

Disfluency Characteristics of Children With ADHD



Hyun Kyung, Lee¹, Hyun Sub, Sim¹, Eun Ju, Lee²

¹ Ewha Womans University, Seoul, Korea ² Dankook University, Gyeonggi-do, Korea

¹hyperacidity@hanmail.net

Introduction

- **Definition of ADHD(American Psychiatric Association, 1994)**
- A neurobehavioral developmental disorder, characterized by a persistent pattern of impulsiveness and inattention, with or without a component of hyperactivity.
- **Speech and Language Characteristics of Children with ADHD**
- Several studies reported that a substantial number of children with ADHD have speech and language problems such as receptive language, expressive language, story telling, organizing and monitoring their story telling, mastering pragmatics and reading(e.g., Bental & Tirosh, 2007; Tirosh & Cohen, 1998; Barkley, 1997; Purvis & Tannock, 1997; Kim & Kaiser, 2000).
- They are likely to have problems with fluency(Kim & Kaiser, 2000; Im & Hwang, 2009).
- **Prevalence of children who stutter with ADHD(Healey & Reid, 2003).**
- It ranged from 4% (Arndt & Healey, 2001) to 26%. (Riley & Riley, 2000).

Research Question

To investigate the characteristics of speech disfluency in both children with ADHD and age-matched control group, the current study addressed the following research questions.

- **Q1:** Are there significant differences in the frequency of total disfluency, normal disfluency and abnormal disfluency between two groups ?
- **Q2:** Are there significant differences in the frequency of total disfluency, normal disfluency and abnormal disfluency among the types of the tasks(reading, story retelling, and picture description)?
- **Q3:** Are there significant differences between the groups as a function of the type of the task in the frequency of total disfluency, normal disfluency and abnormal disfluency?

Methods

1. Participants: 15 children with ADHD and 15 age-matched control group

- ADHD: age (mean=8.0, SD=0.8),
- Control group : age (mean=7.9, SD=0.9i),
- None of the participants were reported to have history of language, neurological, or psychiatric disorder.

2. Procedures

Three tasks were administered to elicit spontaneous utterances: 1) reading when two different narrative texts were presented, 2) story retelling when six sequential pictures were presented after they read a text, 3) picture description when a picture was presented.

3. Data Analysis

All of speech samples for each task were transcribed from the videotape and analyzed based on the three different categories of disfluency: 1) normal disfluency, 2) abnormal disfluency, and 3) total disfluency.

Results(Con'd)

2. Three separate 2-way mixed ANOVAs (group x task)

1) DV1: The frequency of total disfluency

- Significant main effects for the group and the task ($p < .000$)
- Two-way interaction was not significant
- Post-hoc analysis with Bonferroni correction was performed ($p < .05$)

Table 1. Pair-wise comparison with Bonferroni correction

Task	Reading	Story retelling	Picture description
Reading	-		
Story retelling	.479	-	
Picture description	.018*	.519	-

* Statistically significant difference at the .05 level of significance.

2) DV2: The frequency of normal disfluency

- Significant main effects for the group and the task ($p < .000$)
- Two-way interaction was not significant

3) DV3: The frequency of abnormal disfluency

- Significant main effects for the group and the task ($p < .000$)
- Two-way interaction between the task type and group was significant ($p < .005$)
- Post-hoc analysis with Bonferroni correction was performed ($p < .005$, $p < .000$)

Table 2. Pair-wise comparison with Bonferroni correction

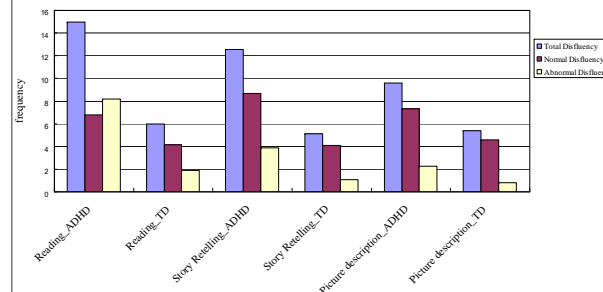
Task	Reading	Story retelling	Picture description
Reading	-		
Story retelling	.002**	-	
Picture description	.000***	.311	-

** Statistically significant difference at the .005 level of significance.

*** Statistically significant difference at the .000 level of significance.

Results

1. Frequency means of total, normal and abnormal disfluency for each task



Discussion

❖ Characteristics of disfluency in children with ADHD

- Children with ADHD produced more frequencies of total, normal and abnormal disfluency than the control group.
- The reading task generated greater difficulties than other two tasks in the frequency of total and abnormal disfluency.
- Furthermore, the greatest group differences were observed in the reading task compared to the other two tasks, indicating that children with ADHD had more difficulties in reading than the control group, resulting in generating the higher frequency of abnormal disfluency.
- These findings provided the evidence regarding the specific task type which might differentially tax cognitive capacity in children with ADHD.

Selected References

1. Arndt, J. & Healey, E. C. (2001). Concomitant disorders in school-age children who stutter. *Language, Speech, Hearing Services in Schools*, 32, 68-78.
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4. Healey, E. C. & Reid, R.(2003). ADHD and stuttering: A tutorial. *Journal of Fluency Disorders*, 2, 79-94.