

Reading in the digital age

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1. Recent empirical research



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E-READ

- COST-funded project, Nov. 2014 – May 2019
- 180 European reading researchers
- From a wide variety of disciplines
- Empirical research
- ‘Stavanger Declaration on the Future of Reading’ (<http://ereadcost.eu/stavanger-declaration/>)
- Meta analysis of previous research

Results from a meta-analysis on paper-based vs. digital-based reading comprehension

Pablo Delgado¹, Cristina Vargas¹, Rakefet Ackerman², Ladislao Salmerón¹, ‘Don’t throw away your printed books’ (2018)

¹ University of Valencia, Spain

² Technion–Israel Institute of Technology, Israel



VNIVERSITAT
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LECTURA

Estructura de Recerca
Interdisciplinar



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The screen disadvantage effect

- The E-READ meta-analysis, of
 - 54 Studies, dealing with 76 print vs screen comparisons
 - With 171,055 participants from 19 countries
- Showed significant reading media effect, indicating **better comprehension outcomes for paper-based reading** than for screen-based reading

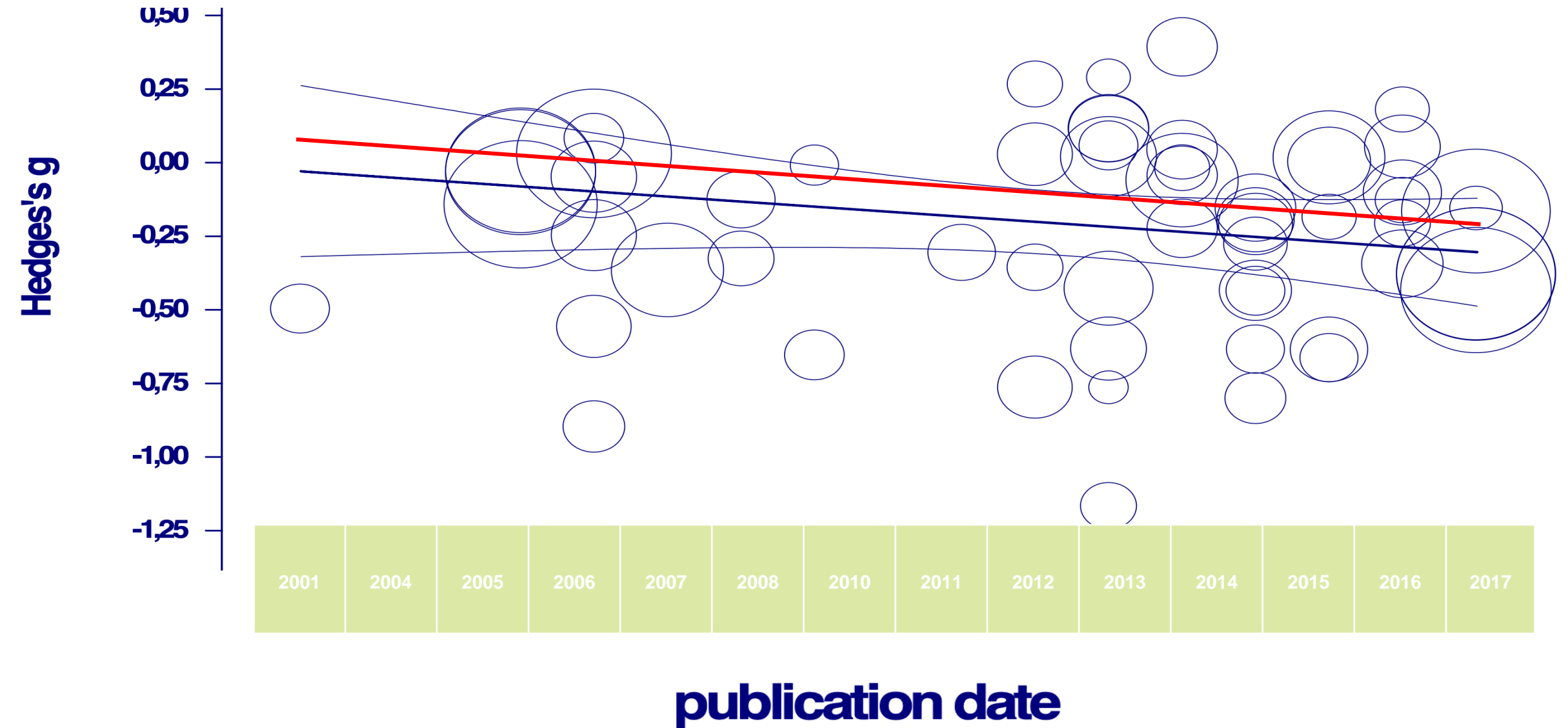
Conclusions (1/2)

