



Language and Speech Analyses of a Retell Task in Normal Young Adults

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Introduction

• Fluency in language production is valuable for individuals of all ages to meet their communication goals; this applies to both social and vocational domains (Nippold et al. 2017). Undoubtedly, most of the research related to language and speech fluency focuses on early childhood and school-age individuals, as well as the elderly (Yairi & Seery 2015; Kemper et al., 2011). An increasing number of studies have addressed the issue of language fluency in adolescents and young adults (Nippold et al. 2014; Verhoeven et al., 2002) while studies documenting speech fluency in the young adult population is limited (Bloodstein & Ratner, 2008).

• Exploring the relationship between language and speech fluency from a life span perspective is supported by: a) research that demonstrates an increase in syntactic and semantic complexity with age as well as a change in these capacities in the elderly population; and, b) change in the nature and frequency of speech disfluencies across the lifespan. It is likely that these two factors are related and might aid in predicting the overall impact on one's communication abilities (or disabilities).

• The rationale for the current study is: a) paucity of research on language and speech production capacities for typical young adults, particularly ones that evaluate both components of fluency in the same population, b) need for this data to evaluate undergraduate college student's readiness for higher education language tasks, and c) the need for language and speech fluency data in young adults to inform diagnostic processes (e.g., specific language impairment, learning disability, TBI, ADHD).

• The purpose of this study was to explore and relate speech and language measures obtained from a retell task in college freshman. The retell task is ecologically valid and affords the necessary data for speech fluency and linguistic analyses. Further, there is evidence for individual differences in language and speech fluency coupled with variations in one's cognitive ability. The specific research question was:

Are there relationships between measures of speech fluency (repetitions, repairs, filled pauses) and language fluency (productivity, complexity, fluency)?

Ho1: A particularly stronger correlation between language fluency and between-word fluency measures.

Ho2: The patterns of fluency in speech and language will be related.

Sample

N = 107	M (SD)
Age in Years	18.36 (0.59)
Female : Male	73 : 34
<u>Clinical Evaluation of Language Fundamentals (CELF-4)</u> <small>Fourth Edition (Semel, Wiig, & Secord, 2003)</small>	
Recalling Sentences	10.37 (1.97)
Understanding Spoken Paragraphs	9.58 (2.50)
<u>Peabody Picture Vocabulary Test (PPVT)</u> <small>Fourth Edition (Dunn & Dunn, 2007)</small>	
Standard Score	105.42 (10.21)
<u>Expressive Vocabulary Test (EVT)</u> <small>Second Edition (Williams, 2007)</small>	
Standard Score	107.39 (11.22)

Procedures

• Freshmen in good standing were recruited to participate in the study and completed standardized and experimental tasks:

• Standardized Assessment Battery

- CELF-4 → Recalling Sentences
- CELF-4 → Understanding Spoken Paragraphs
- PPVT-4
- EVT-2

• Experimental Tasks, *after reading expository text*

- Answered 8 Comprehension Questions
- Retell of Scandal

• Recorded samples of Scandal Retells were orthographically transcribed and subjected to both language and speech sample analyses in two separate research labs.

- Language Sample Analyses → Standard Language Measures
- Speech Sample Analyses → Standard Fluency Measures

Counter Balanced Across Participants

Discussion

• This study examined relationships among language and speech measures using a retell task in normal young adults. Retell tasks are ecologically valid for freshman in college as they are expected to read novel text and make meaning from that. Additionally, retelling of a scandal, as was the task in the current study, allows for an interesting topic from which to retell. In general, participants were able to retell the 'gist' of the story, with variability in recall of specific facts.

• Findings from the study contribute normative data on speech and language measures for young adults and indicate that while speech fluency was apparent (no more than 1% syllables stuttered), language disfluency was also apparent (one third of utterances contained mazes and linguistic fillers 'um' 'ah' 'like' occurred in 84% of utterances).

• As expected, significant relationships were observed between speech and language fluency measures. Specifically, the mazes per c-unit were related to speech repetitions and repairs while fillers per c-unit were related to filled pause scores, all were moderate to strong in magnitude. These are overlapping constructs measured in different manners, so the significant relationships were of no surprise.

• Two unexpected small relationships were observed: (i) sentence complexity and speech repairs; (ii) lexical diversity and filled pauses. The more complex the utterance, as measured in clauses per utterance, the more repairs observed, while the lower the lexical diversity measured in TTR the more filled pauses were observed.

