



# Global Learning XPRIZE - Impact

Simon King  
Jennifer Pressley  
Amber Gove

# RTI's Responsibility

- RTI's responsibility was only longitudinal measurement and analysis of children's reading, writing and math ability.
- We provided data on learning outcomes to the client, who chose the winner based on a combination of judging criteria selected through a panel of judges.
- Although RTI knew the competitors/treatments (because this information was public), this data was recoded in the data sets and every effort was made to ensure that the principal data analyst, data collectors, and project manager were blind to the treatment group assignments during data collection, analysis and reporting.

# Presenting Learning Outcomes Global Learning XPRIZE

## About the assessment

- An Early Grade Reading Assessment (EGRA) and Early Grade Mathematics Assessment (EGMA) was used.
- This assessment is a measure of reading and numeracy skills designed as a diagnostic of mathematics and reading development.

## About the Data

- The baseline was conducted August 2017 and the endline March 2019.
- A total of 2041 participants from 168 villages were used for the assessment. 30 villages were assigned to control.

## Characteristics the participants used for Analysis

- Age of Participants:

Self Reported Child Age	Less than 9	9 Years	10 years	11 years	Older than 11 years
Percentage of children	8%	39%	29%	22%	3%
- Remoteness from school or city center
- 74% of the children at baseline were reported as never attending school
- 80% of the children at baseline reported as never being read to at home

## About the Analysis for this presentation

- This presentation will show outcomes comparing the control group to the treatment groups combined. As a result, the outcomes presented will 361 control and 1680 treatment observations.

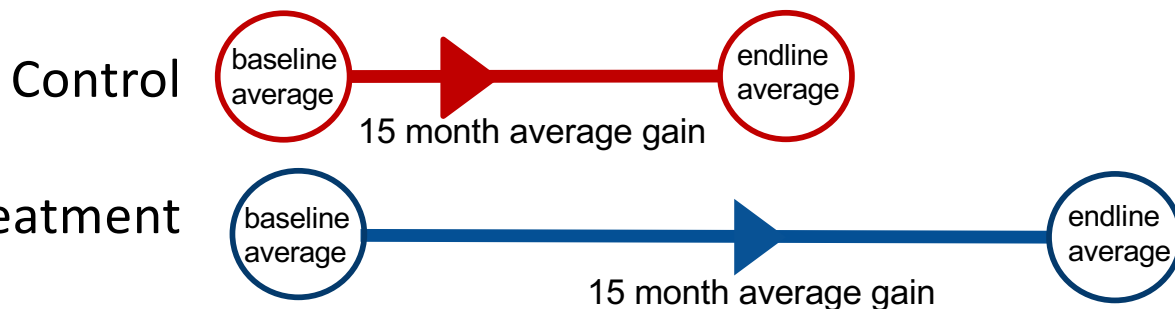
# Early Grade Reading Assessment

## **Subtasks (selected)**

- Correct Syllable Sounds per Minute
- Correct Familiar Words per Minute
- Correct Invented Words per Minute
- Oral Reading Fluency (correct words per minute)
- Reading Comprehension

# How to Interpret the Outcomes

## Average Baseline & Endline Scores



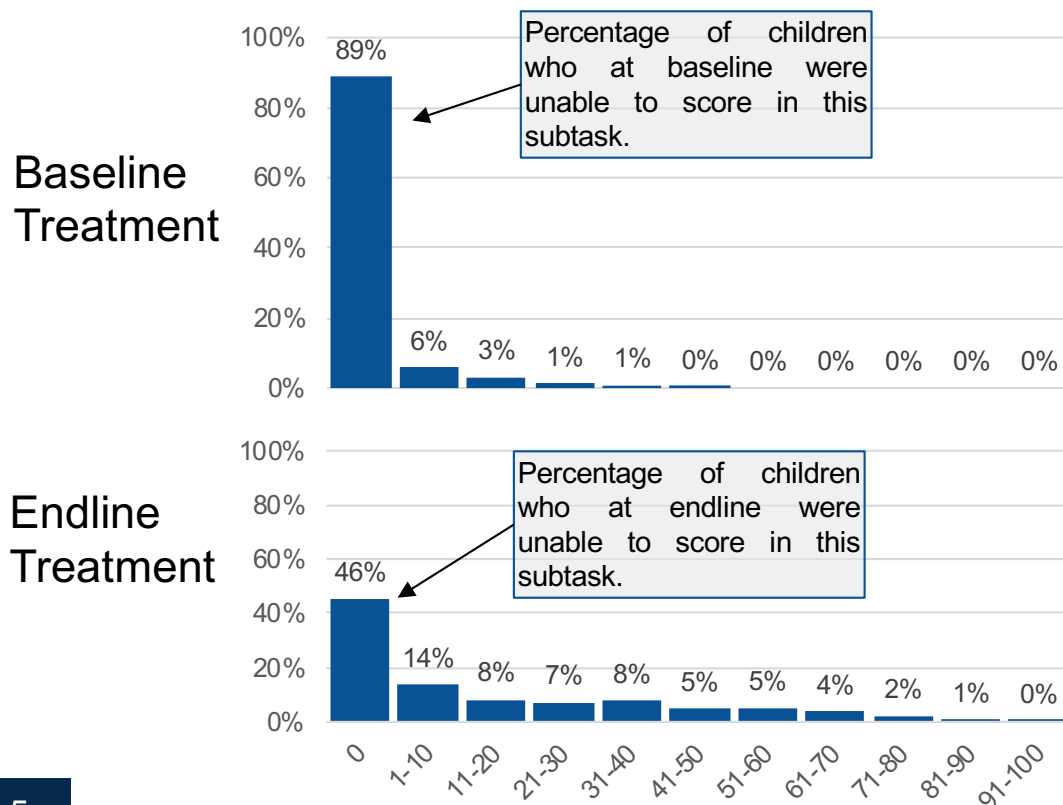
The average gain is the difference between the control and treatment 15 month average gains

