



National Accessible Reading Assessment Projects



Segmented Text Study

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Jamal Abedi, Seth Leon & Jenny Kao



Purpose

- To determine if reducing the length of reading passages by segmenting them would impact performance of student's with disabilities.
- To examine the impact of segmenting on students' non-cognitive domains such as anxiety, fatigue, frustration and motivation.



Background of Study

- From “chunking” to “segmented text”
 - Chunking in past literature deals with working memory capacity, with the hypothesis that reading material chunked into meaningful units facilitates reading comprehension and efficiency.
 - However, chunking in the literature refers to chunking sentences.
 - We use “segmented text” to refer to how passage segments are grouped with their corresponding items on the test page.



Segmented Text

- Segmented text also serves as “built-in” test breaks, possibly reducing the need for accommodation



Participants

- 738 Grade 8 students from ten public schools in California
- 620 non-SD, 117 SD
- Of the 117 SD:
 - 107 specific learning disabilities
 - 2 deaf/hard of hearing
 - 3 autistic
 - 2 speech/language impairment
 - 4 other health impairments



Reading Test

- Three reading comprehension passages were obtained from publicly-released tests from two states.
- Two versions of the test were created: Original (version A) and Segmented (version B)
- Test designed to be completed in one classroom period (approx. 50 min.)



Passages

- All passages were informational (i.e., not fiction or literature).
- First passage was 700 words, other two passages were about 550 words each.
- Each passage had 8 multiple-choice items with 4 possible answer choices (24 total MC items).



Process of Segmenting

- Segments were grouped with corresponding test items
- Each passage was broken down into 3 to 4 segments; each segment contained 1-3 questions
- Inferential questions appeared at the end
- Test items appeared in the same order in both versions



Other Instruments

- Teacher Ratings
- Emotion/Mood Inventory
- Motivation Scale



Teacher Ratings

Asked teachers to rate each of their students.
Corresponds with Calif. (CST) proficiency levels.

In your opinion, how would you rate this student's reading comprehension ability?

- Advanced
- Proficient
- Basic
- Below basic
- Far below basic



Emotion/Mood Inventory

Asked students after each passage:

How does taking the test make you feel? Please circle all the words that describe how you feel. There is no right or wrong answer.

If none of these words describe how you feel, please circle NONE.

good	tired
energetic	upset
bored	confident
frustrated	okay
happy	stressed
blanked out	interested
relaxed	bad
	NONE



Motivation Scale

- Post-test (printed at the end of the test booklets)
- 10-item, 4-point Likert-type, combining “importance” and “effort” questions



Research Questions

- Accessibility
 - Segmented Text and Reliability
 - Segmented Text and Performance
 - Segmented Text and the correlation between teacher ratings, English language arts (ELA) achievement test level and reading performance
- Affective Factors
 - Segmented Text and Motivation
 - Segmented Text and Emotion/Mood Inventory



Segmented Text and Reliability Findings

- The original version of the assessment was more reliable for non-SDs than for SDs.
- This reliability gap decreased on the segmented version (no longer a significant difference).
- This suggests the segmented version may be more accessible for SD students
- **Reliability limits validity, because $r_{xy} < \sqrt{r_{xx}}$ (Allen & Yen, p. 113)**

Groups	Reliability	Validity
SD/Original (n=53)	0.516	.718
SD/Segment (n=62)	0.689	.830
Non-SD/Original (n=312)	0.783	.884
Non-SD/Segment (n=305)	0.788	.888



Segmented Text and Performance

- No significant differences in reading performance of either group due to segmenting

Groups	Mean	<i>SD</i>	n
SD/Original	9.94	3.32	52
SD/ Segment	9.32	4.05	57
Non-SD/ Original	13.89	4.58	301
Non-SD/ Segment	13.88	4.67	292



Motivation Results

Summary of descriptive analyses for the motivation section

No significant differences

Group	Mean	<i>SD</i>	n
Students with disabilities, original	22.21	3.65	53
Students with disabilities, seg.	22.83	3.44	60
Students with disabilities, total	22.54	3.54	113
Non-disabled, original	21.36	5.07	313
Non-disabled, seg	22.16	4.23	296
Non-disabled, total	21.75	4.69	609
Original version, total	21.48	4.89	366
Segmented version, total	22.27	4.12	356
Total	21.87	4.54	722



Conclusions

- Results suggest segmented text may be more accessible to students with disabilities
- Segmenting did not affect performance of non-SD students; therefore, it did not alter the reading construct
- Segmenting did not affect performance of SD students either
- Segmenting improves psychometric characteristics of reading comprehension assessments



Implications for the large scale reading assessments

- The study could help states in identifying factors that affect accessibility of reading assessment
- It provides methodological paradigm for the study of accessibility of reading
- It examined important factors that affects presentation of test items
- Since segmenting passages improves the reliability of reading assessment without altering the construct, states can apply this feature into their assessments.
- This study encourages states and test publishers to look into test characteristics in a more comprehensive way to identify factors affecting accessibility of assessments for all students particularly for students with disabilities.



Contact Information

Jamal Abedi

jabedi@ucdavis.edu