- On average, **paper-based reading yields better comprehension outcomes, the effect being stronger for more complex texts**
- **Screen readers are more likely to be overconfident about their comprehension abilities** than print readers, in particular when under time pressure, leading to more skimming and less concentration on the text

Conclusions (2/2)

- **Support for the ‘shallowing hypothesis’**
 - Students’ screen habits may interfere with deep comprehension needs
- Most surprisingly, **the digital disadvantage has increased over time**, regardless of age group and of prior experience with digital environments, so **‘digital natives’ do not exist**

The digital disadvantage over time



To sum up

- Digital environments may not always be best suited to fostering deep comprehension and learning
- The screen disadvantage is getting stronger rather than disappearing

The screen disadvantage effect

- Demonstrated independently in **three recent meta studies** and a literature review
 - Virginia Clinton, 'Reading from paper compared to screens', *Journal of Research in Reading* (2019)
 - Pablo Delgado, et al., 'Don't throw away your printed books: A meta-analysis on the effects of reading media on comprehension', *Educational Research Review* 25 (2018)
 - Kong et al., 'Comparison of reading performance on screen and on paper: A meta-analysis', *Computers & Education* (2018)
 - Singer & Alexander, 'Reading on paper and digitally: What the past decades of empirical research reveal' *Review of Educational Research* (2017)

2. Next steps in reading research



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A. What causes screen disadvantage?

- Go beyond regarding it as a usability issue
- Some hypotheses:
 - Embodied cognition
 - Unrealistic sense of agency and control
 - Undermining of textual authority
 - Distraction
 - [Etc.]

B. Find solutions for screen inferiority

- Screens are not going to go away
- We must find ways to cohabit peacefully and productively with them
 - Especially in education

C. The social impact

- Cf The Gutenberg revolution
 - Substrate: Impact on the *individual* reading experience
 - Infrastructure: The social impact of printing
- The social impact of the screen infrastructure is harder to substantiate
 - Three hypotheses