### Effect Size Interpretation

Small effect size = 0.2

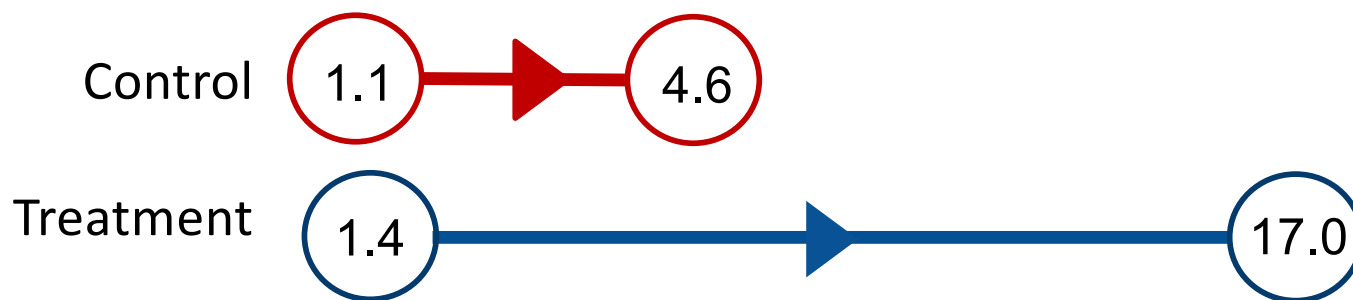
Medium effect size = 0.5

Large effect size = 0.8



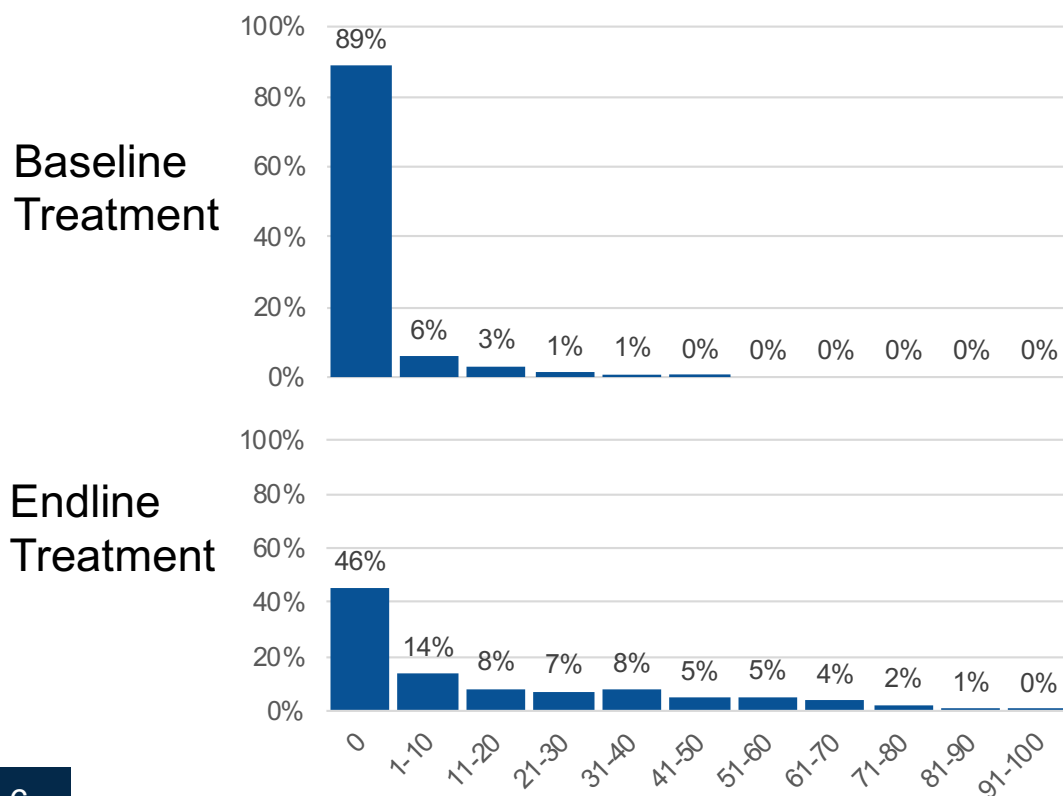
# Correct Syllable Sounds per Minute (csspm)

## Average Baseline & Endline



**Average gain  
+12.6 csspm**

effect size 0.59

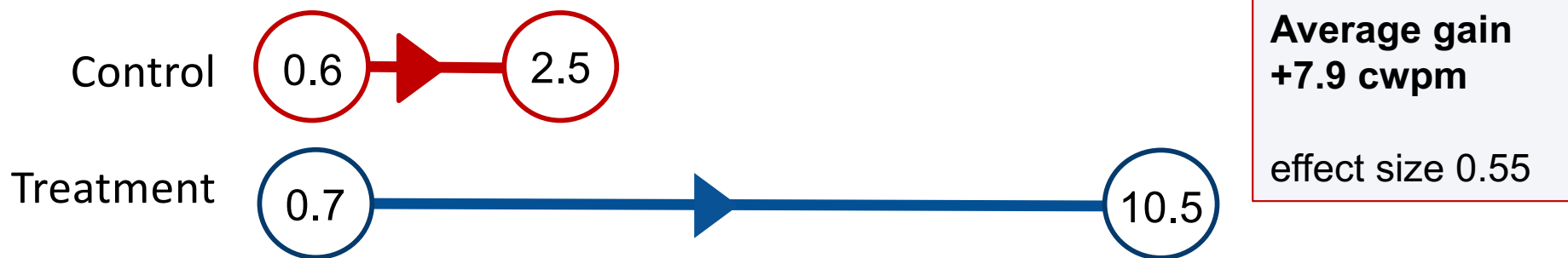


## Sample Stimuli

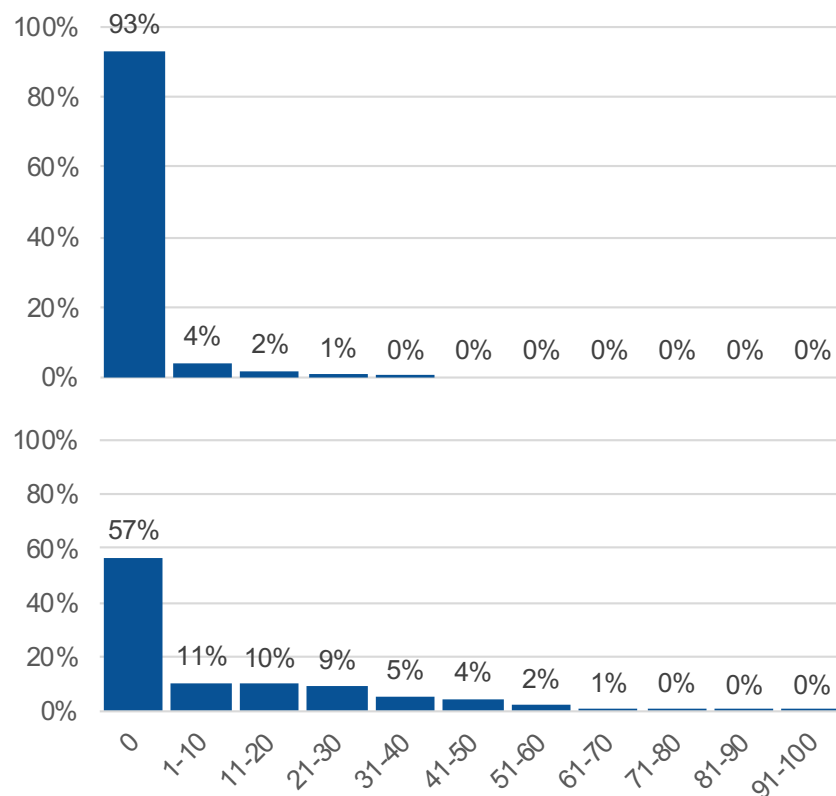
no	kwa	he	ta	ge	lu
bi	ke	so	ji	ya	nywe
mba	nu	wa	fo	sa	hi
te	ro	ni	e	mi	cho
yu	vi	gu	ra	ho	mwa
su	re	go	nzi	ng'o	da

