

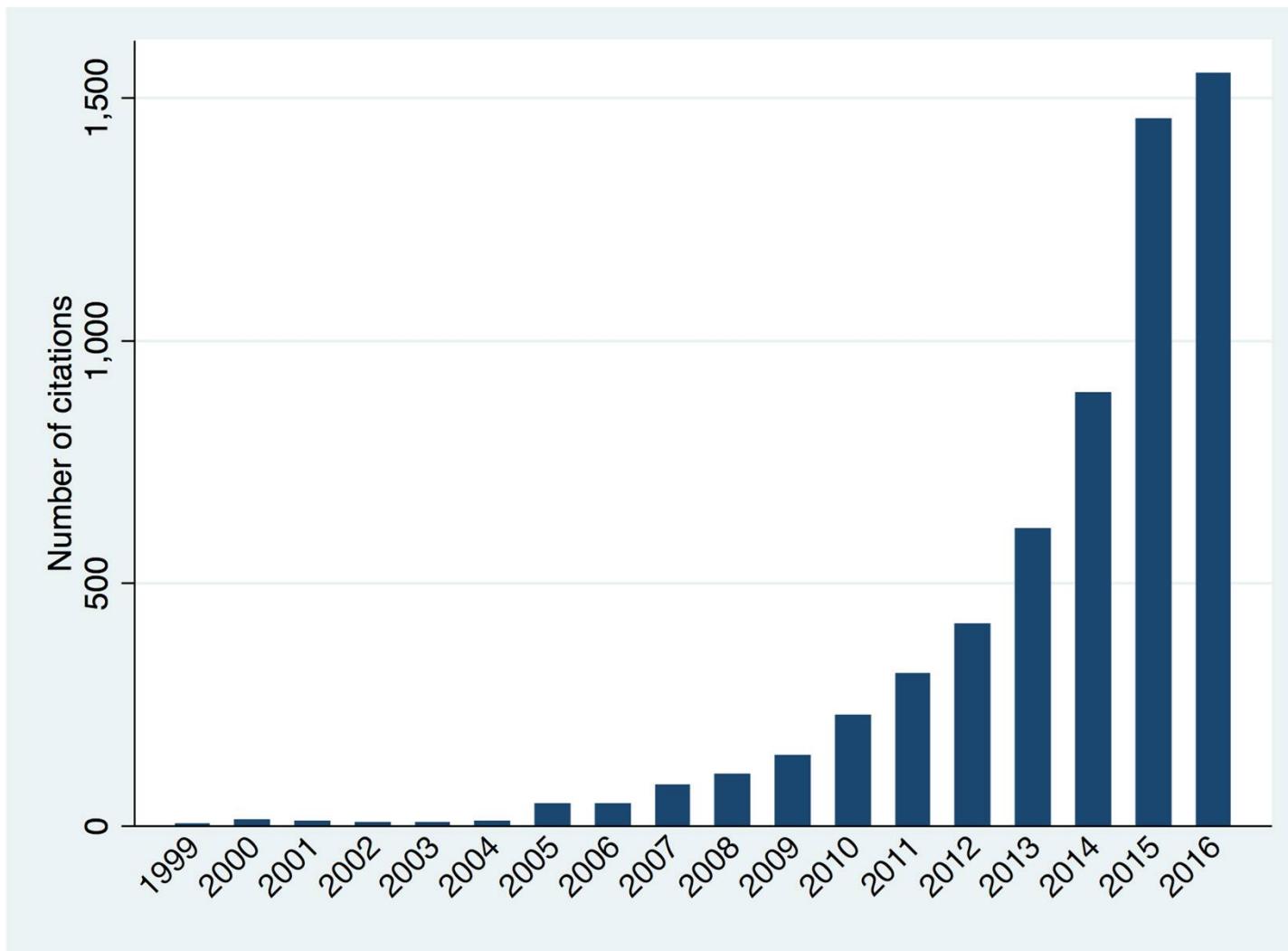
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New evidence on the effectiveness of financial education

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Researchers invest: Citations to the term „financial literacy“ (SSCI)



- There are thousand studies about FL etc. Which of these measure reliably the possible impact of FE on FL and FB?
- Narrative literature review is written by experts who provide guidance by selecting and assessing studies (e.g. Fox et al. 2005; Collins and O'Rourke 2010; Willis 2011; Hastings et al. 2013; Lusardi and Mitchell 2014)
- Meta-study is a transparent and quantitative approach:
 - Cover all studies that fulfill search criteria
 - Make impacts comparable by using standardized “effect sizes”
 - Inform about size of average effect, significance and distribution

Inferior ways:

- Self-assessment.
- Pure cross-sectional comparison.
- One group before and after treatment.

➔ Biased assessment

➔ Self-selection

➔ Effect over time?

➔ No control for trends

Superior ways:

- Quasi-experiment: two groups (DID, matching); or natural experiment (exogenous event)
 - RCT (Randomized Control Trial), i.e. experiment with control group and randomized assignment.
- ➔ Cleaner identification.