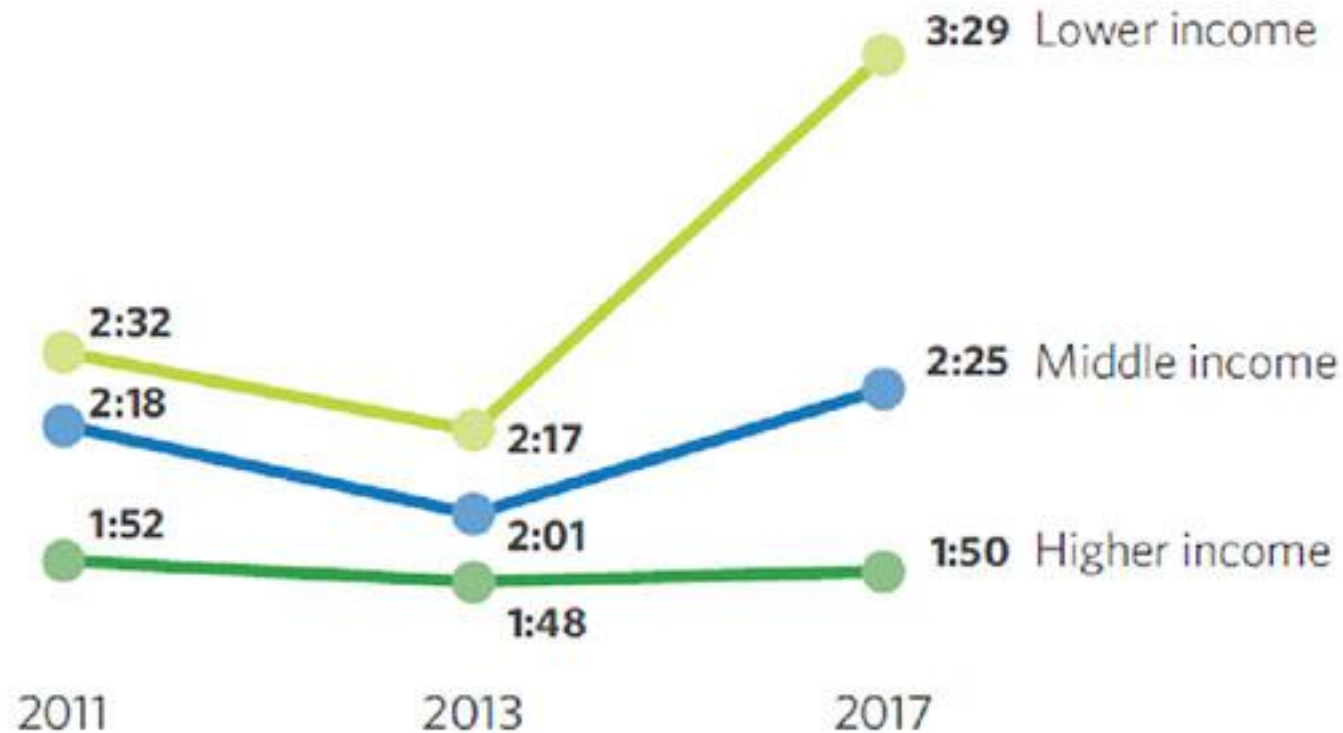
Hypothesis 1

- The **‘secondary digital divide’**
 - Cognitive
 - (The primary digital divide is [was] economic)
- Digital information environments are complex, demanding increased reader responsibility, driving inequality
- This affects children from a disadvantaged background more

In the lower socioeconomic strata screen time is surging

FIGURE C. Screen Media Use, by Income, 2011-2017

Average time 0- to 8-year-olds spent daily (hours:minutes)



Note: *Lower income* is less than \$30,000 a year; *middle income* is \$30,000 to \$75,000 a year; and *higher income* is more than \$75,000 a year.

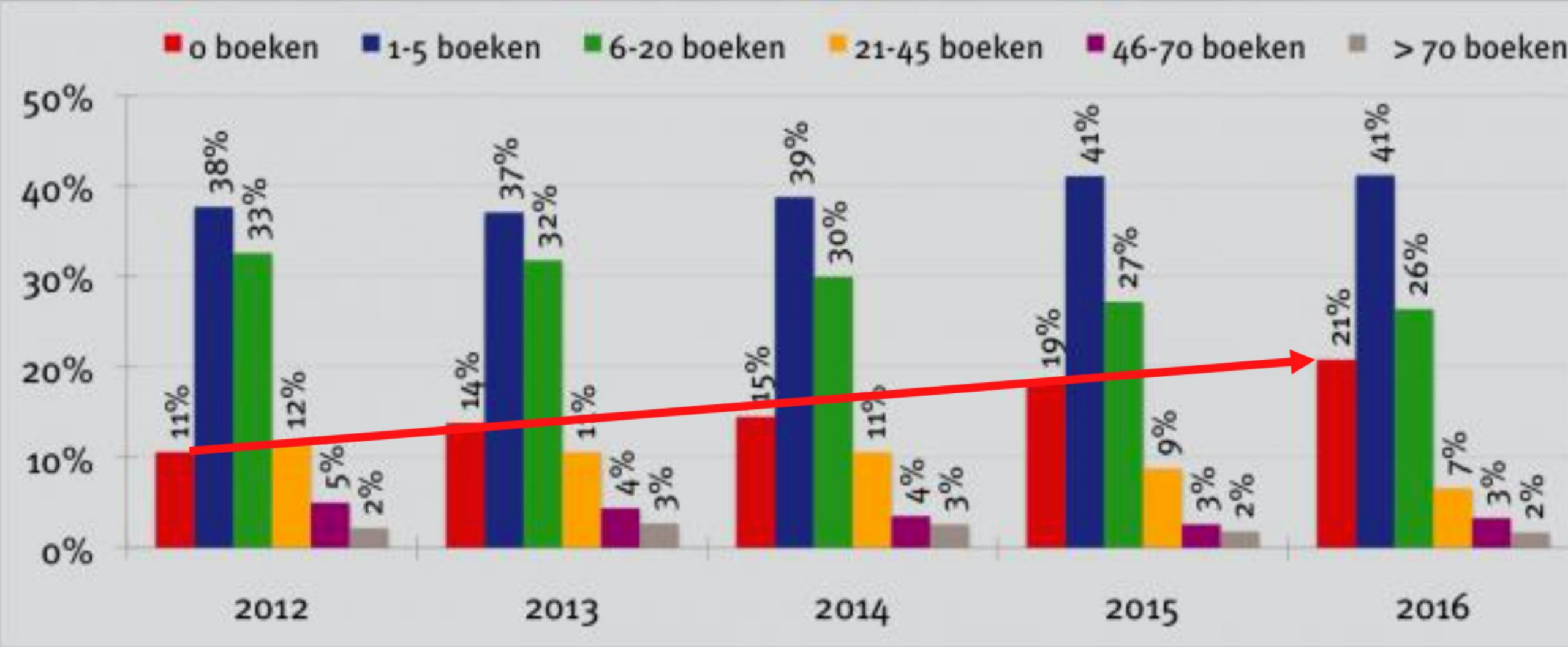
(Michael J. Petrilli, <https://www.the74million.org/article/petrilli-2019-naep-results-show-theres-something-wrong-going-on-3-theories-about-what-might-be-happening-in-our-schools-and-beyond/>, 2019)

