

EDUCATIONAL AUDIOLOGY: METHODOLOGY FOR AUDITORY PROCESSING DISORDERS

Erwin Baas

Royal Dutch Kentalis, Department of audiology, Eindhoven, The Netherlands

Corresponding author: Erwin Baas, Royal Dutch Kentalis, Department of audiology, Eindhoven, The Netherlands, e-mail: e.baas@kentalis.nl

Abstract

Auditory Processing Disorders (APD) are difficult to define and diagnose, due to correlations and co-morbidities with other disorders. Children with APD need and deserve an adequate diagnosis, since that will open ways for effective remediation.

In this presentation the definition of APD and its correlations will be presented and discussed. Based on that the screening and diagnosis of APD will be presented, with an attempt to unravel the muddle of co-morbidity. The major need of educational practice, after a diagnosed APD, is how to translate this diagnosis into effective remediation. Evidence-based methods for diagnosis and treatment of APD will be summarized and discussed. Remediation is often categorized in direct training, compensation strategies and adjustment of the environment. This categorization will be discussed and reported effects of remediation for APD will be reviewed: what is the effect in practice on educational performance of children with APD?

Background

In the context of Educational Audiology, Auditory Processing Disorder (APD) is an interesting phenomenon: it is a problem experienced in the daily situation of e.g. the classroom, but it is not so easy to measure in the test booth. Educational Audiology is typically about 'what you experience with your hearing and other abilities in all day life'. Firstly, it correlates the results of auditory tests with the development of the child in a multidisciplinary approach: how does the child have support from own compensatory skills and how can the environment be tuned towards optimal auditory, communicative, social and educational development of the child. As a consequence it secondly monitors the development of the child and if it hampers, it will search for an diagnosis and adjust the remediation program.

In this second step, APD can be the result of the diagnostics. Initially, the child is referred to the clinic with listening and comprehension problems that fit to children with a hearing loss or speech and language learning problems. But in the test booth, hearing, speech and language skills and other basic educational skills like cognition and attention are on average. The child with 'pure' APD has just only difficulties with more complex auditory tasks. This is also the way ASHA [1] has defined APD: (Central) Auditory Processing Disorder refers to difficulties in the perceptual processing of auditory information in the CNS as demonstrated by poor performance in one or more of auditory skills (a list of skills is mentioned on the ASHA site). Next behavioral characteristics for APD are listed that are mentioned above as reasons for referral to the clinic.

Materials and methods

This current study uses literature to apply the ICF-CY model to demonstrate the use of educational audiology

in considering APD and review the evidence for diagnosis and treatment of APD.

Results

The complex diagnosis of APD can be clarified with the model for International Classification of Functioning, Disability and Health for Children and Youth (ICF-CY) [2]. In case of APD, there is an assumed underlying dysfunction of a body structure: certain brain structures that are used for processing auditory input. This causes problems with auditory performance in a test for auditory processing. But this may be quite different from auditory performance in the participation in e.g. school activities, since that auditory performance also depends on environmental factors (e.g. acoustics) and personal factors like comorbidity of other problems or compensatory skills. The ICF-CY model also takes into account that a child is developing and APD is often considered as a developmental disorder[3]. Only with a complete picture in terms of the ICF-CY, a diagnosis like APD with a fitting remediation plan can be formulated.

In practice, screening for APD can be done in the classroom with questionnaires with the purpose to raise awareness for auditory processing problems. Testing for APD requires a multidisciplinary team to check hearing, speech and language skills and other basic educational skills like cognition and attention since there may be overlapping or comorbid disorders. This team can only formulate a remediation plan if it knows the child well with its options for use of compensatory skills and adjustment of the environment. Since it concerns a child in development, this plan cannot be static but requires regular revision.

Up to now, the evidence basis for diagnosis and remediation of APD is limited. Dawes and Bishop concluded in their review [4]: "APD, as currently diagnosed, is not a

coherent category, but that rather than abandoning the construct, we need to develop improved methods for assessment and diagnosis, with a focus on interdisciplinary evaluation". This supports once more the need for a multidisciplinary approach in testing and remediation for APD.

Remediation of APD is complex and still lacks sufficient evidence. It is often categorized in direct training, compensation strategies and adjustment of the environment.

Direct training has recently been reviewed by McArthur [5]. He found only a few studies with proper control groups and concluded that training can treat children's auditory processing disorders. However no generalization effects could be found on reading and language skills.

For general remediation and training compensatory strategies, Witton [3] stated that it doesn't show simple cause-effect relations and requires multi-professional approach. But, although evidence is still lacking, there is a strong theoretical basis for the multidisciplinary approach in remediation since APD is a complex, associated with other developmental disorders.

References:

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Discussion

The bottom line of this article is Auditory Processing Disorders are difficult to define and diagnose, due to correlations and co-morbidities with other disorders. Children with APD need and deserve an adequate diagnosis, since that will open ways for effective remediation. This remediation is an ongoing process that should monitor the effect in practice on educational performance, communicative functioning and social emotional well being of children.