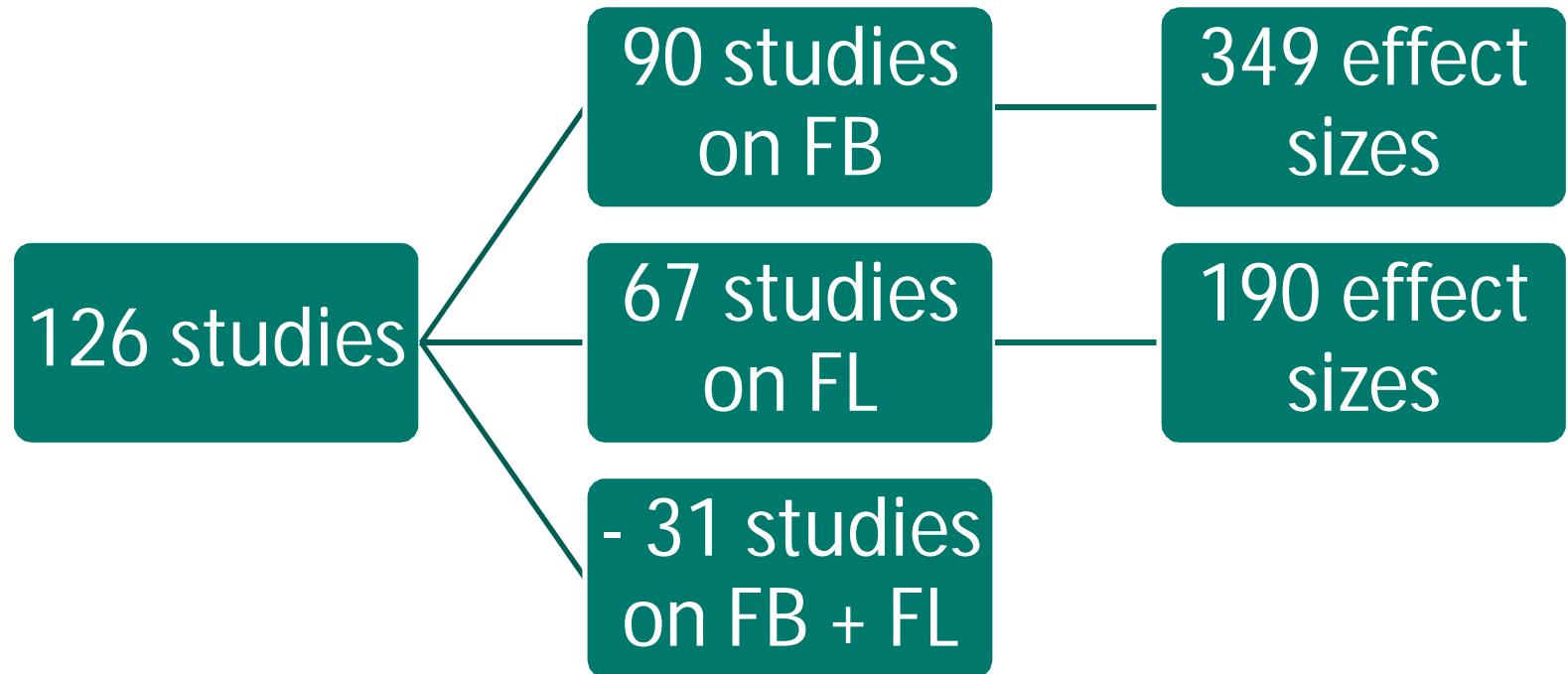
Studies considered, if:

- There is an (exogenous) event, such as newly introduced or changed fin education.
- There is an observed counterfactual: we do not include purely observational studies or pre-post (single group) designs: 126 studies.
- The design is thus either a (quasi, natural-) experiment or a (cluster-) RCT and reported outcomes allow coding an effect size and its standard error.

Source: Tim Kaiser and Lukas Menkhoff (2017), Does Financial Education Impact Financial Literacy and Financial Behavior, and If so, When?, World Bank Economic Review 31:3, 611-630 (also DIW DP).

2

126 studies out of about 1,000 meet the inclusion criteria



Problem of measurement:

- FE addresses very different things, e.g. knowledge and behavior
- Studies aim at different outcome variables
- Studies differ in further respects: target groups, intensity of training, content etc.

Procedures:

