

Improving Reading Comprehension by Fostering Children's Engagement with Books During Summer Vacation: A Cluster-Randomized Trial Comparing Content- and Strategy-Oriented Instruction for Elementary School Children

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Improving Education through Accountability
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Outline

- 1) Motivation: why summer reading
- 2) Definition: comprehension routine
- 3) Interventions / Study Design : strategy v. content-oriented lessons
- 4) Research questions / Results
- 5) Discussion

1) Motivation: Why summer reading

- US public schools
 - Low – income children are at-risk of falling behind in reading comprehension during the summer
- Why does summer loss occur for low-income children?
 - Limited access to a wide variety of books
 - Few books matched to reading level/interests
 - Lack knowledge of comprehension activities that foster reading engagement

Study goals

- We tested two comprehension routines
- Prior research
 - We found teacher-scaffolded routines focused on strategy instruction and fluency (right before summer) and matched books improved comprehension
- Current research
 - Compare to content-oriented lessons

Theory: Construction-instruction

- Kintsch CI model of comprehension
 - Readers construct explicit textbase
 - Integrate textbase with background knowledge to form situation model
- Why focus on content?
 - Teach children to use background knowledge to form a coherent mental representation of text's meaning
 - Activate background knowledge about narrative and expository text structures using before, during, after routine

2) Definition: Teacher-scaffolded ***comprehension routines***

- Comprehension routines (Duke & Pearson, 2011) = “integrated set of practices that could be applied regularly to one text after another, and in the process, provide students with two benefits”
 - (1) better understanding of the texts to which the routines are applied, and
 - (2) the development of processes that will benefit encounters with future text, especially texts that students must negotiate on their own.

(3) Interventions / Study Design: Strategy v. content routines

- (1) Multiple strategy condition:
 - use same comprehension routine with narr/exp text validated in previous study (Kim & White, 2008)

(4) What did you do to better understand this book? (check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> I made connections about this topic. | <input type="checkbox"/> I made predictions about this book. |
| <input type="checkbox"/> I re-read parts of this book. | <input type="checkbox"/> I asked questions about this book. |

- (2) Content condition:
 - use different comprehension routine with narr/exp text

Jeremy Bean
|
things to collect
|
Grandpa's story
|
Ralph the rooster
|
shoes, rocks, sticks
|
no good collection
|
another story
|
a great idea
|
collect stories

Narrative lesson

- Before reading
 - Words listed in the order they appear in text
 - Words are anchored to narrative text structure (main character, setting)
- During reading
 - Teacher reads aloud, stops and asks questions (characters, problems)
- After reading
 - check prediction

Expository lesson

- Gail Gibbons Polar Bears
- Before reading
 - KWL chart: know about topic, want to know, what learned

K (What do I already Know)	W (What I Want to know)	L (What did I Learn)

“W” (what do I want to know)

- During reading: Teacher asks questions using expository text structures
 - Description (where do polar bears live?)
 - Compare and contrast (does a polar bear hibernate like other bears?)
- After reading: Teacher and students answer “W” questions and write down answers in “L” (learned column)

What happens outside school

- Children are prompted to use routines in the summer
 - Receive 10 books in the mail
 - Receive postcards with each book

Narrative text

- Strategy

(4) What did you do to better understand this book? (check all that apply)

- I made connections about this topic.
- I made predictions about this book.
- I re-read parts of this book.
- I asked questions about this book.

- Content (Story impression + postcard)

4. What did you do to better understand this book? (check all that apply)

- ___ I read the list of words and phrases
- ___ I made guesses about the story using the words and phrases
- ___ I checked to see if my guesses were actually in the story
- ___ I thought about which of my guesses were the same or different from the actual story

Expository text

- Strategy

(4) What did you do to better understand this book? (check all that apply)

- I made connections about this topic.
- I made predictions about this book.
- I re-read parts of this book.
- I asked questions about this book.