# Correct Familiar Words per Minute (cwpm)

## Average Baseline & Endline



Baseline Treatment



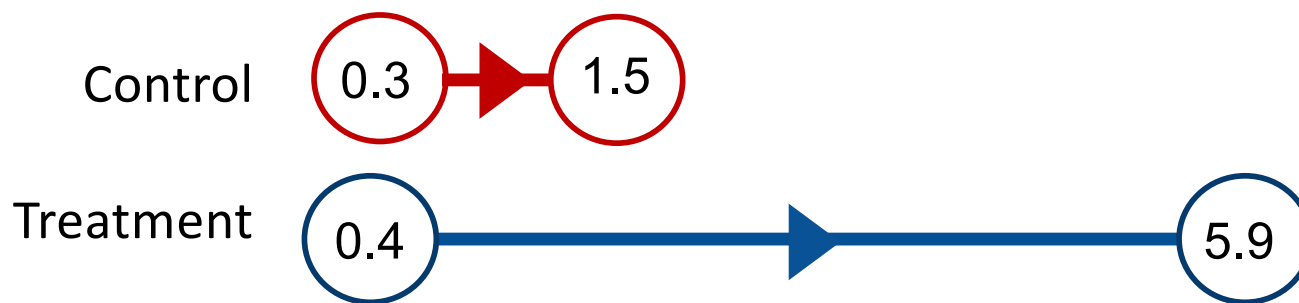
Endline Treatment

## Sample Stimuli

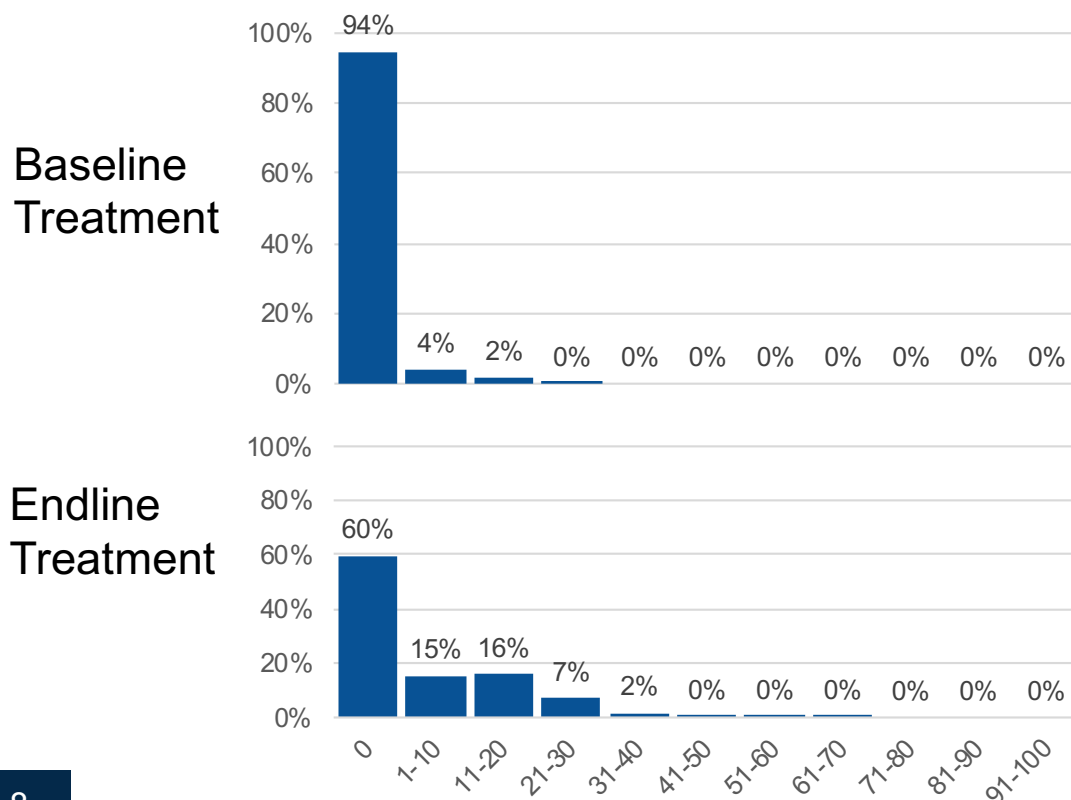
jina	sana	watu
mkubwa	vile	nani
watoto	katika	kitabu
maji	gari	kalamu
mimi	ni	wote

# Correct Invented Words per Minute (cnonwpm)

## Average Baseline & Endline



**Average gain  
+4.4 cnonwpm**  
effect size 0.51



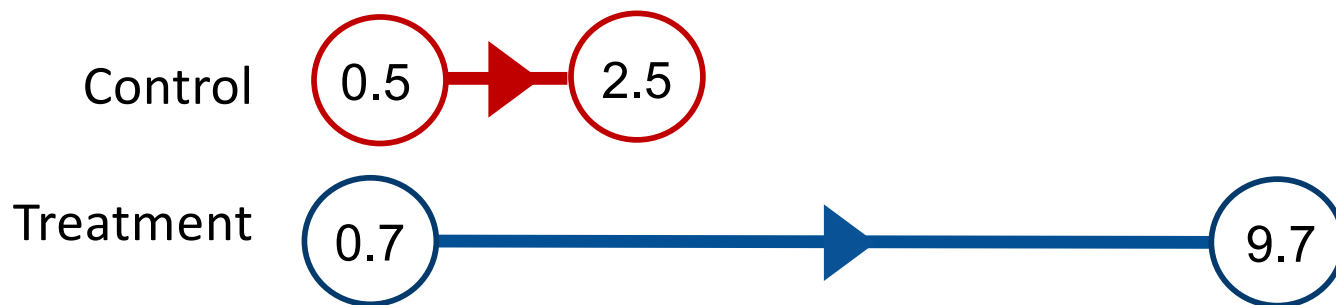
### Sample Stimuli

keya	yuhu	tikaka
sarada	jami	kojima
fumre	naa	shoke
zame	varede	rufishi
nefesi	riga	lihi



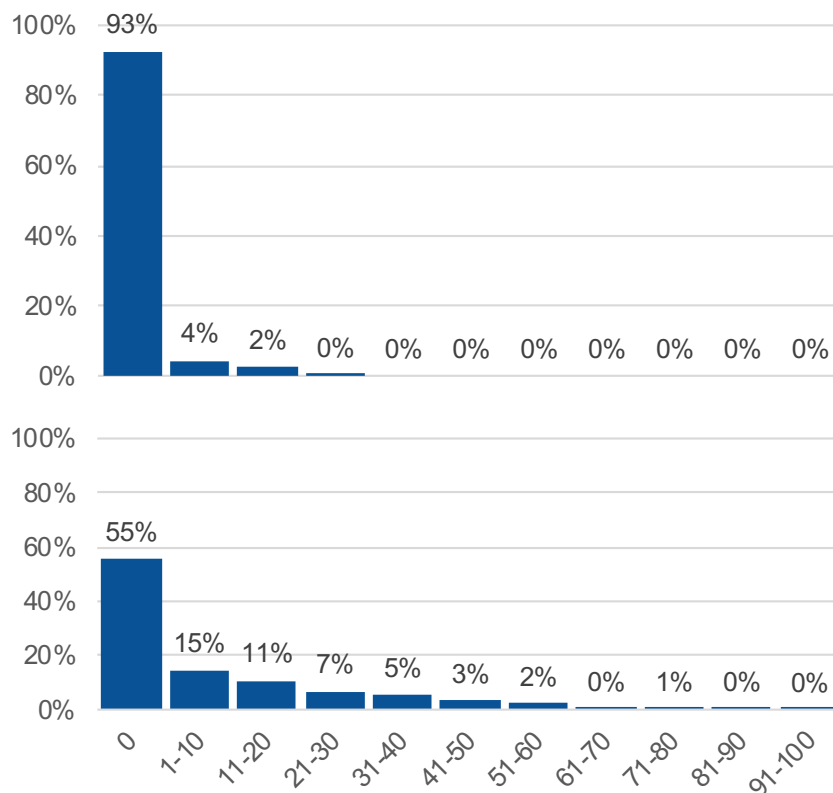
# Oral Reading Fluency, Correct Words per Minute (cwpm)

## Average Baseline & Endline



**Average gain  
+7.0 cwpm**  
effect size 0.50

Baseline  
Treatment



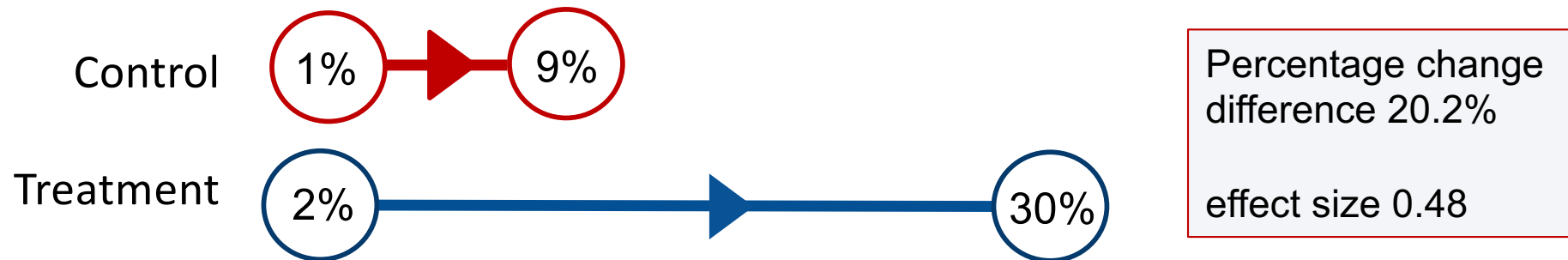
Endline  
Treatment

## Sample Stimuli

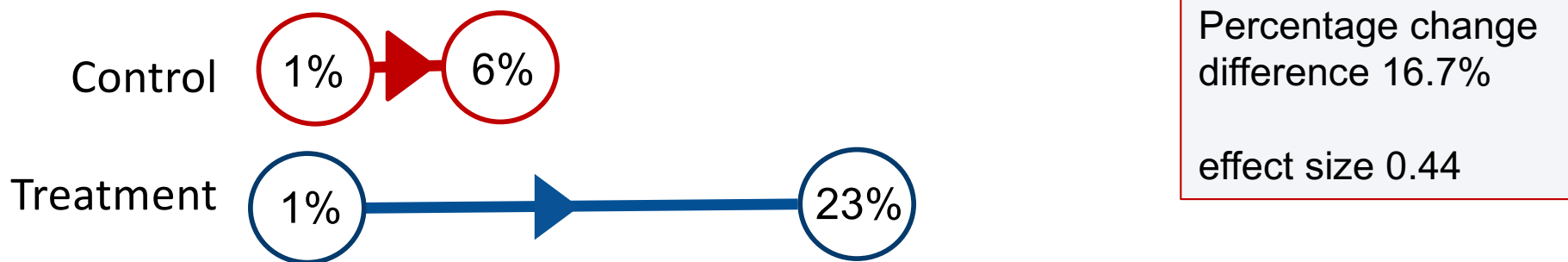
Siku moja Amina alikuwa anakwenda kisimani. Njiani akamuona rafiki yake analia. Rafiki yake alimwambia ndoo yake imevunjika mkono. Amina alijua jinsi ya kutengeneza ule mkono wa ndoo. Alitumia kipande cha kamba kutengeneza mkono wa ndoo. Rafiki yake alifurahi sana na kumshukuru Amina.