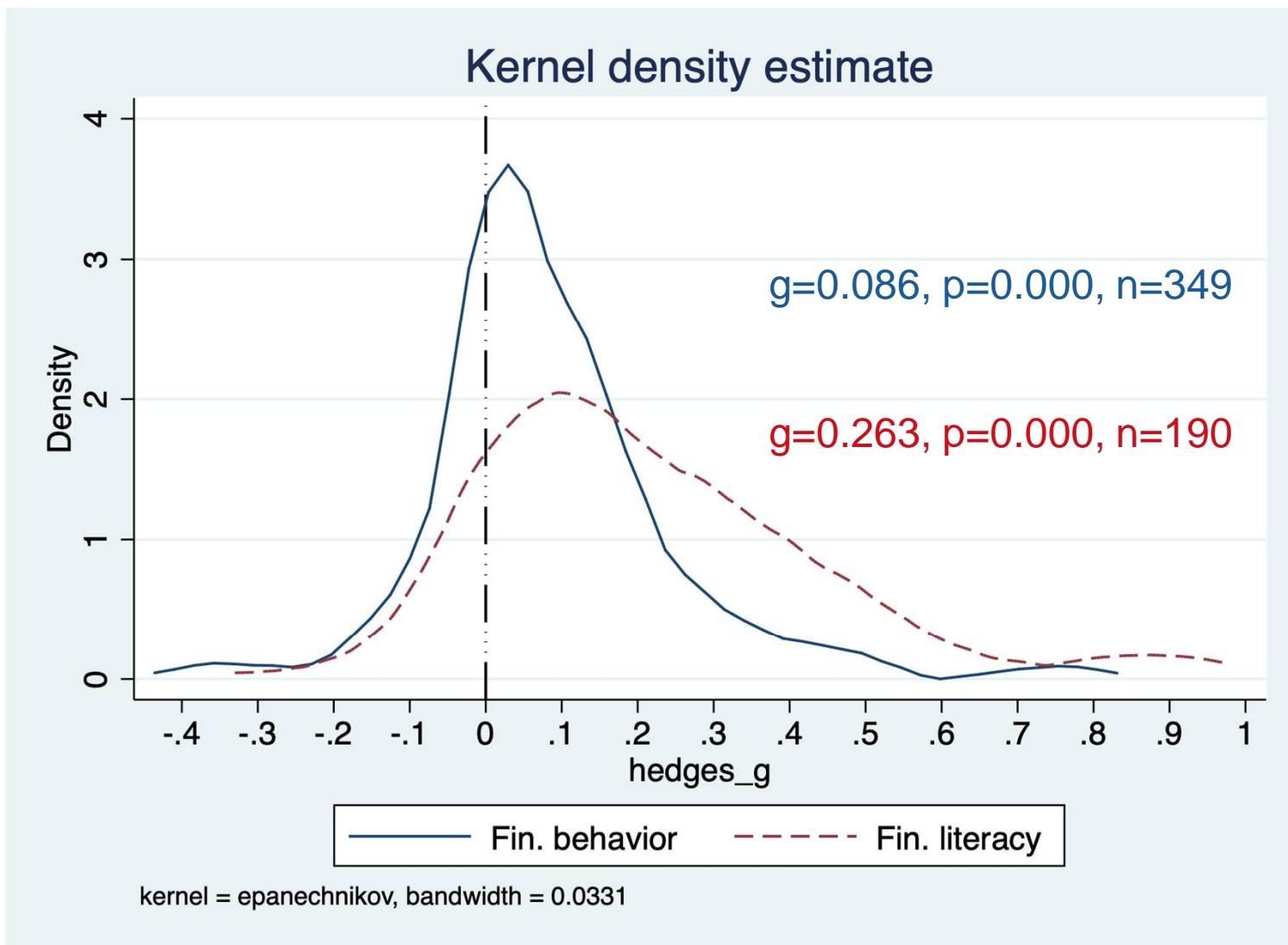
- Separate knowledge vs. behavior
- Fine but standardize by coding of effect sizes
- May be considered in meta-analyses

- A meta study requires to make effects comparable across studies: some kind of standardization.
- Coding of effect sizes: **Hedges' g**

$$g = \frac{M_T - M_C}{SD_p} \quad \text{with} \quad SD_p = \sqrt{\frac{(n_T - 1) SD_T^2 + (n_C - 1) SD_C^2}{n_T^2 + n_C^2 - 2}}.$$