- Text structure (KWL)

4. What did you do to better understand this book? (check all that apply)

- I wrote down what I already Know about the topic
- I wrote down what I Want to know about the topic
- I wrote down what I Learned about the topic
- I thought about what I Know, what I Want to know, and what I Learned, but I didn't use KWL chart

4) Research questions / Results

- Are there differences between strategy and content condition on
 - 1) Classroom lesson fidelity-adherence
 - 2) Books read / text char.
 - 3) postcard return rates
 - 4) total books read
 - 5) were books “just right” (not too easy, hard)
 - 6) Reading comprehension (ITBS narr. / exp.) in fall and NC EOG 4 in spring

Design: School RCT (n = 19)

19 schools
(Grade 3 teachers and children, 1,000)
randomly assigned to

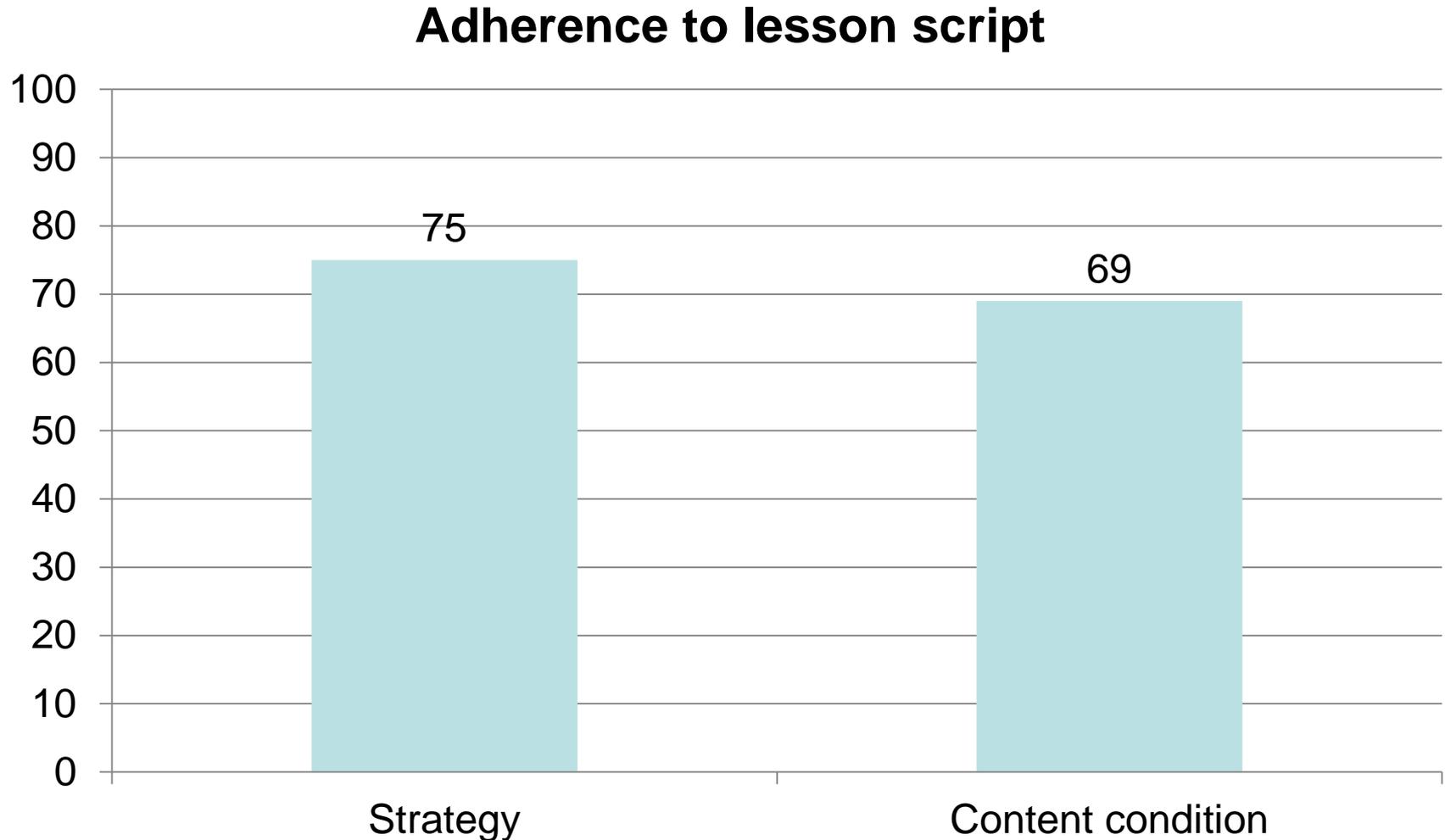
(1) Strategy routines:
8 matched books + 2 lesson books
in the summer