Hypothesis 2

- **Algorithmic effects on diversity**
 - The 'filter bubble' effect
 - The popularity effect (demonstrated in, e.g., music and scholarship)
 - In addition to ethical issues, e.g., privacy, etc.

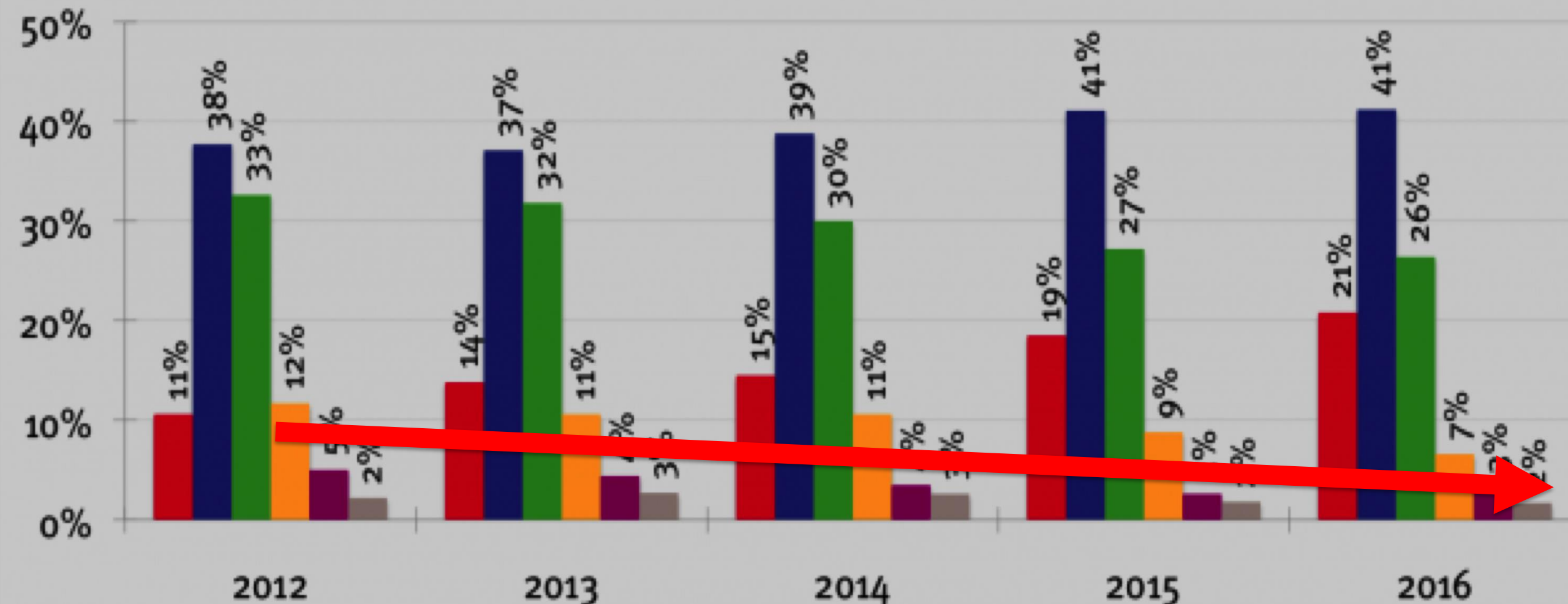
Hypothesis 3