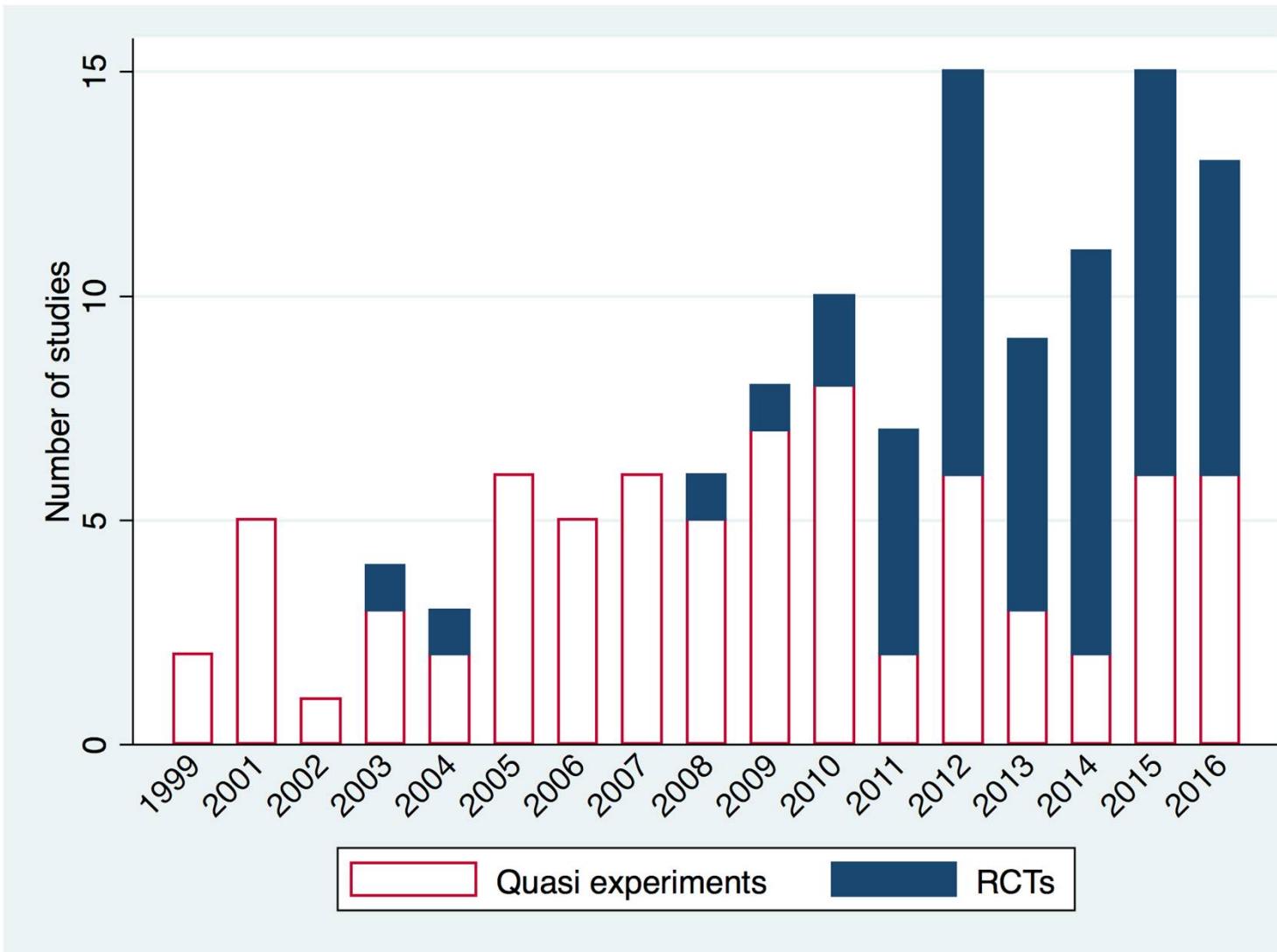
- Mean (M) of treatment (T) and control (C) group, relative to the standard deviation (SD) of both
- Similar to Cohen's d and Glass' Δ , however SD_p calculates SD separately for T- and C-groups which is seen as more robust when sample sizes differ much btw T- and C-group.

Effect sizes of FE on FL are much larger than on FB (by OLS)



3.1

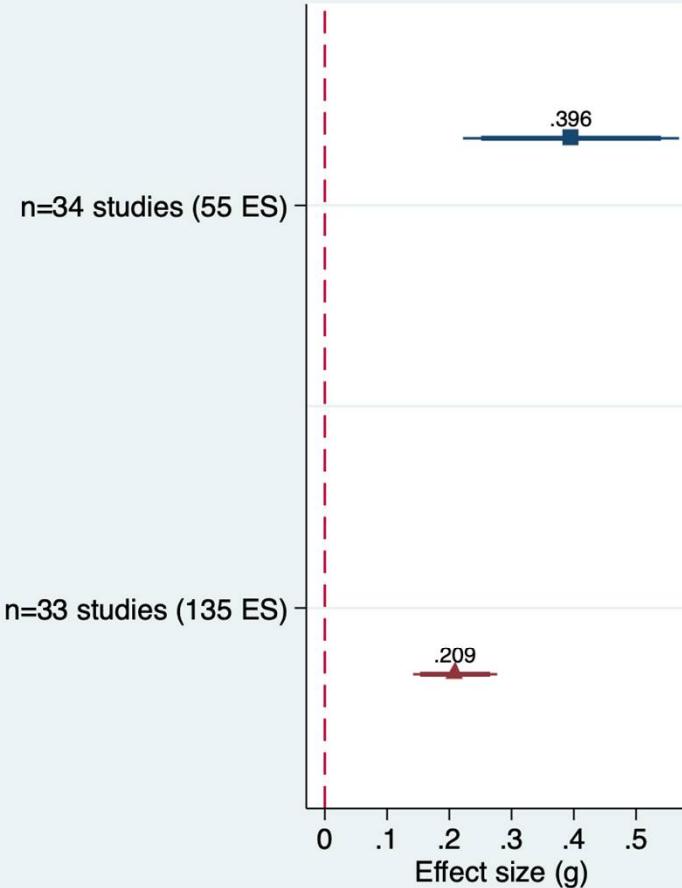
Increasing share of RCTs during the last years