(2) Content routines:
8 matched books, 2 lessons books in
the summer

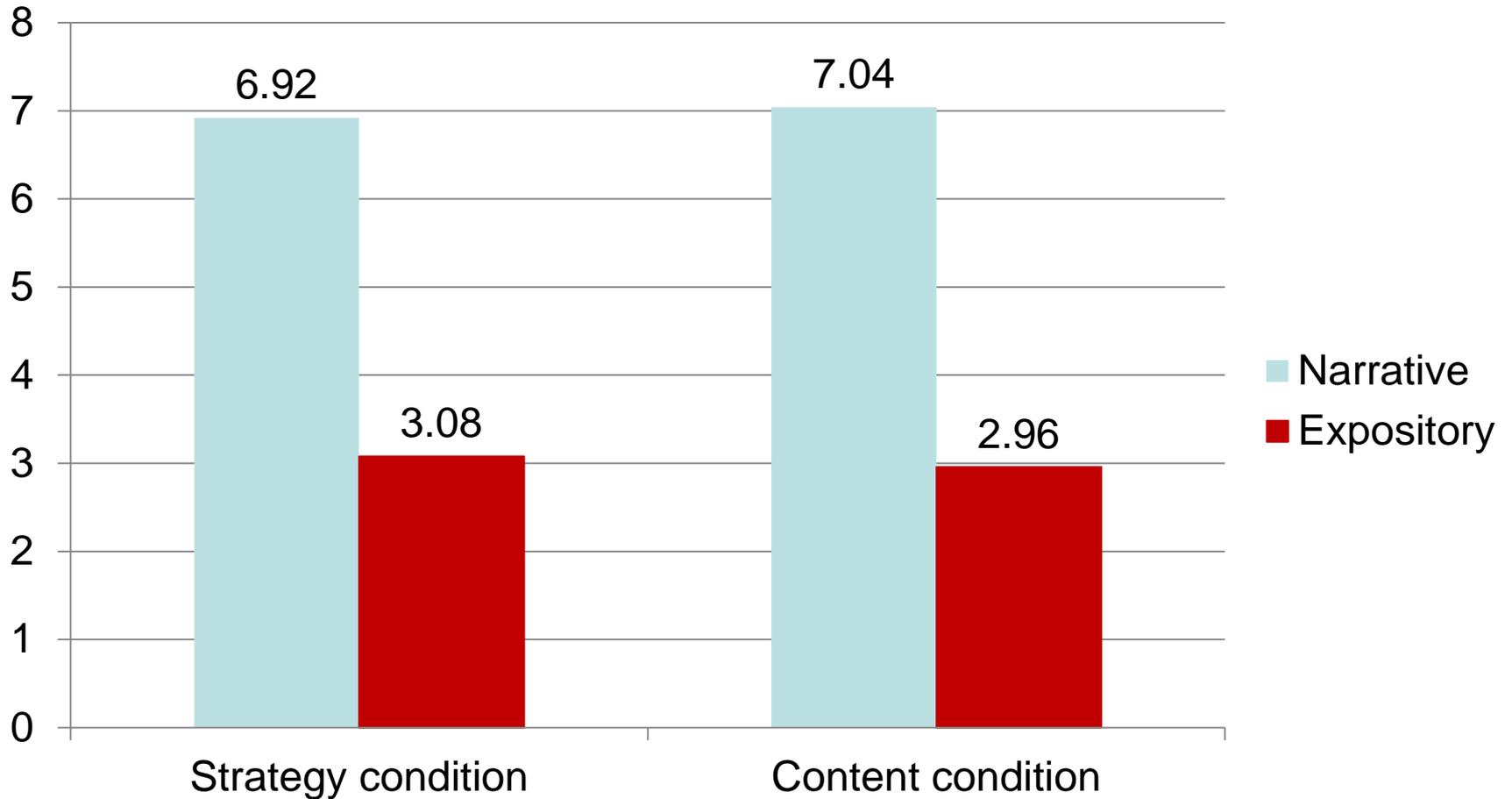
Key Measures

- Spring reading survey: preferences
- Fall reading survey: book specific measure
- Spring and Fall reading comprehension: Iowa Test of Basic Skills (37 item multiple choice)
 - Narrative subtest
 - Expository subtest
 - Alpha reliabilities $> .85$, test-retest $> .70$
- End of Grade (EOG) Reading comprehension, spring grade 4

