

The music of language: the relationships between prosody and syntax in a group of children with Developmental Dyslexia

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Rationale

There are several hypotheses for the origin of dyslexia but many researchers now converge on the idea that several causes and factors (sometimes mutually related, sometimes only co-occurring) concur to the emergence of reading disorders (multi-factor models) (Pennington, 2006). Among these factors, deficits in auditory processing of incoming stimuli deserve special attention because their influence is exerted at very early stages of language development (starting from Tallal, 1980 onward, Ramus & Szenkovits, 2008 etc.).

Methods

32 children (17 typically developing (TD) age in months $M=145,8$ $SD=10,9$, 15 children with developmental dyslexia (DD) age in months $M=148,4$ $SD=12,6$) Italian native speakers took part in the experiment. They had to listen to a recorded sentence and choose between three pictures (target response, alternative interpretation and a distractor). Each sentence had an ambiguous syntactic structure which was disambiguated through prosody.

Results

The results (accuracy) were separately analysed according to Response (target, alternative or distracter) considering: a) the Type of linguistic structure, b) the Distance in the syntactic dependences and the Grammatical Functions Assignment (GFA), comparing the two Groups (dyslexics vs TD). A multivariate ANOVA showed significant main effects of Type, Distance and GFA for Target responses; of Type and Distance for Alternative responses; of Type and GFA for Distracter responses; moreover, a significant interaction of Group with Type for Distracter responses; of Group with GFA for Target responses. So, there were no differences in response accuracy of the two groups but, interestingly, there were different response patterns for the different types of sentences. Considering the complexity of the syntactic structure, sentences with long dependences and those which required a reassignment of the grammatical functions of the phrases (eg.: 1. La giovane fotografa la pianta/ 1a. The young girl photographs the plant vs. 2b. The young photographer plants it) seemed to be harder to process for both groups. Moreover, an effect emerged even in DP/object clitic sentences (eg. sent. 1): despite of the prosody's hint DD children tended to choose distracter images much more than alternative structures; this could be interpreted as a general difficulty by DD children to process this kind of sentences.