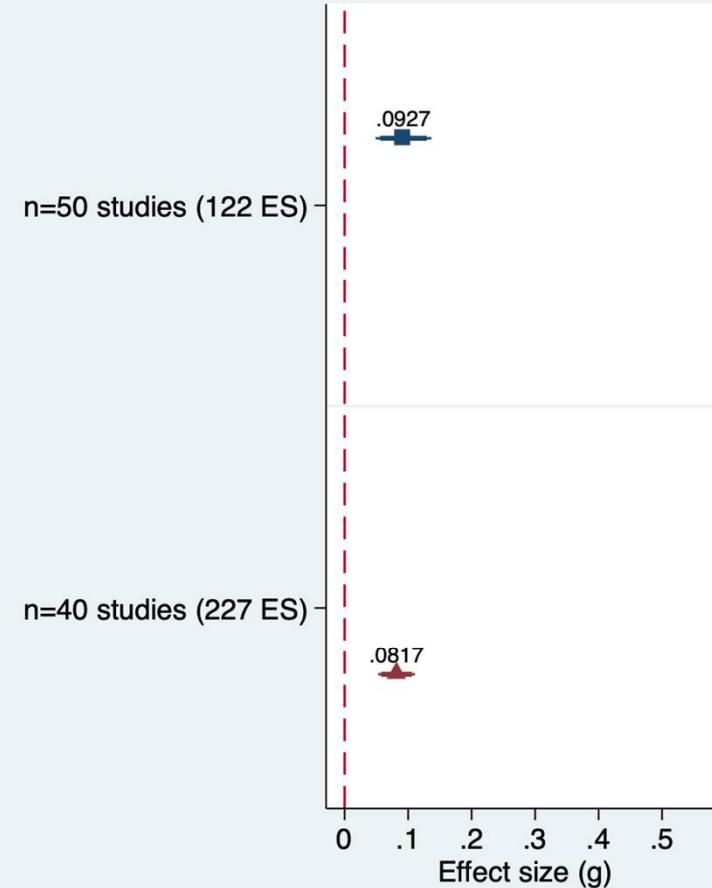
3.1

Financial education is clearly effective in RCTs

Effects on Fin. Literacy



Effects on Fin. Behavior



3.2

Effectiveness does not depend on the regression model

Outcome	(1) OLS Full pooling	(2) OLS Synthetic ES	(3) RE-Metareg	(4) RE GLS	(5) WLS 1/ SE _g	(6) Robumeta
<i>Panel A : All</i>						
Fin. Behavior	0.086*** (0.012)	0.102*** (0.013)	0.079*** (0.009)	0.093*** (0.012)	0.026** (0.011)	0.064*** (0.008)
n(Studies)	90	90	90	90	90	90
n(Effect sizes)	349	90	90	349	349	349