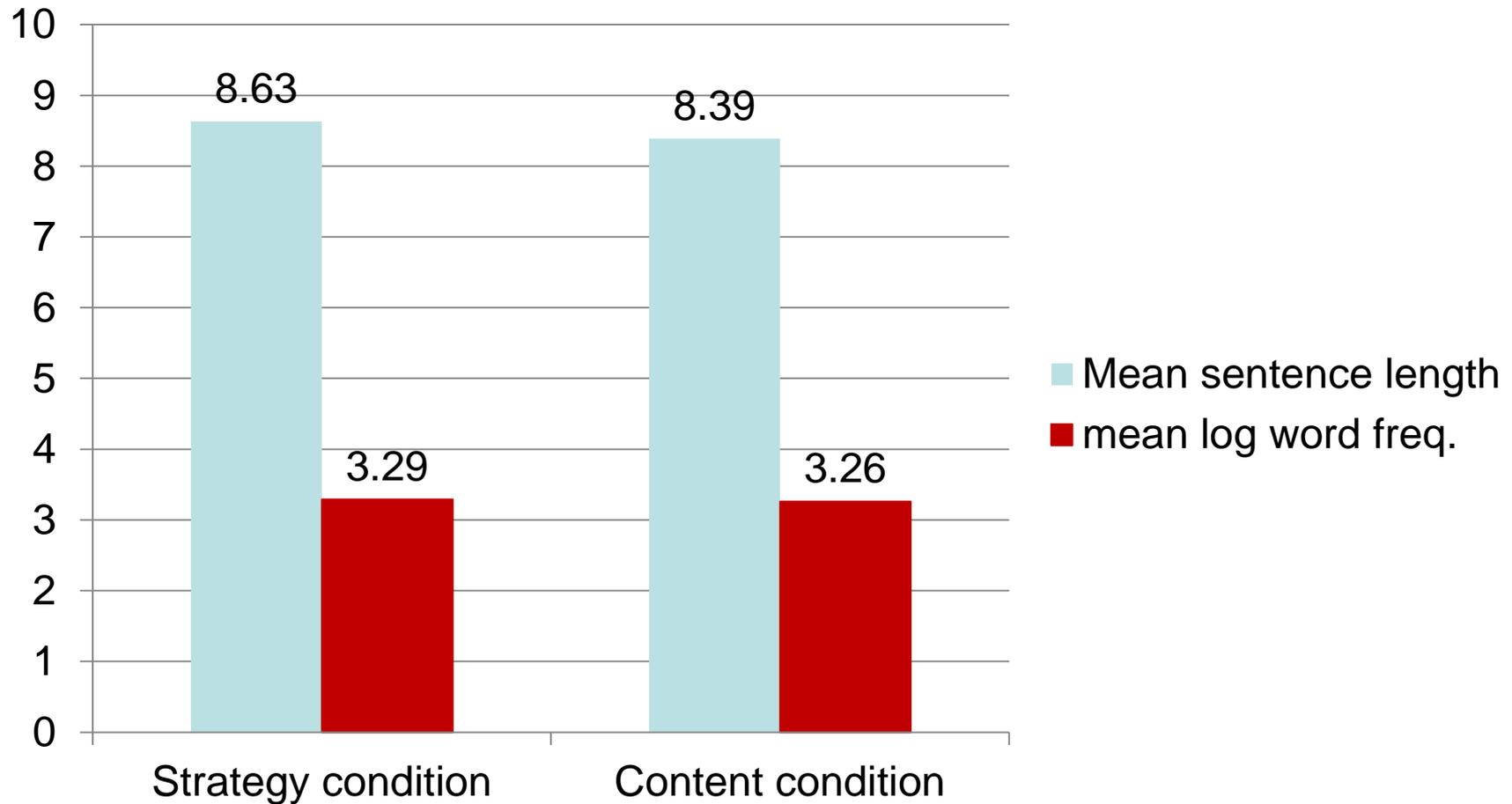
1) Classroom fidelity: coded video of 25+ lesson components (no difference)