# Oral Reading Fluency, Benchmarks

## Percentage of students able to read at least one complete sentence



## Emergent Readers (17+cwpm)



# Oral Reading Fluency, Longitudinal View

## Control

		ENDLINE				Total
		Zero Score	Low Reader	Emerg. Reader	Fluent Reader	
BASELINE	Zero Score	82%	9%	2%	1%	94%
	Low Reader	1%	2%	2%	0%	5%
	Emergent Reader	0%	0%	1%	0%	1%
	Fluent Reader	0%	0%	0%	0%	0%
	<b>Total</b>	<b>83%</b>	<b>12%</b>	<b>5%</b>	<b>1%</b>	<b>100%</b>

## Treatment

		ENDLINE				Total
		Zero Score	Low Reader	Emerg. Reader	Fluent Reader	
BASELINE	Zero Score	55%	21%	14%	2%	93%
	Low Reader	0%	1%	4%	1%	6%
	Emergent Reader	0%	0%	1%	0%	1%
	Fluent Reader	0%	0%	0%	0%	0%
	<b>Total</b>	<b>55%</b>	<b>22%</b>	<b>19%</b>	<b>4%</b>	<b>100%</b>

Percentage of children performing in each reading category at baseline

- Zero Score - child scored zero correct words per minute (cwpm)
- Low Reader - child scored between 1 and 17 cwpm
- Emergent Reader - child scored more than 17 and less than 50 cwpm
- Fluent Reader - child score at least 50 cwpm

# Oral Reading Fluency, Longitudinal View

## Control

		ENDLINE				
		Zero Score	Low Reader	Emerg. Reader	Fluent Reader	Total
BASELINE	Zero Score	82%	9%	2%	1%	94%
	Low Reader	1%	2%	2%	0%	5%
	Emergent Reader	0%	0%	1%	0%	1%
	Fluent Reader	0%	0%	0%	0%	0%
	<b>Total</b>	<b>83%</b>	<b>12%</b>	<b>5%</b>	<b>1%</b>	<b>100%</b>

## Treatment

		ENDLINE				
		Zero Score	Low Reader	Emerg. Reader	Fluent Reader	Total
BASELINE	Zero Score	55%	21%	14%	2%	93%
	Low Reader	0%	1%	4%	1%	6%
	Emergent Reader	0%	0%	1%	0%	1%
	Fluent Reader	0%	0%	0%	0%	0%
	<b>Total</b>	<b>55%</b>	<b>22%</b>	<b>19%</b>	<b>4%</b>	<b>100%</b>

Percentage of children performing in each reading category at endline

- Zero Score - child scored zero correct words per minute (cwpm)
- Low Reader - child scored between 1 and 17 cwpm
- Emergent Reader - child scored more than 17 and less than 50 cwpm
- Fluent Reader - child score at least 50 cwpm

# Oral Reading Fluency, Longitudinal View

## Control

		ENDLINE				
		Zero Score	Low Reader	Emerg. Reader	Fluent Reader	Total
BASELINE	Zero Score	82%	9%	2%	1%	94%
	Low Reader	1%	2%	2%	0%	5%
	Emergent Reader	0%	0%	1%	0%	1%
	Fluent Reader	0%	0%	0%	0%	0%
	<b>Total</b>	<b>83%</b>	<b>12%</b>	<b>5%</b>	<b>1%</b>	<b>100%</b>

## Treatment

		ENDLINE				
		Zero Score	Low Reader	Emerg. Reader	Fluent Reader	Total
BASELINE	Zero Score	55%	21%	14%	2%	93%
	Low Reader	0%	1%	4%	1%	6%
	Emergent Reader	0%	0%	1%	0%	1%
	Fluent Reader	0%	0%	0%	0%	0%
	<b>Total</b>	<b>55%</b>	<b>22%</b>	<b>19%</b>	<b>4%</b>	<b>100%</b>

**Percentage of children changing reading performance category between baseline and endline**

- |                 |   |
|-----------------|---|
| Zero Score      | - child scored zero correct words per minute (cwpm) |
| Low Reader      | - child scored between 1 and 17 cwpm                |
| Emergent Reader | - child scored more than 17 and less than 50 cwpm   |
| Fluent Reader   | - child score at least 50 cwpm                      |

# Oral Reading Fluency, Longitudinal View

## Control

		ENDLINE				
		Zero Score	Low Reader	Emerg. Reader	Fluent Reader	Total
BASELINE	Zero Score	82%	9%	2%	1%	94%
	Low Reader	1%	2%	2%	0%	5%
	Emergent Reader	0%	0%	1%	0%	1%
	Fluent Reader	0%	0%	0%	0%	0%
	<b>Total</b>	<b>83%</b>	<b>12%</b>	<b>5%</b>	<b>1%</b>	<b>100%</b>

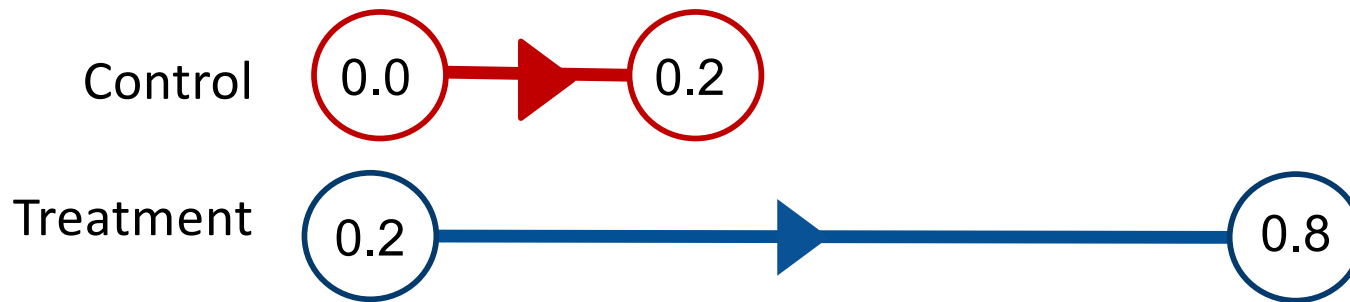
## Treatment

		ENDLINE				
		Zero Score	Low Reader	Emerg. Reader	Fluent Reader	Total
BASELINE	Zero Score	55%	21%	14%	2%	93%
	Low Reader	0%	1%	4%	1%	6%
	Emergent Reader	0%	0%	1%	0%	1%
	Fluent Reader	0%	0%	0%	0%	0%
	<b>Total</b>	<b>55%</b>	<b>22%</b>	<b>19%</b>	<b>4%</b>	<b>100%</b>

Zero Score - child scored zero correct words per minute (cwpm)  
 Low Reader - child scored between 1 and 17 cwpm  
 Emergent Reader - child scored more than 17 and less than 50 cwpm  
 Fluent Reader - child score at least 50 cwpm