- Major contributing cause of the **downturn in linear long-form book reading**
 - Effects on
 - Cognitive patience (concentration, discipline)
 - Critical thinking skills
 - Social cognition



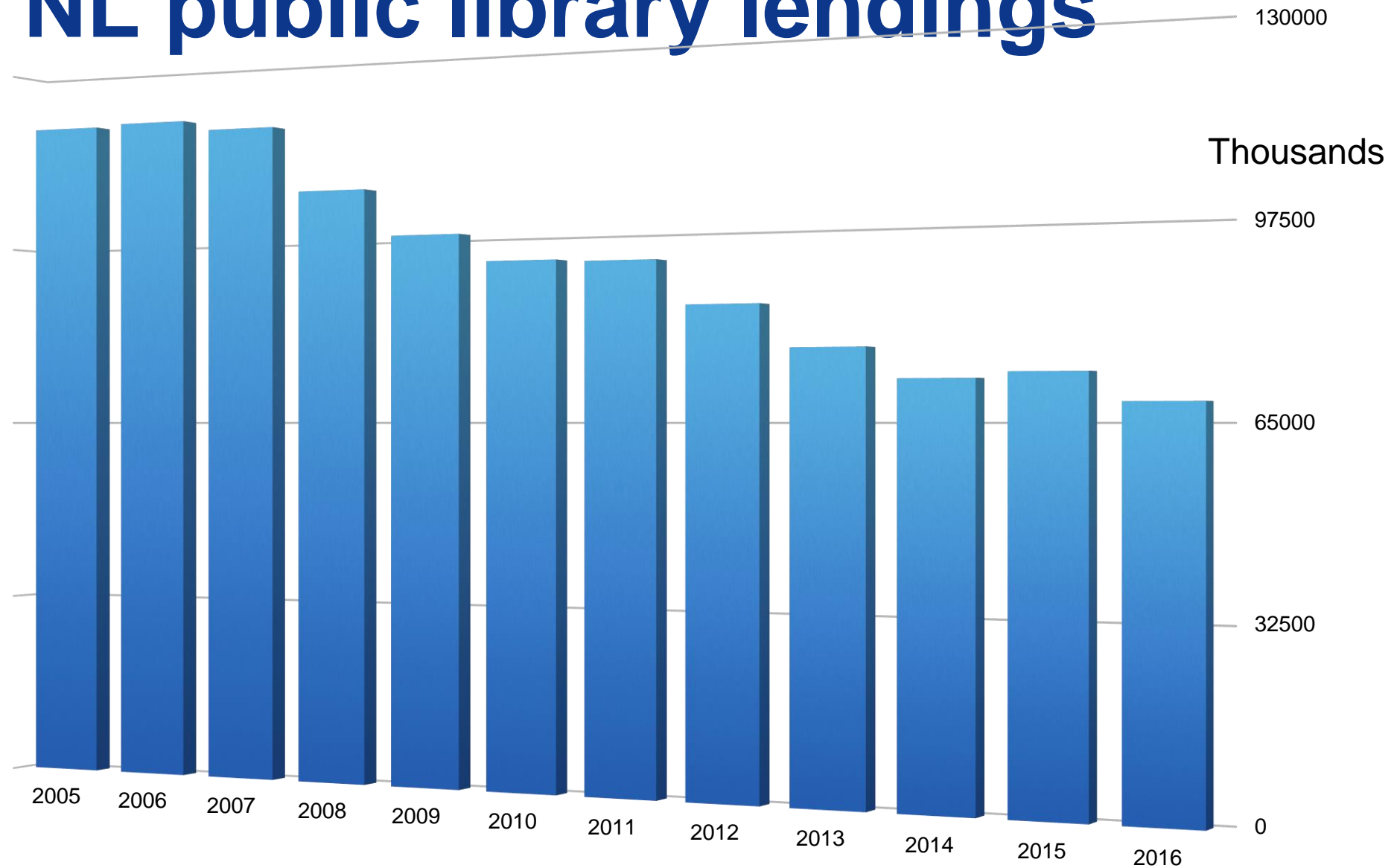
The percentage of non-readers (0 books per annum) in the Netherlands is up from 11% to 21%