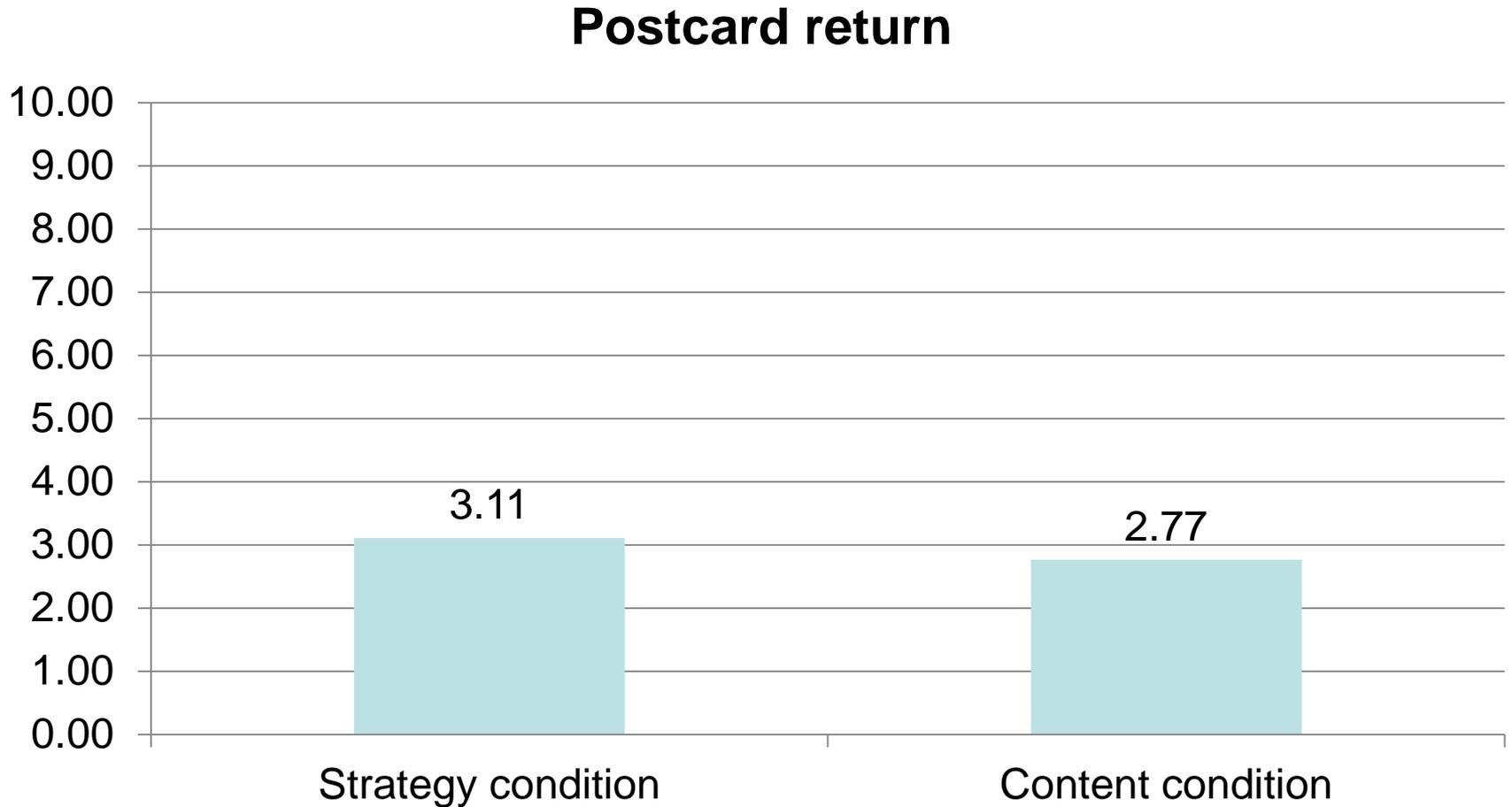
2a) Books: Narrative v. Expository Texts (no difference)



2b) Books: Sentence length, mean log word frequency (no difference)