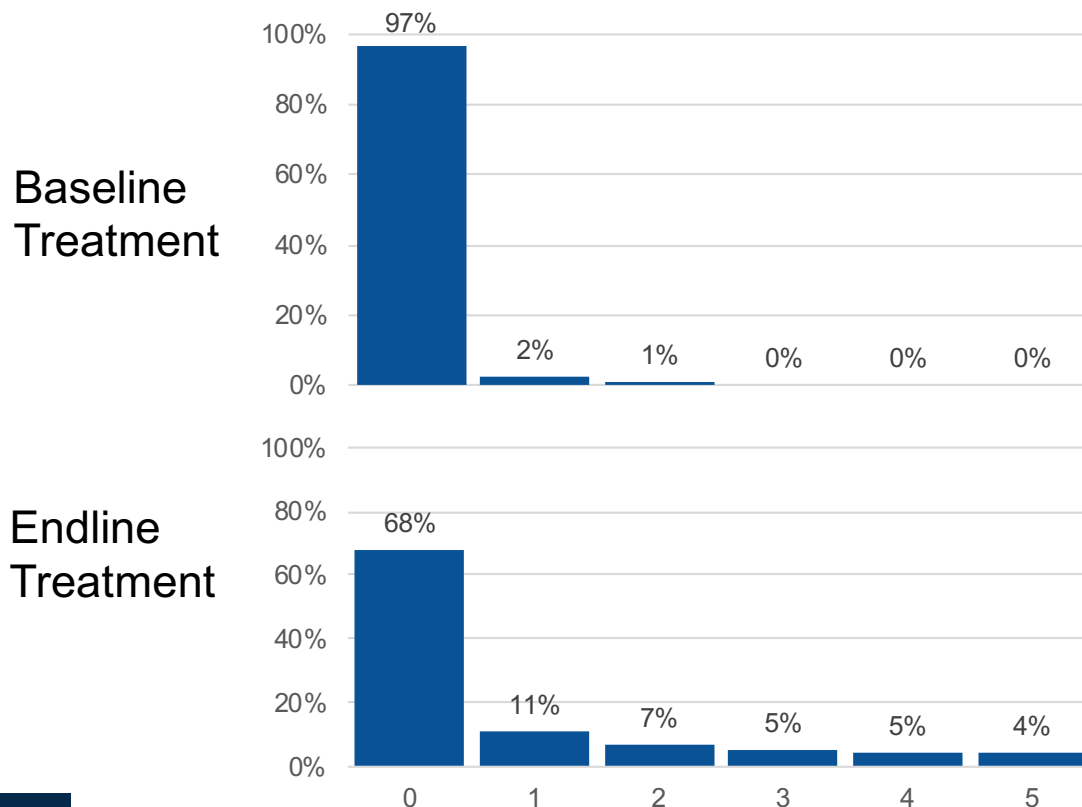
# Reading Comprehension Score (out of 5)

## Average Baseline & Endline



Average gain  
**+0.6 out of 5**

effect size 0.46



## Sample Stimuli

Amina alikua anaenda wapi?

Kwanini rafiki yake alikua analia?

Amina alitengeneza nini?

# Early Grade Mathematics Assessment

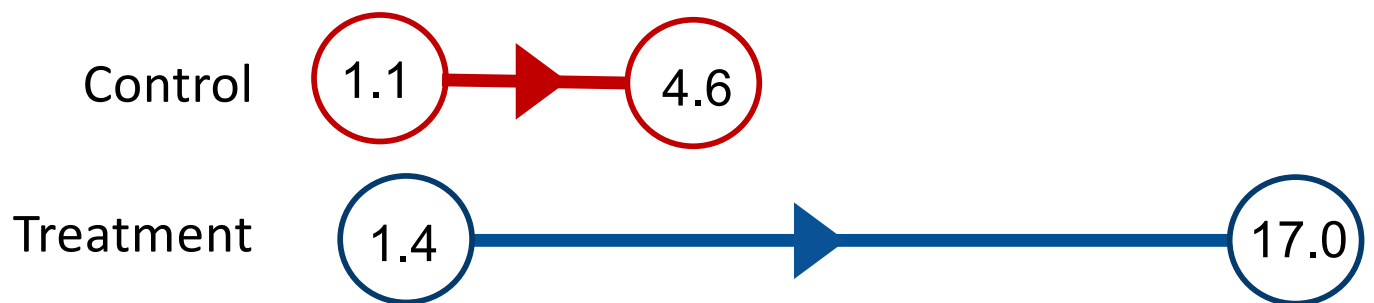
## **Subtasks (selected)**

- Number Identification
- Number Discrimination
- Missing Number
- Addition Level 1
- Addition Level 2
- Subtraction Level 1
- Subtraction Level 2
- Word Problems



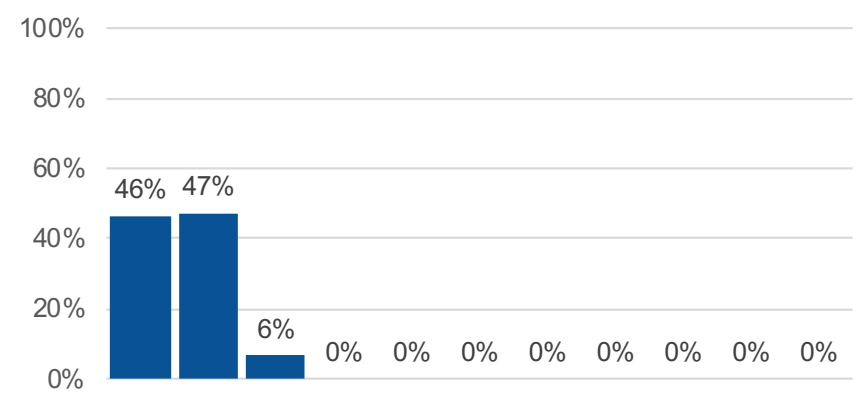
# Number Identification, Correct Problems per Minute (cnumidpm)

## Average Baseline & Endline

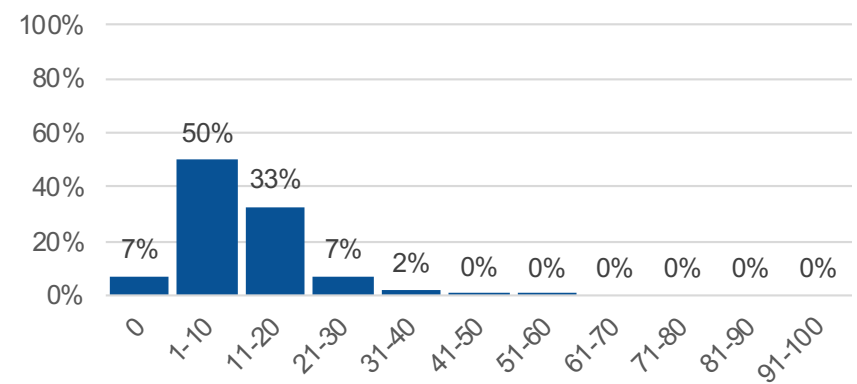


**Average gain  
+12.6 csspm**  
effect size 0.59

Baseline Treatment



Endline Treatment

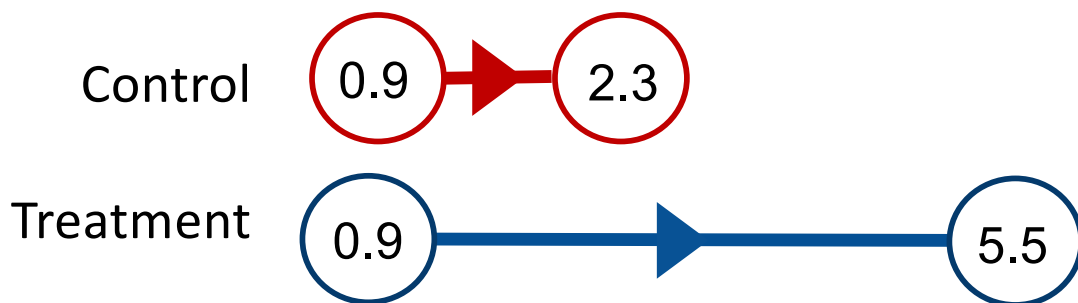


Sample Stimuli

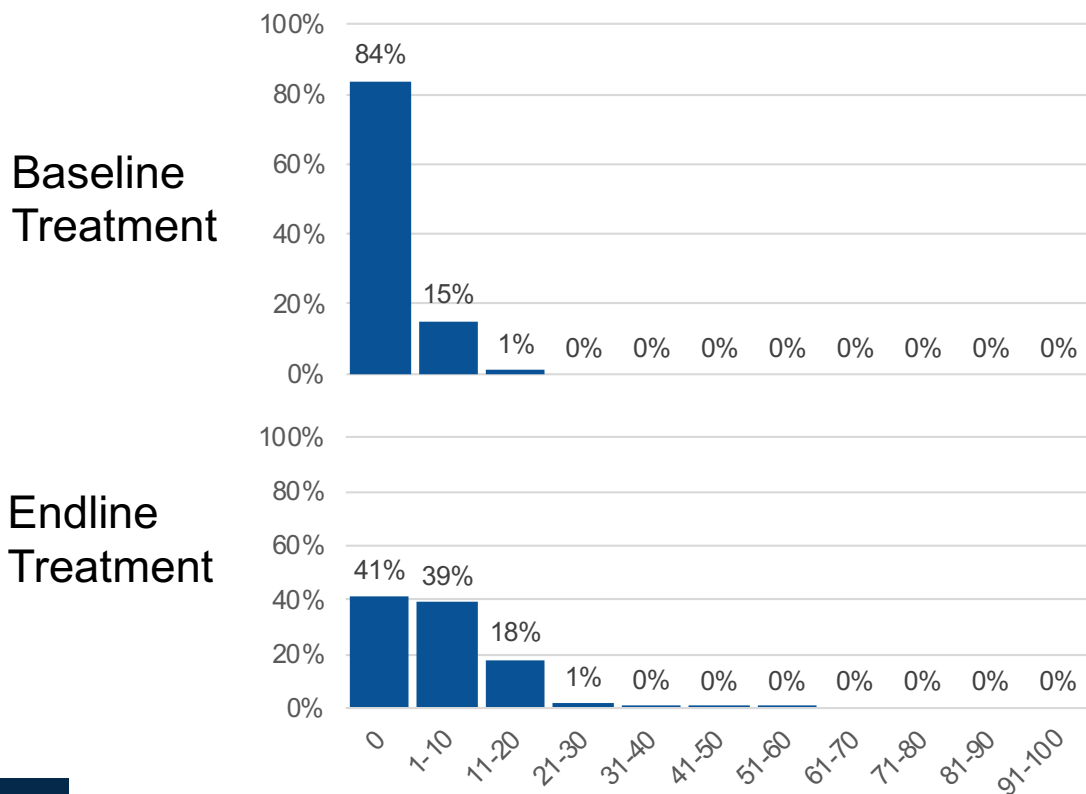
3	9	0	16	20
23	45	33	27	48
1/2	91	74	87	3/4
245	108	553	600	989

