



Writing Analysis in Children with Hearing Impairments: An Exploratory Study

Joanne Odiase, Anthony D. Koutsoftas, and Deborah Welling
Seton Hall University



Introduction

• Language includes four modalities: speaking, listening, reading and writing. Although distinct, the modalities are categorized according to similar linguistic function. Therefore, the language modalities can be categorized by how language is understood or expressed in both spoken and written forms.



• The writing model (Hayes & Flower, 1980; 1981) has three major components—the task environment, the writer's long-term memory, and the writing processes, monitored by executive function processes. The writing process, the focus of the current study, includes: planning, translating, and revising.

• When compared to normal hearing peers, children with hearing impairments produce shorter stories, with less complex syntax and word choice, and poorer grammatical and spelling accuracy (Geers & Hayes, 2011; Rose et al., 2004).

The Current Study

• In this study, we compared how children with hearing impairments performed on a series of measures of writing across two genres, narrative and expository. Furthermore, children were recruited from either a Total Communication (TC) or an Aural/Oral (A/O) classroom allowing for comparison of writing across sub-groups of children with hearing impairments.

• The specific **research questions** were:

- 1) Do children with hearing impairment differ on measures of writing between narrative and expository genres?
- 2) Do children differ by group (TC, A/O) on measures of narrative and expository writing?
- 3) Are measures of writing related to measures of socioeconomic status, language, and reading?

Sample

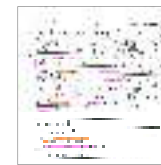
N = 15	A/O (n = 7)	TC (n = 8)
Age in Years	10.85 (1.43)	11.42 (1.80)
Female : Male	2 : 5	3 : 5
Mother's years of Education	13.50 (3.15)	12.43 (2.44)
Peabody Picture Vocabulary Test <small>Fourth Edition (Dunn & Dunn, 2007)</small>		
Standard Score*	91.14 (27.43)	64.13 (15.00)
Test of Silent Reading Efficiency and Comprehension <small>(Wagner, Torgesen, Rashotte, & Pearson, 2010)</small>		
Index Score	85.71 (20.33)	72.50 (13.37)

* $p < .05$

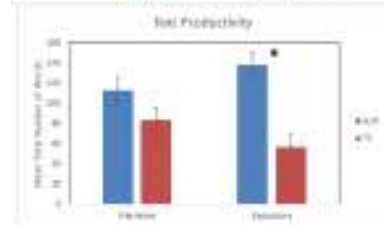
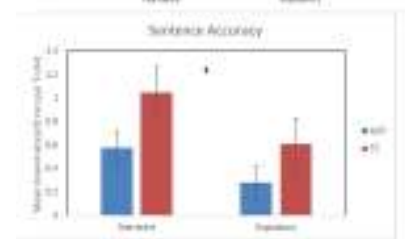
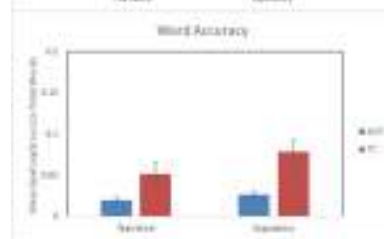
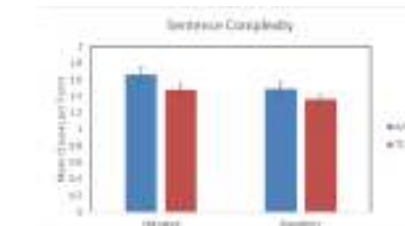
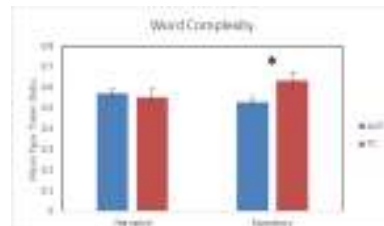
Procedures

• Children produced a narrative and expository writing sample on two separate days with a 10 minute time limit. Sentences frames (Berninger & Fuller, 1992) by genre prompted children's writing.

• The first author analyzed writing samples by segmenting them into T-units, counting clauses, counting the total number of words, and coding grammatical and spelling errors.



Results



	Mother's Ed	PPVT-IV	TOSREC
Narr-TNW	.27	.23	.21
Narr-TTR	.64*	.59*	.68*
Narr-C/Tunit	.43	.19	.08
Narr-SpellAcc	-.28	-.31	-.25
Narr-GramAcc	-.84**	-.70**	-.83**

* $p < .05$; ** $p < .01$

Discussion

• This exploratory study compared writing across genres and by groups of children with hearing impairments. Findings provide descriptive insight into how children with hearing impairments' deficits in the listening modality affect expression in the written modality.

• Differences by genre were not observed; however, a main effect for measures by program and differences in measures in the expository genre by group provide insight into the writing ability of children in this sample.

• A significant difference was observed in the expository genre for text production between A/O and TC group. The A/O group's longer text production may be a result of using more words when communicating as compared to TC group suggesting more familiarity with writing in the expository genre.

• Although not significant, both A/O and TC produced more grammatical errors in narrative genre than the expository genre consistent with prior research (Geers & Hayes, 2011; Rose et al. 2004). This may be due to the increased text production observed in the narrative genre. Hence, longer writing samples increases the possibility of committing more grammatical errors.

• For the TC group, almost 100% of written sentences were agrammatical with far fewer spelling errors; both findings are likely a result of using manual forms of communication including fingerspelling.

• Combined these findings indicate that writing is a major difficulty for children with hearing impairments the ramifications of which are ever-increasing due to academic and school demands.

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- Correspondence about this project should be directed to anthony.koutsoftas@shu.edu

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