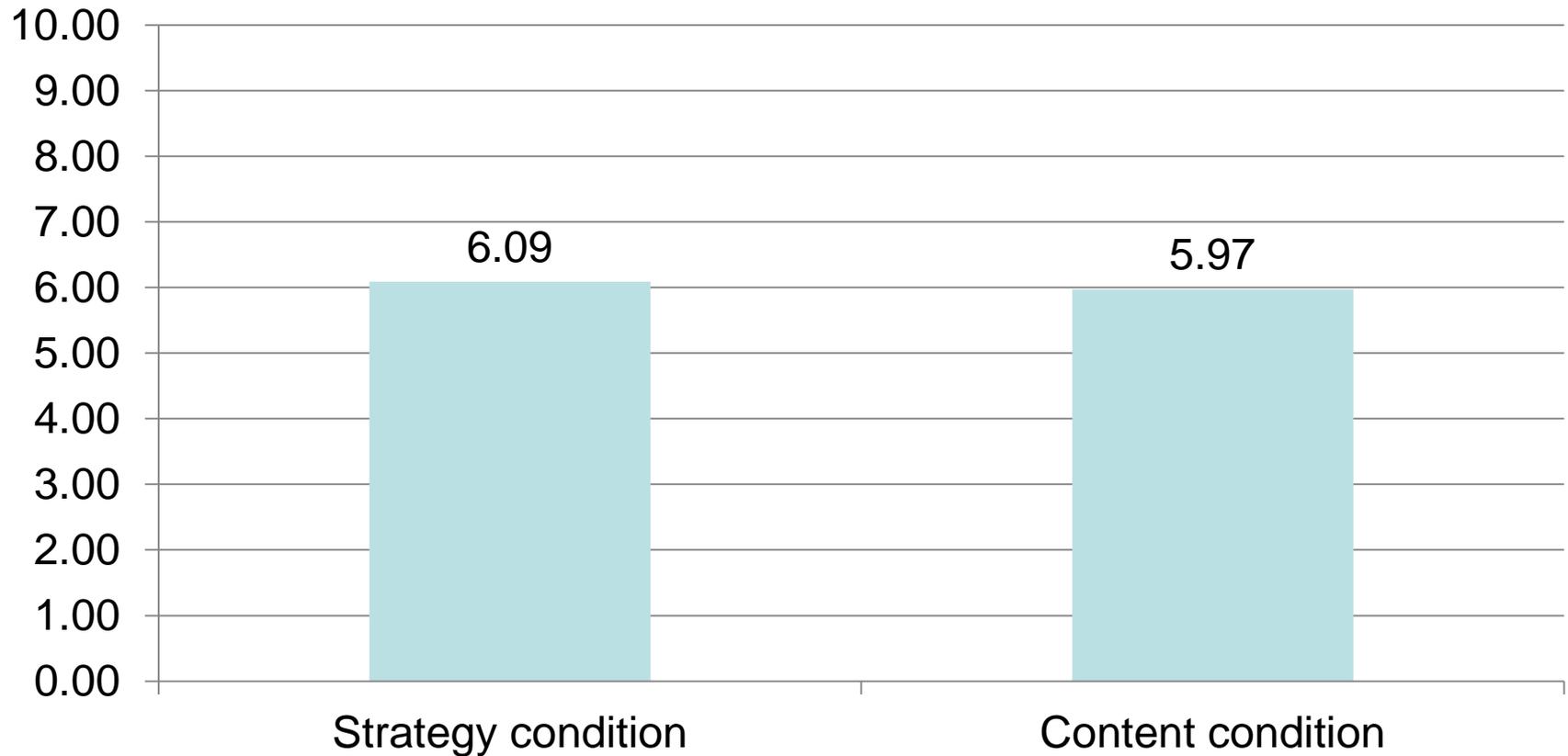


3) Postcards: return rate (no difference)