3.3

Publication bias does not eliminate effectiveness

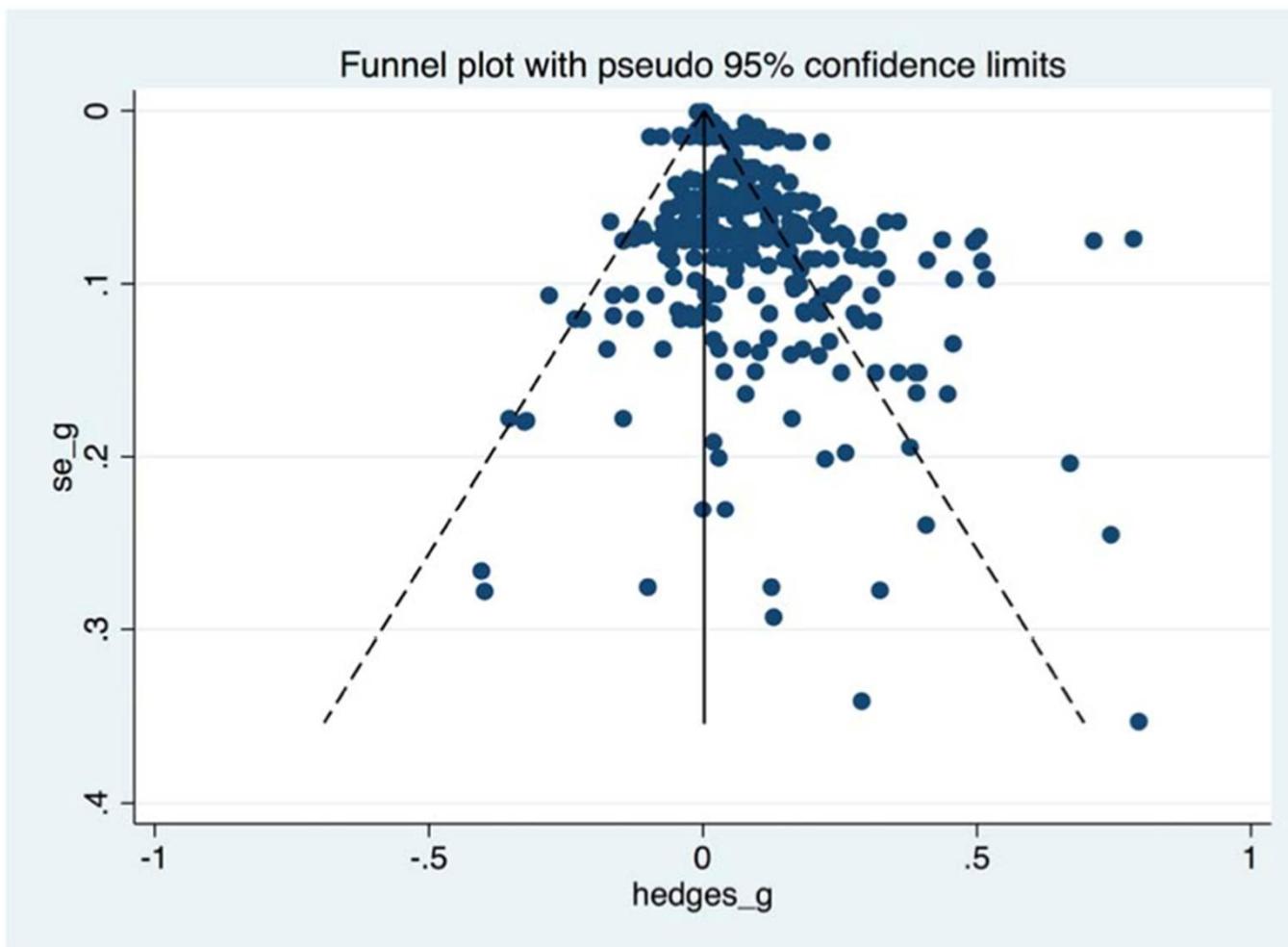
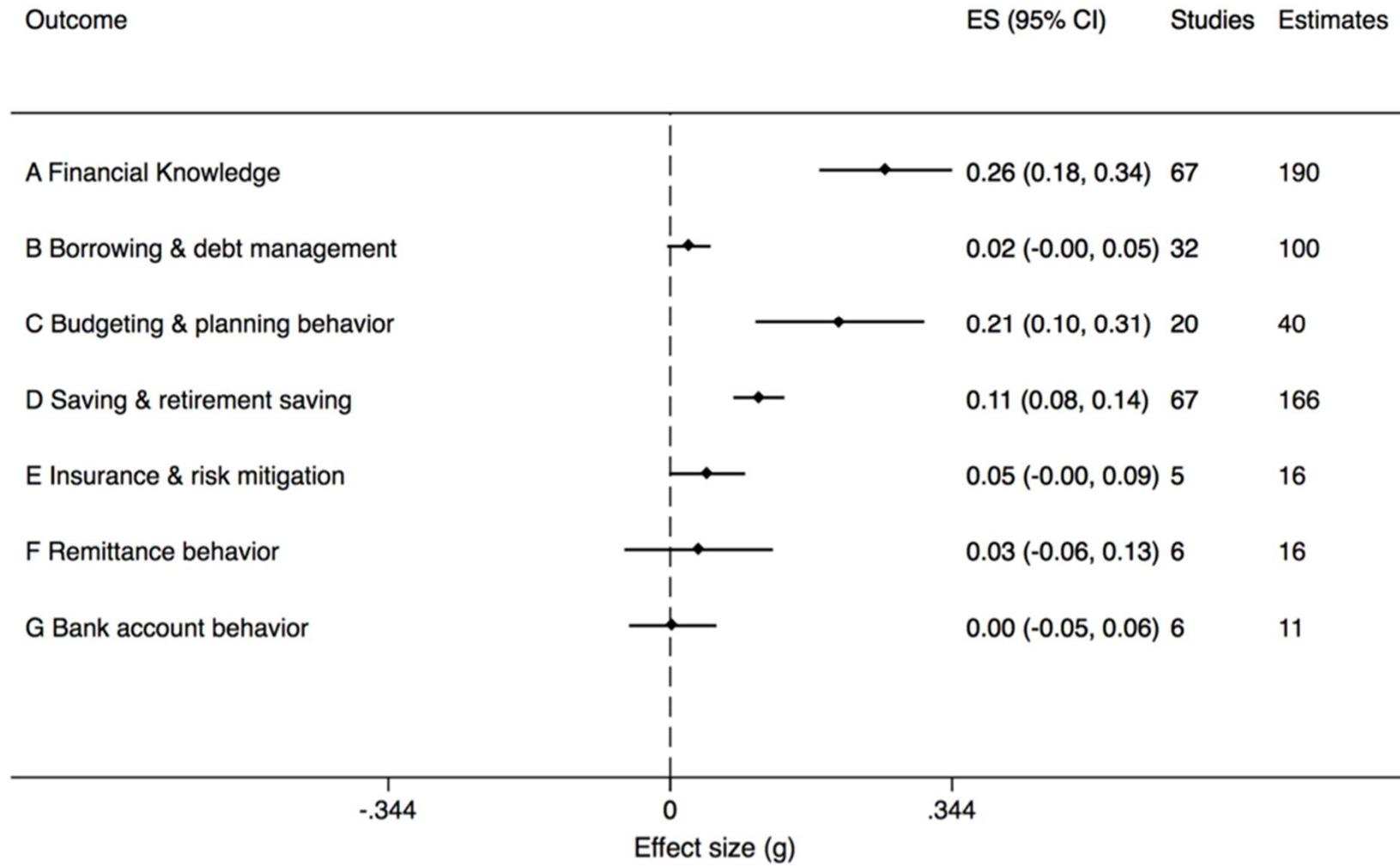


Figure S4.2: Funnel plot of treatment effects on financial behavior

3.4

Positive effects of financial education hold for many outcomes



- Financial education (FE) is generally effective.
- FE has a strong impact on financial literacy (like math).
- FE has a positive and significant impact on FB.
- This effect also holds for the sub-sample of RCTs.
- This effect holds for all kinds of regression models.
- This effect holds when we control for publication bias.
- This effect is positive for almost all outcomes.