# Correct Simple Addition, Correct Problems per Minute (caddpm)

## Average Baseline & Endline



**Average gain  
+3.2 caddpm**  
effect size 0.58

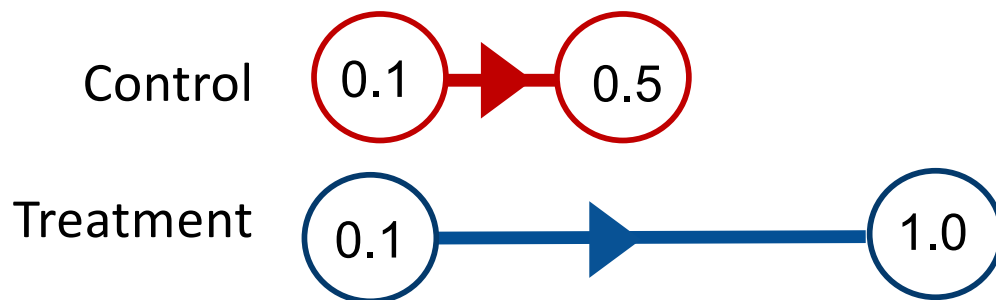


**Sample Stimuli**

3+1	11+4
4+2	13+4
6+2	6+5
4+5	7+7
2+7	5+6
5+5	10+5
3+7	8+10

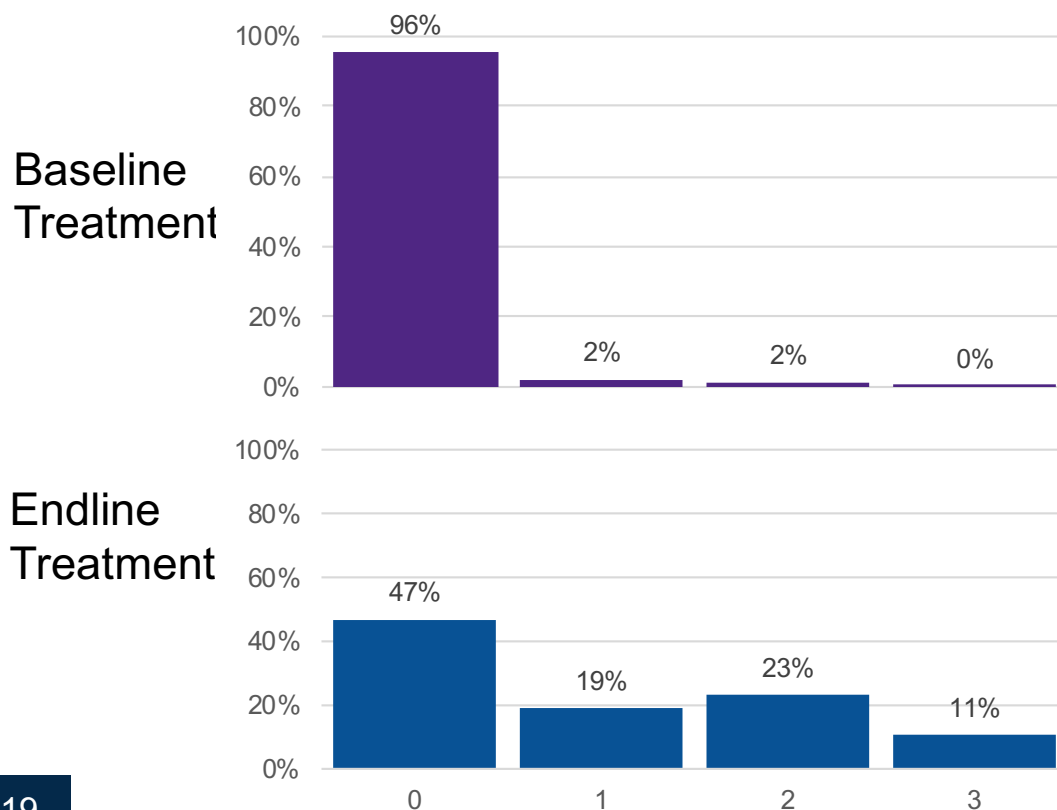
# Addition Level 2, Correct Problems (out of 3)

## Average Baseline & Endline



**Average gain  
+0.5 problems**

effect size 0.49



**Sample Stimuli**

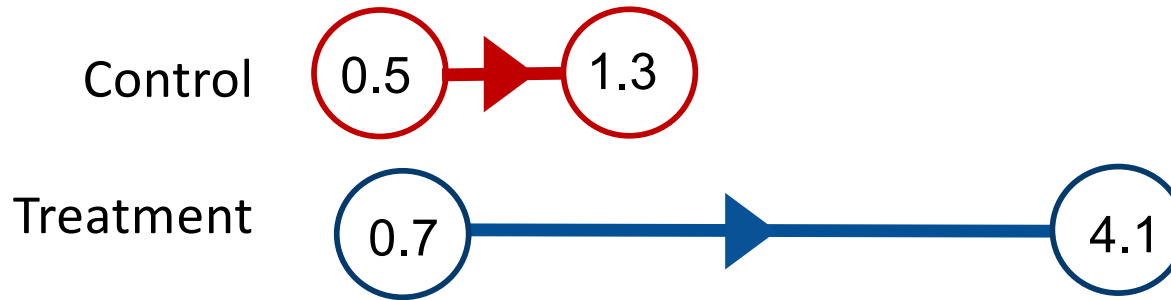
12+5

18+7

13+25

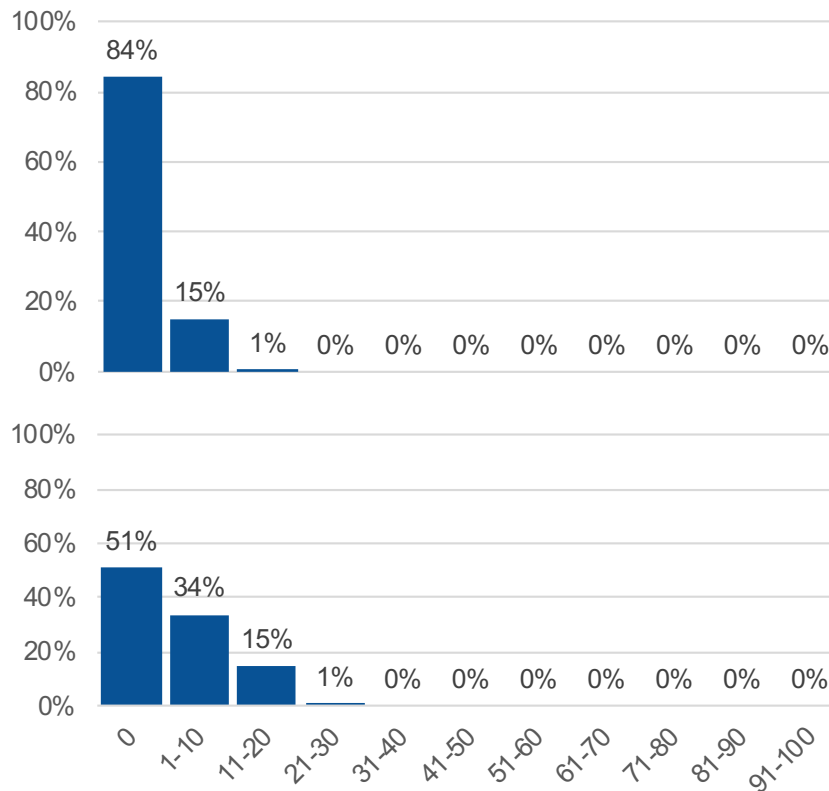
# Correct Simple Subtraction, Correct Problems per Minute (caddpm)

