by poor performance in one or more of the skills listed below:” (ASHA, 2005)
 - **Auditory Discrimination**
 - **Temporal Processing**
 - Auditory pattern recognition
 - Temporal aspects of audition, including:
 - Temporal integration;
 - Temporal resolution (e.g., temporal gap detection);
 - Temporal ordering; and
 - Temporal masking.
 - **Binaural Processing**
 - Sound localization and lateralization
 - Auditory performance with competing or degraded acoustic signals (including dichotic listening)

Academic Performance

- Children born preterm perform poorer academically, despite normal scores on full-scale IQ evaluations (Gomot, M., 2007)
- As listening conditions become more difficult, the student risks excessive auditory fatigue and reduced listening comprehension
- Overwhelming amount of verbal information flooding the system, adversely affects comprehension skills (Ferre, J., 2014)
- Inability to synthesize and attach meaning quickly and efficiently to incoming verbal information, at risk for secondary issues in receptive and expressive language (Ferre, J., 2014)
- Difficulty in reading, phonological, and spelling skills, direction following, note-taking, sequencing, auditory attention, working memory, and problem-solving (Ferre, J., 2014)
- Communication problems can include difficulty understanding sarcasm, recognizing word meaning that may vary depending upon stress, and recognizing and using nonverbal pragmatic language cues (Ferre, J., 2014)

Case Study

- 9-year-old male seen at the Mailman Center for Auditory Processing evaluation.
- 25 weeks gestation, <800g birth weight, prolonged Neonatal Intensive Care Unit stay.
- Previous diagnosis of Autism Spectrum Disorder and speech delay
- Our test results revealed:
 - Normal hearing bilaterally
 - Presence of Central Auditory Processing Disorder for degraded speech
- Parents were proactive about early intervention services with his previous diagnoses, and saw a great amount of improvement in their child’s development
- Because of previous success with early intervention, parents agreed to our clinic’s recommendations for academic accommodations for CAPD.

Conclusions

- There is a need for Audiologists and other specialists to follow children born preterm, as they are at a greater risk for CAPD and other sensory processing disorders
- Early identification of CAPD can help in the timely development of service plans for achieving academic and social success
- Early therapeutic and support services can change a child’s developmental path and improve outcomes for children, families, and communities

Auditory Processing Trends in Children Born Preterm

- Preterm infants who spent time in an intensive care unit were more likely to develop atypical sensory processing patterns, with visual/auditory sensitivity ranking the second highest effected sensory category (Crozier, 2016)
- Auditory discrimination and language and learning difficulties are often seen
- Temporal auditory processing (ordering and resolution) performance can be impaired
- Higher than average rates of cognitive difficulties that prevent conventional schooling
- Perform worse on sequential memory tests for verbal and non-verbal sounds, the recognition of phrases with ipsilateral competitive message test and on the speech in white noise test
- CAPD can often coexist with other disorders (e.g. attention deficit hyperactivity disorder, language impairment and (verbal and non-verbal) learning disability), which all impact a child’s ability to perform academic tasks conventionally (ASHA, 2005)

Early Consequences of Poor Academic Performance

- Difficulties in learning can lead to low self-esteem
- Self-esteem and perceived ability to perform a task are necessary for students to take risks in learning, and for them to bounce back after failure or difficulty. Without these skills, children may withdraw from learning (American Psychological Association, 2020)
- Poor academic performance can lead to social isolation and bullying, both of which have negative emotional and social impacts (American Psychological Association, 2020)

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