→ **FE is robustly effective**; but heterogeneity

Other meta-studiesFernandes et al (2014 ManSci)

- Effect declines over time
- Effect decreases with more precise measurement
- No effect in 12 RCTs

Miller et al. (2015, WBRO)

- Effect depends on outcomes

Kaiser/Menkhoff (2018, WP)

- Update of K/M 2017 for schools
- High pos. effect on knowledge
- Robust pos. effect on behavior

Our findings

K/M (WBER 2017)

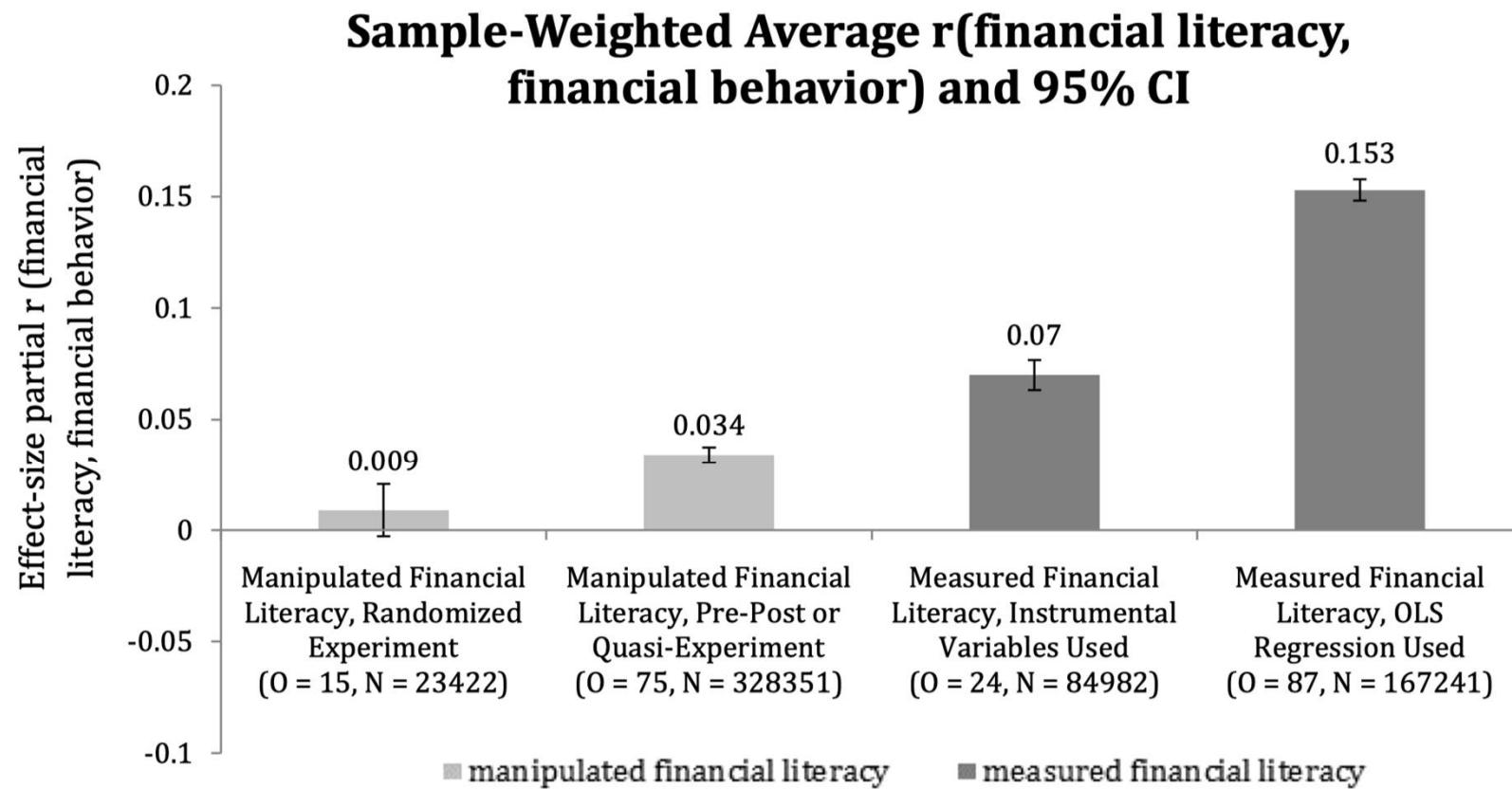
- Yes, not surprising
- Yes, we confirm this for partially different studies
- **FinEdu effective in 40 RCTs**

K/M (2017)

- Yes, confirmed, more studies

K/M (2017)