## Average Baseline & Endline



**Average gain  
+2.5 problems**  
effect size 0.54

Baseline  
Treatment

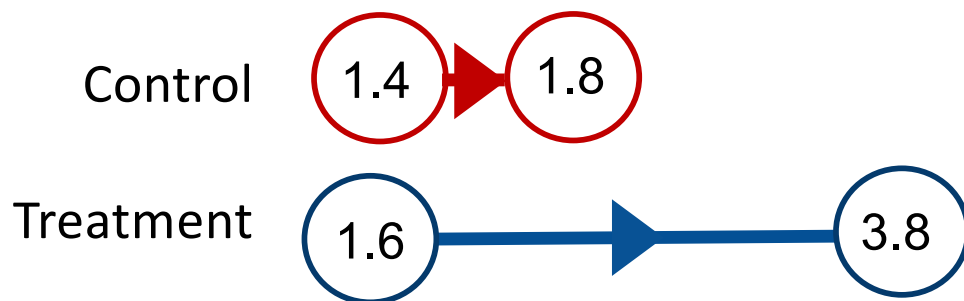


Sample Stimuli

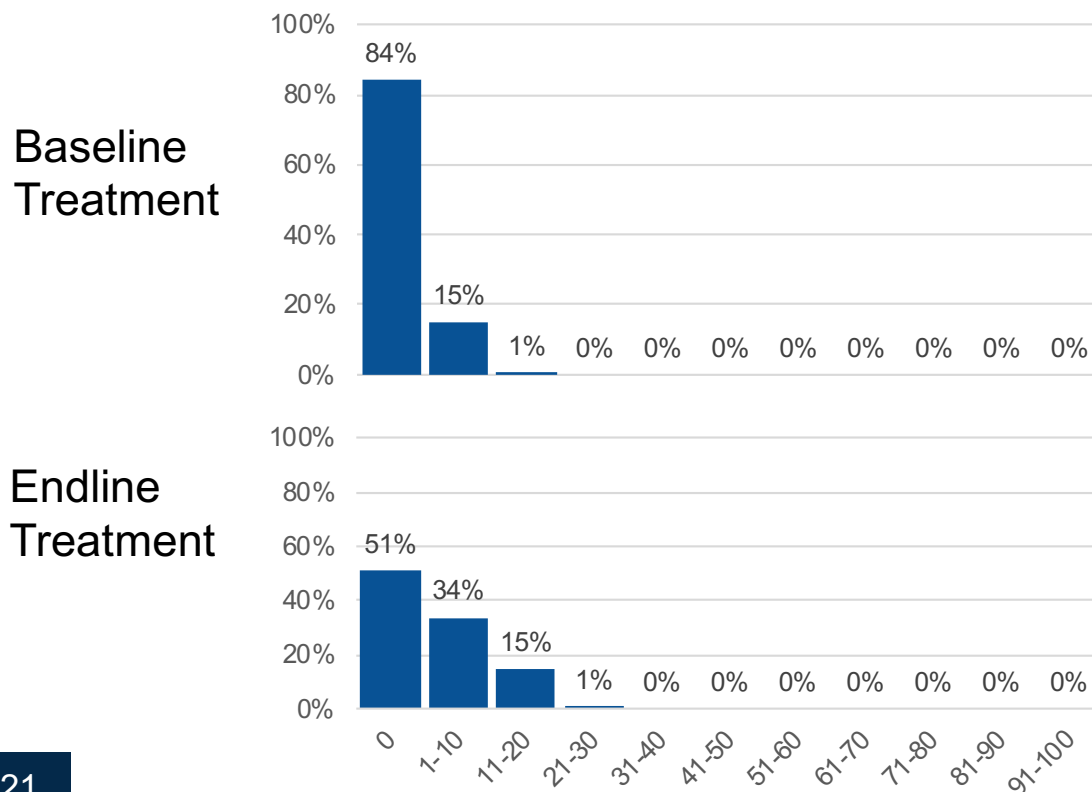
2-1	12-1
5-2	14-2
7-3	17-4
9-5	13-3
9-7	12-8
10-5	15-9
10-7	16-8

# Correct Number Discrimination, Correct Problems (out of 10)

## Average Baseline & Endline



**Average gain  
+1.8 csspm**  
effect size 0.57

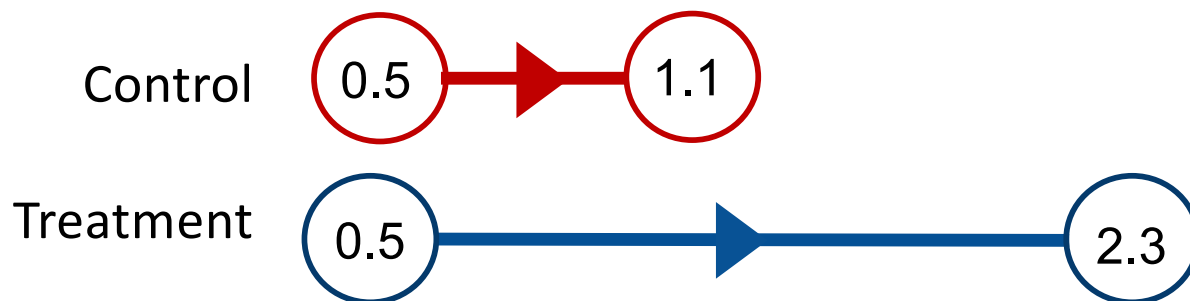


**Sample Stimuli**

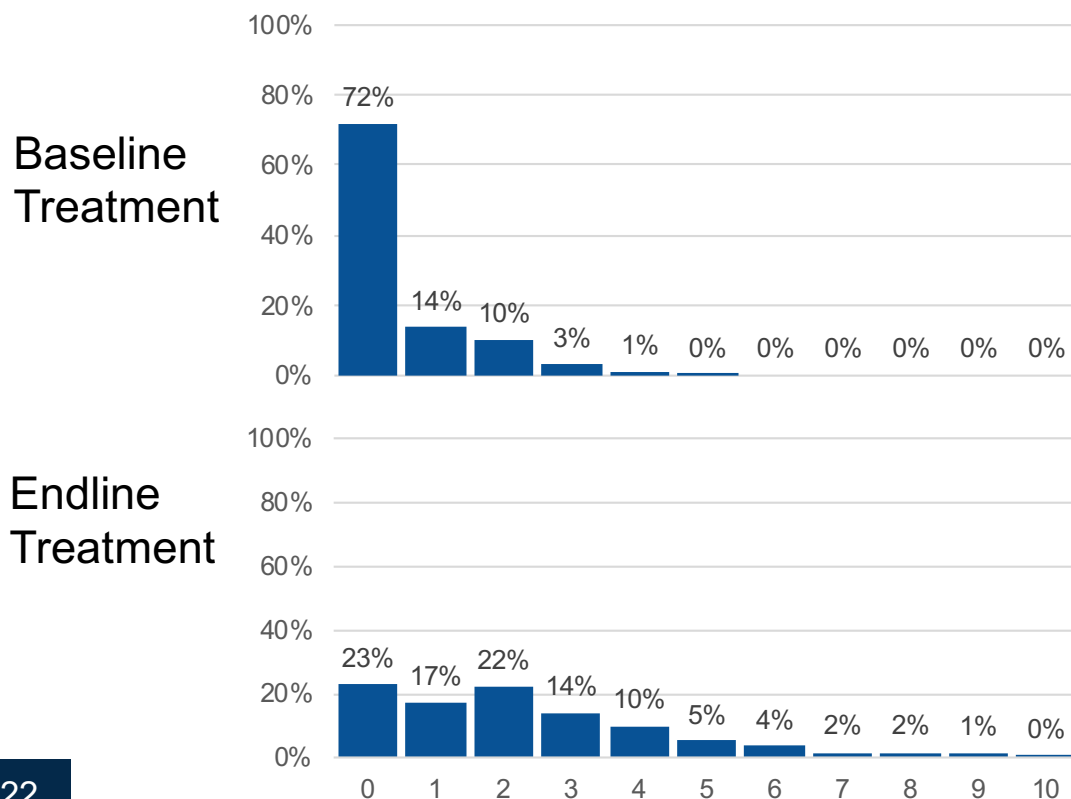
7, 5  
16, 23  
39, 23  
 $\frac{1}{3}$ ,  $\frac{1}{4}$   
65, 67  
77, 67  
146, 153  
395, 421  
705, 750  
967, 965