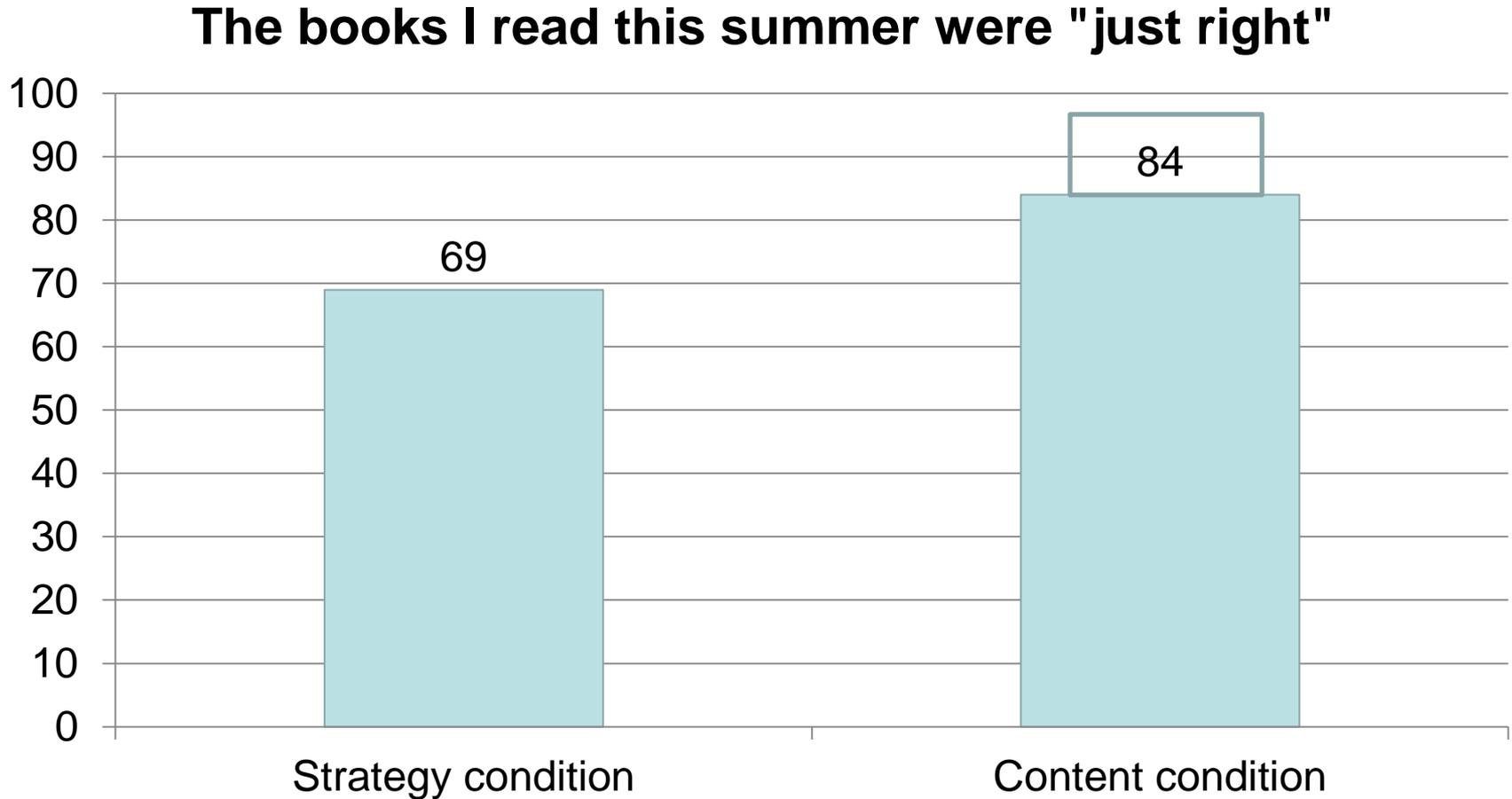


4) Books read (10 mailed books) (no difference)

Books read (fall survey)



5) % of students : “read this summer were just right” (content > strategy)



Impact on comprehension

- Multi-level model with school, class random effects
 - Pretest and % low-income covariates
 - Condition (standardized mean difference)

$$Y_{ijk} = \gamma_{00} + \gamma_{01}(\text{Pretest})_j + \gamma_{02}(\% \text{Low-income})_j + \gamma_{03}(\text{Condition})_j + (\mu_k + \delta_{jk} + \varepsilon_{ijk})$$

Results: Impact on narrative and expository comprehension

	Reading Comprehension			Narrative			Expository		
Fixed Effect	Coefficient	SE	z	Coefficient	SE	z	Coefficient	SE	z
Intercept	0.225	0.126	1.79~	0.199	0.101	1.97*	0.211	0.115	1.84~
ITBS pretest	0.881	0.027	33.09***	0.716	0.025	28.87***	0.629	0.028	22.20***
% low-income	-0.336	0.169	-1.98*	-0.36	0.138	-2.61**	-0.307	0.157	-1.95~
Condition	0.081	0.059	1.37	0.111	0.048	2.29*	0.002	0.055	0.03
Random Effect	Estimate	SE		Estimate	SE		Estimate	SE	
School	0.064	0.052		0.000	0.000		0.000	0.000	
Teacher	0.000	0.000		0.02	0.294		0.058	0.082	
Residual	0.708	0.018		0.671	0.023		0.759	0.019	

~ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Results: Impact on G4 spring NC End of Grade Reading Test

Reading Comprehension

Fixed Effect	Coefficient	SE	z
Intercept	0.08	0.10	0.75
ITBS pretest	0.78	0.02	33.09***
% low-income	-0.24	0.14	-1.72~
Condition	0.10	0.05	1.96*