0 boeken 1-5 boeken 6-20 boeken 21-45 boeken 46-70 boeken > 70 boeken



The percentage of intensive readers (20+ books per annum) is down from 19% to 12% of the population

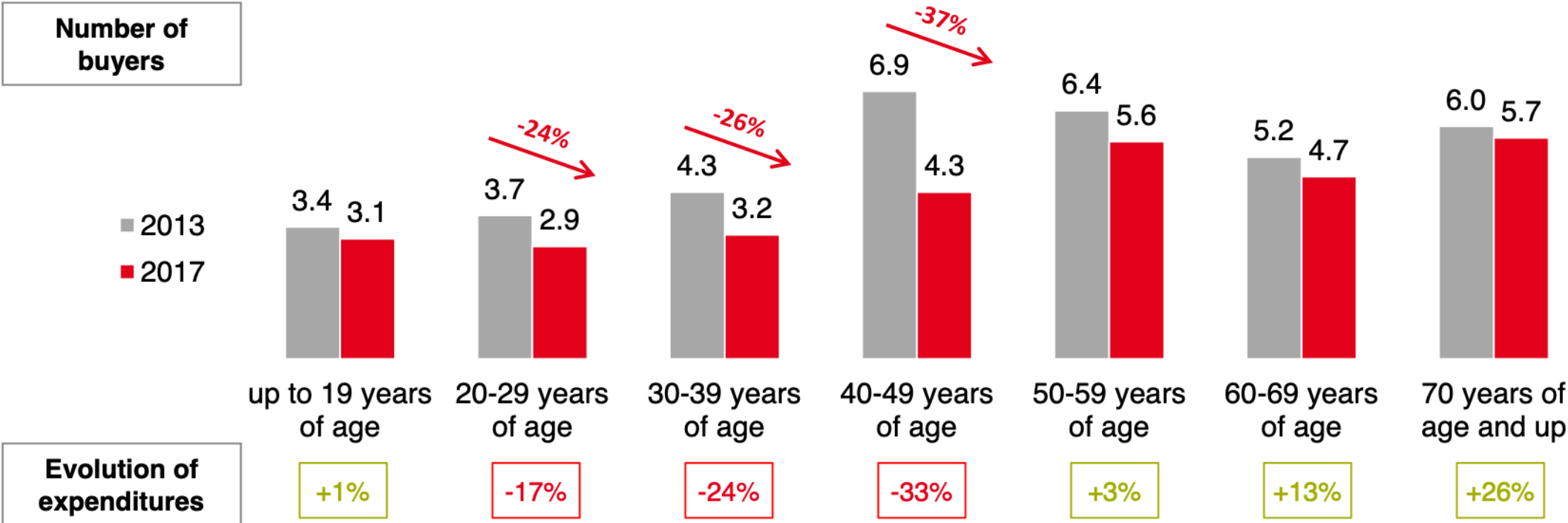
NL public library lendings



In 1994–2016, library loans in the Netherlands declined from over 180 million to 70 million

Book buying in Germany, 2013-2017

Number of book buyers (in millions) and evolution of expenditures* by age



Based on key figures, Each time period extends from January to December; German consumers aged 10 and up; **excluding school and learning books**; Taken from the GfK Consumer Panel Media*Scope book

*Consumer book market including downloads (audio books and E-books)

Fiction reading in Russia

- то доля жителей России, которые читают её ежедневно или еженедельно, сократилась существенно – в два раза: с 23% до 14% и с 26% до 14% соответственно
- (The proportion of Russian residents who read fiction daily or weekly decreased significantly [between 1994 and 2019]: halving from 23% to 14% and from 26% to 14%, respectively)
 - <https://www.levada.ru/2019/07/01/dosug-i-razvlecheniya/>

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