# Correct Missing Number, Correct Problems (out of 10)

## Average Baseline & Endline



**Average gain  
+1.2 csspm**  
effect size 0.59

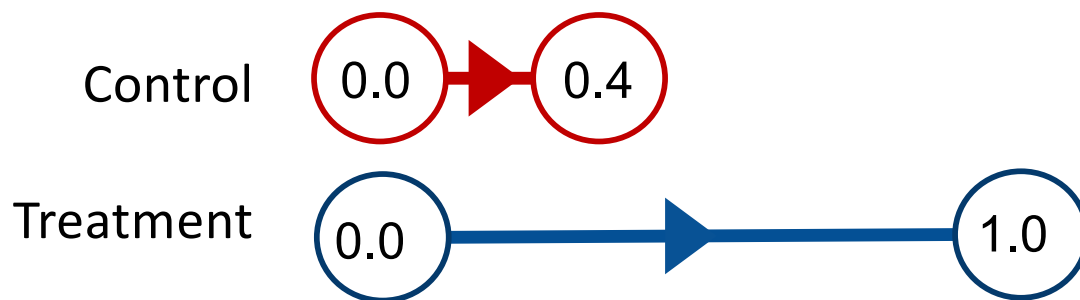


**Sample Stimuli**

5, 6, 7, \_  
12, 13, \_, 15  
\_, 200, 300, 400  
2, 4, 6, \_  
268, 269, \_, 271  
35, 40, \_, 50  
550, 540, 530, \_  
2, 7, \_, 17

# Subtraction Level 2, Correct Problems (out of 3)

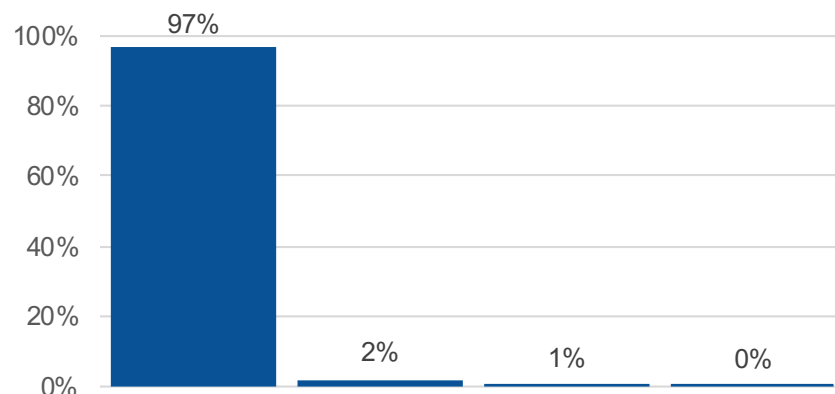
## Average Baseline & Endline



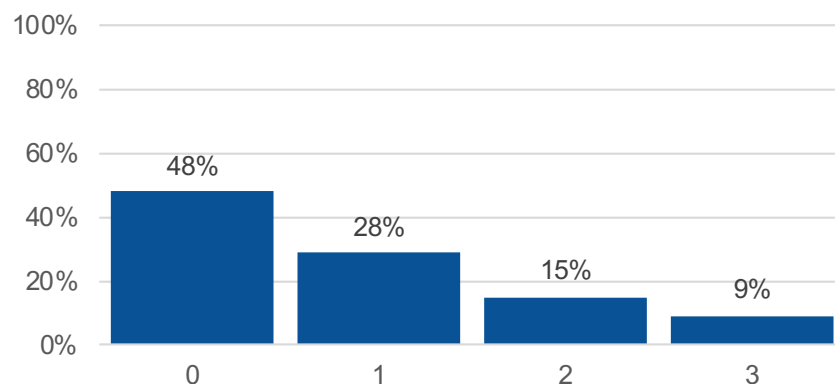
**Average gain  
+0.5 problems**

effect size 0.49

Baseline  
Treatment



Endline  
Treatment



Sample Stimuli

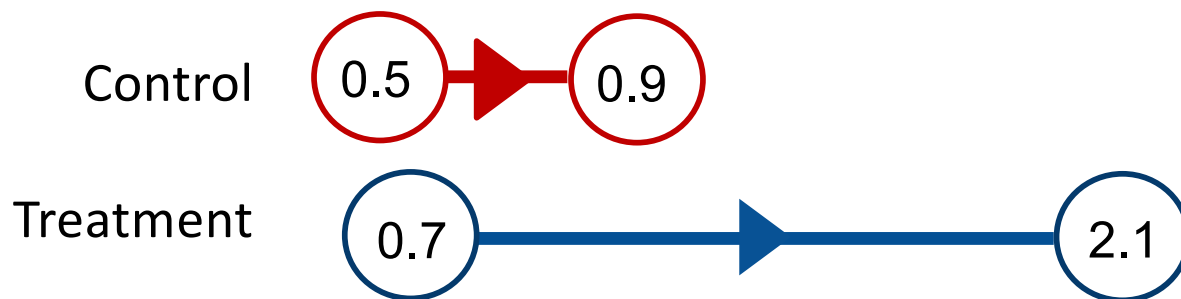
18-4

21-3

36-12

# Maths Word Problems, Correct Problems (out of 7)

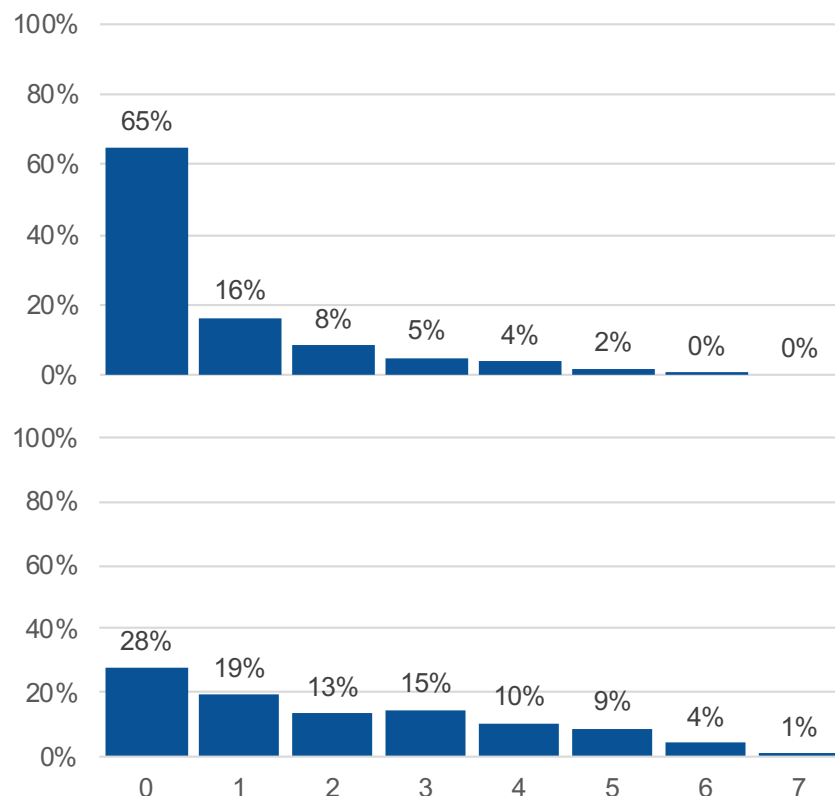
## Average Baseline & Endline



**Average gain  
+0.7 problems**

effect size 0.42

Baseline  
Treatment



Endline  
Treatment

## Sample Stimuli

- There are three children in a vehicle. Two more children get into the vehicle. How many children are there altogether?
- Two children share twelve sweets equally between themselves. How many sweets does each child get?



# Any Questions & Thank You!

This presentation has predictably taken too long.

No time for questions.

But, please reach out to us.

Simon King  
[sjking@rti.org](mailto:sjking@rti.org)

Jennifer Pressley  
[jpressley@rti.org](mailto:jpressley@rti.org)

Amber Gove  
[agove@rti.org](mailto:agove@rti.org)