• Future directions include a finer grained analysis of the impact of quality of retell and how this is related to the speech and language measures. Additionally, it will be important to examine these constructs across different genres that are important for young adults.

Results

Table 1. Speech Measures

	Measure	Mean (SD)
Repetitions	Syllable Count (SC) Total number of syllables produced; <i>* Used as the denominator for remaining measures</i>	462.97 (238.56)
	Part-Word Repetition (PWR) Phoneme or syllable repetition resulting in an incomplete word	0.001 (0.002)
	Single Syllable Word Repetition (SSWR) Word repetition with no intervening meaningful syllable or word	0.003 (0.005)
Repairs	Multi- Syllabic Word Repetition (MSWR) Word repetition with no intervening meaningful syllable or word	0.000 (0.001)
	Phrase Repetition (PR) One or more words in series is repeated	0.002 (0.002)
	Revisions (R) Change or correction in form or content of spoken expression	0.013 (0.008)
Filled Pauses	Abandoned/Incomplete (AB) Phrases or sentences that did not convey complete thoughts	0.000 (0.001)
	Interjections (I) Extraneous words or phrases that differed from fluent text; must be actual words that do not add to content	0.017 (0.023)
	Fillers (F) These include extraneous sounds that are not part of the speech context	0.035 (0.024)

Table 2. Language Measures

	Measure	Mean (SD)
Productivity	Total C-units (TC) Total number of C-units produced in the sample	25.46 (13.93)
	Total Number of Words (TNW) Total number of words produced in the sample	375.38 (193.87)
Complexity	Type Token Ratio (TTR) Proportion of the number of different words to the TNW	0.45 (0.07)
	Subordination Index (SI) Proportion of clauses to C-units in the sample	1.88 (0.38)
Fluency	Mazes per C-unit (MPC) Proportion of C-units with mazes to the total number of C-units	0.27 (0.16)
	Fillers per C-unit (FPC) Proportion of total number of fillers to the total number of C-units	0.84 (0.55)

Table 3. Correlations among speech measures (along top) and language measures (along left side)

	Repetitions Score	Repairs Score	Filled Pauses Score
Total Number of Words	-0.023	-0.094	0.097
Type Token Ratio	0.015	0.088	-0.228*
Subordination Index	0.013	0.220*	-0.049
Mazes per C-unit	0.541**	0.773**	0.114
Fillers per C-unit	0.009	0.045	0.907**

* p < 0.05; ** p < 0.01

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References

- Bloodstein, O., & Ratner, N. B. (2008). *A Handbook on Stuttering*. Thomas Delmar Learning.
- Dunn, L.M., & Dunn, D.M. (2007). *Peabody Picture Vocabulary Test, Fourth Edition*. San Antonio, TX: Pearson.
- Kemper, S., Hoffman, L., Schmalzried, R., Herman, R., & Kieweg, D. (2011). Tracking talking: Dual task costs of planning and producing speech for young versus older adults. *Neuropsychol Dev Cogn B Aging Neuropsychol Cogn* 18(3) 257-279.
- Nippold, M. A., Cramond, P. M., & Hayward-Mayhew, C. (2014). Spoken language production in adults: Examining age-related differences in syntactic complexity. *Clinical Linguistics & Phonetics*, 28, 195–207.
- Nippold, M.A., Frantz-Kaspar, M.W., & Vigeland, L.M. (2017). Spoken language production in young adults: Examining syntactic complexity. *Journal of Speech Language and Hearing Research*, 60(5), 1339-1347.
- Semel, E., Wiig, E.H., & Secord, W.A. (2003). *Clinical Evaluation of Language Fundamentals, Fourth Edition*. San Antonio, TX: Pearson.
- Verhoeven, L., Aparici, M., Cahana-Amitay, D., van Hell, J., Kriz, S., &Viguie-Simon,A. (2002). Clause packaging in writing and speech: A cross-linguistic developmental analysis. *Written Language and Literacy*, 5, 135–162.
- Williams, K.T. (2007). *Expressive Vocabulary Test, Second Edition*. San Antonio, TX: Pearson.
- Yairi, E., & Seery, C.H. (2015). *Stuttering: Foundations and Clinical Applications (2nd Edition)*. Pearson.