

# A Library in the Palm of your Hand?

## A Randomized Field Experiment with Low-Income Children

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AEA RCT Registry: AEARCTR 0008561

### Our RCT

Does providing e-book readers to children improve their reading engagement, academic performance, socioemotional well-being, and non-cognitive skills?

- Distributed e-book readers to children (ages 11–12) from disadvantaged backgrounds with a one-year subscription to more than 1,000 age-appropriate books
- Dispatched e-book readers to children’s homes
- Households and children are spread across Germany

### This Paper

First study to use e-book readers in a pre-registered, large-scale randomized controlled trial

- Subscription to a large digital library (about 1,000 books)
  - allows to select books that align with their interests and reading abilities.
- Child autonomy
  - no reliance on parents or teachers.
- Pre-activated password-protected child mode
  - reducing barriers and age-appropriate content.
- Book recommendations via postcards
  - guidance similar to what children from educated backgrounds receive.
- Geographically representative and spread-out sample (spillover effects are unlikely).
  - Treatment outside of schools; teachers not involved.
- Easily scalable and inexpensive intervention.

### Data Collection and Sample

- 1,000 low-income households sampled from Social Security Records of the German Federal Employment Agency
- 4 surveys (6, 12 and 30 months after start)
- Online survey ≈ 20 minutes
  - reading behavior
  - school performance and educational aspirations
  - individual socio-demographic characteristics
  - parents: household characteristics, educational aspirations (parent survey)
- Possibility to link to labor market outcomes in admin data from IAB

### Treatment

Stratified randomization of 1,000 households with children aged 11–12 (grades 5–6) in Germany

- One-year subscription to ≈ 1,000 age-appropriate books (majority in German)
- Configured in advance, ready-to-use, child protection mode
- 6 postcards mailed with a book recommendation about every 3 weeks
- 3 postcards included links to videos produced with Stiftung Lesen

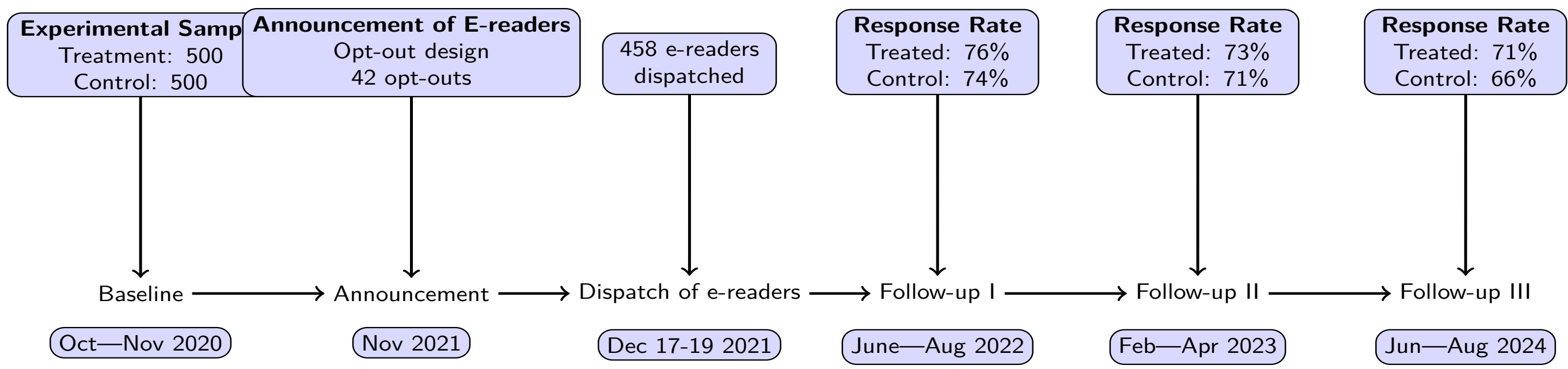
Control group:

- no intervention (panel maintenance postcards)

### Outcome Variables: In Line with Our Pre-Analysis Plan

- **Reading engagement**
  - Any (e-)books read in last 4 weeks, reading frequency (≥ 2 days/week)
- **Academic performance**
  - Reading comprehension (stories & questions), grades in German and math
- **Self-efficacy**
  - Grit and locus of control
- **Strength and difficulties questionnaire (SDQ)**
  - 4 domains: emotional problems, conduct problems, hyperactivity, and peer relationships
- **Summary index** (Kling et al., 2007)

### Timeline



### Estimation and First Results

Intention-to-treat (ITT):

$$Y_i = \alpha + \beta \cdot treat_i + \gamma' \cdot strata_i + \mu' \cdot X_i + \epsilon_i$$

- where  $Y_i$  are domain-specific summary indices
- $treat = 1$  if child  $i$  is initially assigned to the treatment group, zero otherwise
- $strata_i$ : strata FE,  $X_i$ : year and month of birth FE

- Balance of covariates at baseline ✓
- No differential attrition between control and treatment group ✓

### Main Results: Reading Engagement

	Follow-up II			Follow-up III		
	Intention-to-treat (ITT)	p-value	FDR q-value	Intention-to-treat (ITT)	p-value	FDR q-value
<b>Reading engagement (index)</b>	<b>0.105</b>	0.000		<b>0.063</b>	0.016	
At least one e-book	<b>0.177</b>	0.000	0.022	<b>0.136</b>	0.000	0.001
At least one printed book	<b>0.064</b>	0.040	0.066	0.017	0.636	0.613
At least one book	<b>0.089</b>	0.000	0.009	0.010	0.768	0.732
At least two days/week	<b>0.085</b>	0.000	0.022	<b>0.091</b>	0.008	0.043