Random Effect	Estimate	SE
School	0.02	0.15
Teacher	0.07	0.06
Residual	0.61	0.02

~ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

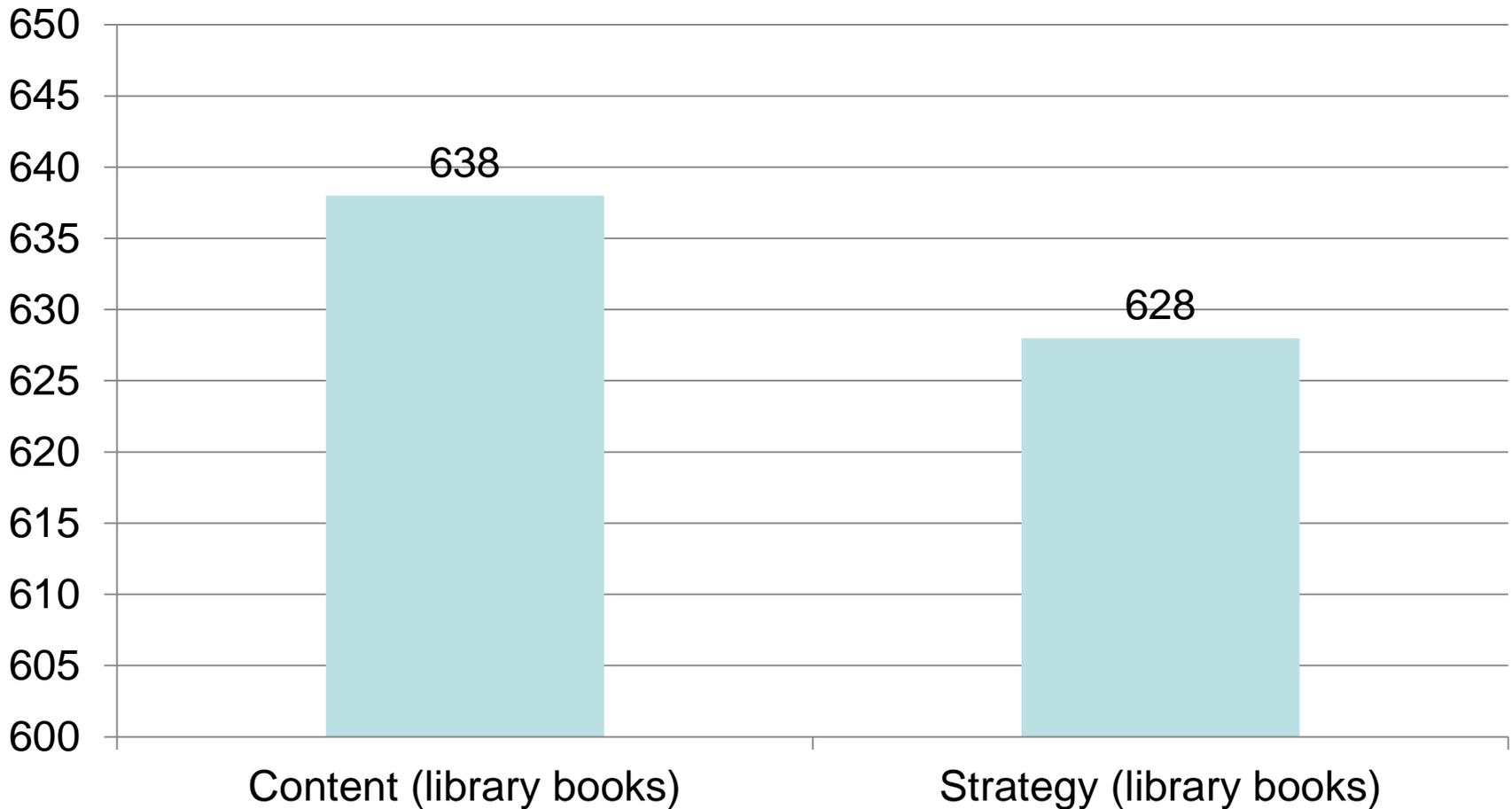
Do children read for leisure during the school year?

- Merged student datafile to library database
- Identified total number of books children checked out of school library from Sept-Dec. 2011
- About 60% of these books were lexiled (Lexile = readability of text based on sentence length and mean log word frequency)

No difference in library books checked out ($d = .06$, $p = .19$)



Difference in lexiles of books - ($d = .24$, $p < .001$) (Note: 620L = G4 midpoint lexile)



5) Discussion

- Content routines improved narrative comprehension short-term, EOG G4 long-term
 - We can rule out other mediating variables that explain posttest differences in comprehension (classroom lesson fidelity, number of narr v. expository, text characteristics, books read)
 - Content lessons/story impression may provide better support for reading during summer (books “just right” although readability of books was the same)

Future research

- No effects on expository comprehension?
 - Quantity of print exposure
 - Quality of KWL lessons
 - Difficulty of lessons (too many structures)
- Reasons why effects are sustained
 - Emerging hypothesis: Do content lessons encourage children to read more challenging books?