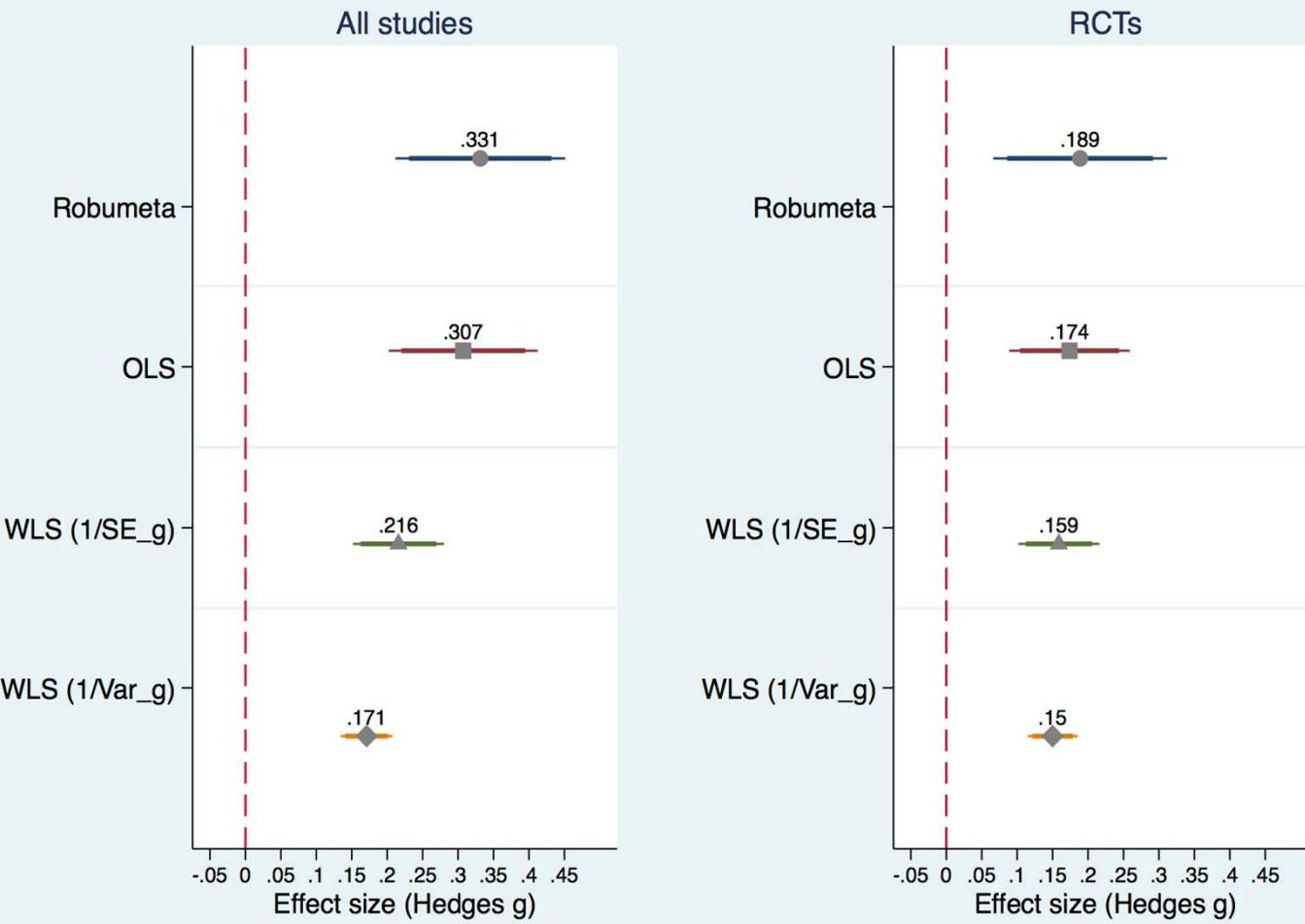
- yes
- yes



Notes: O = number of studies, N = total number of participants in those studies.

Source: Fernandes et al., 2014, p.1865

Treatment effects on financial knowledge



5

Meta-regression results provide hints how to increase effectiveness

RCT	-0.068** (0.028)
TOT	0.068** (0.027)
Delay	0.000 (0.000)
1/SE	-0.000 (0.000)
Intensity per week	0.004*** (0.001)
Duration	-0.000 (0.000)
Low income clients	-0.055*** (0.017)
Mean years of schooling	-0.019*** (0.006)
Country group	
Low/lower-mid.inc.econ	-0.093** (0.036)
Mandatory	-0.051** (0.023)
Teachable moment	0.064** (0.026)
Constant	0.332*** (0.079)
R ²	0.183
n (Studies)	90
n (Effect sizes)	349

Main results:

RCT (-)**

TOT (+)**

Intensity (+)***

Low-income clients (-)***

Mean years of schooling(-)***

Develop. country (-)**

Mandatory FE (-) **

Teachable moment (+)**

Parsimonious OLS-regression with SEs clustered at study-level (Kaiser and Menkhoff, 2017)

- Quality teacher training (Brown et al. RFS 2016)
- Simplified FE (working with rules of thumb) (Drexler et al. AEJ:App 2014, Skimmyhorn et al. 2016)
- Personalized FE (Carpena et al. ManSci 2017)
- Convenient and entertaining FE (Berg and Zia JEEA 2017)
- FE offered at a teachable moment (K/M WBER 2017)
- Applying an “active learning” approach (K/M 2018)

→Can study results be generalized?

→What are key success factors?

→More research is necessary!

1. **Financial education works:** it has a larger effect on financial literacy and a smaller effect on financial behavior.
2. **The effect of FE is very robust:** it holds for RCTs, all kinds of regression models, considering publication bias, and for almost all outcomes.
3. **FE can become more effective:** we need to evaluate more systematically which elements of new education programs are crucial and can be generalized.