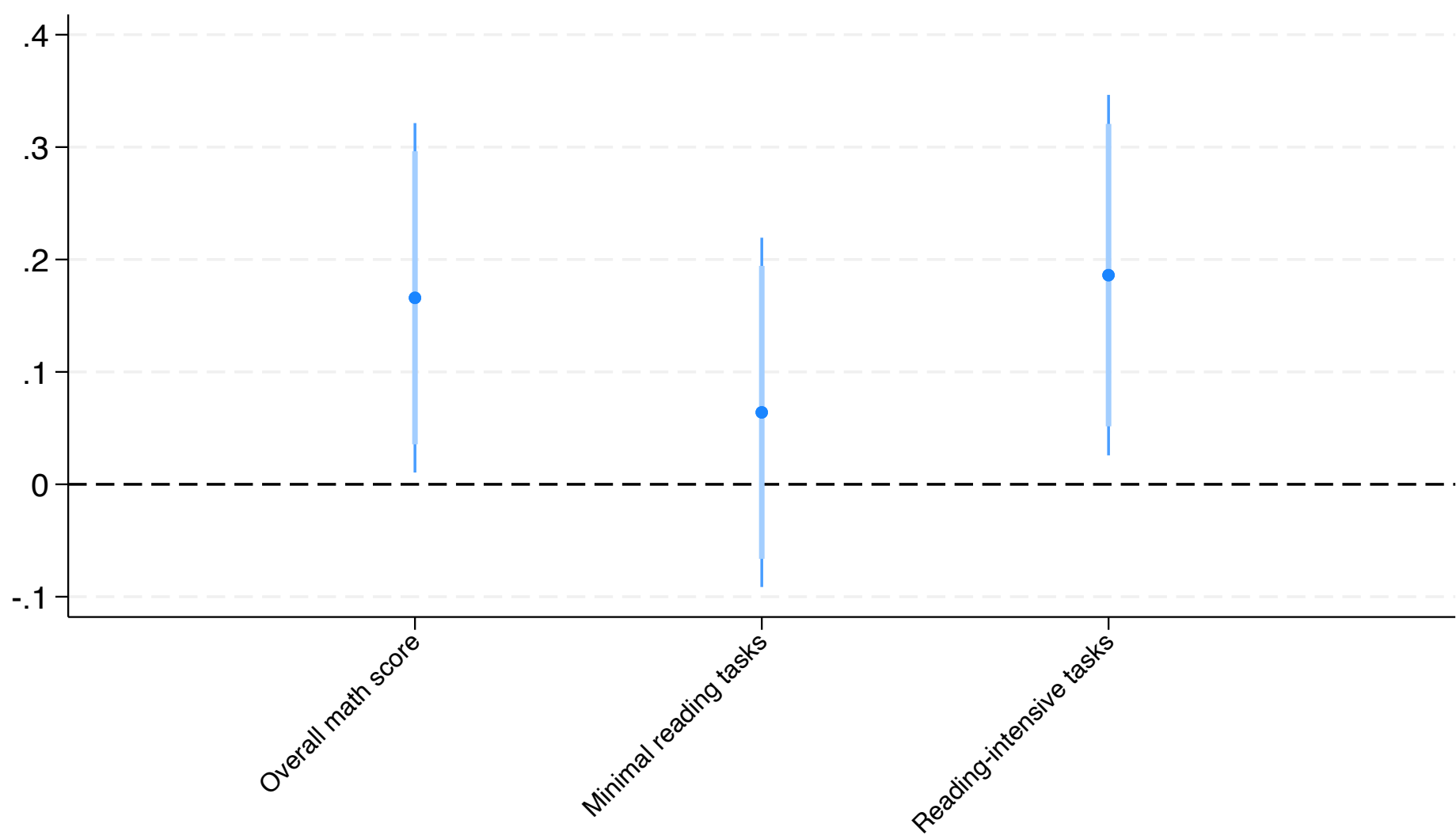
Notes: The table reports p-values from randomization inference (Young, 2019) and sharpened false-discovery rate (FDR) q-values.

### Main Results: Academic Performance, SDQ, Grit and Locus of Control

	Follow-up II			Follow-up III		
	Intention-to-treat (ITT)	p-value	FDR q-value	Intention-to-treat (ITT)	p-value	FDR q-value
<b>Academic performance (index)</b>	<b>0.103</b>	0.036		<b>0.096</b>	0.072	
Reading comprehension	<b>0.129</b>	0.080	0.090	<b>0.137</b>	0.080	0.120
Good math grade	<b>0.086</b>	0.020	0.063	<b>0.102</b>	0.024	0.043
Good German grade	0.023	0.590	0.285	0.025	0.582	0.613
SDQ score	<b>-0.147</b>	0.064	0.077	<b>-0.218</b>	0.004	0.027
Grit	-0.055	0.450	0.264	-0.044	0.592	0.380
Locus of control	0.089	0.282	0.155	-0.050	0.568	0.613

Notes: Strengths and Difficulty Questionnaire. The table reports p-values from randomization inference (Young, 2019) and sharpened false-discovery rate (FDR) q-values.

### What Explains the Effect on Math Grades?



### Conclusions

- **Provision of e-book readers with access to large library of age-appropriate books:**
  - significantly and positively affects reading engagement (no crowding out)
  - improves academic performance and socioemotional well-being
  - persistent effects up to 30 months after the start of the intervention