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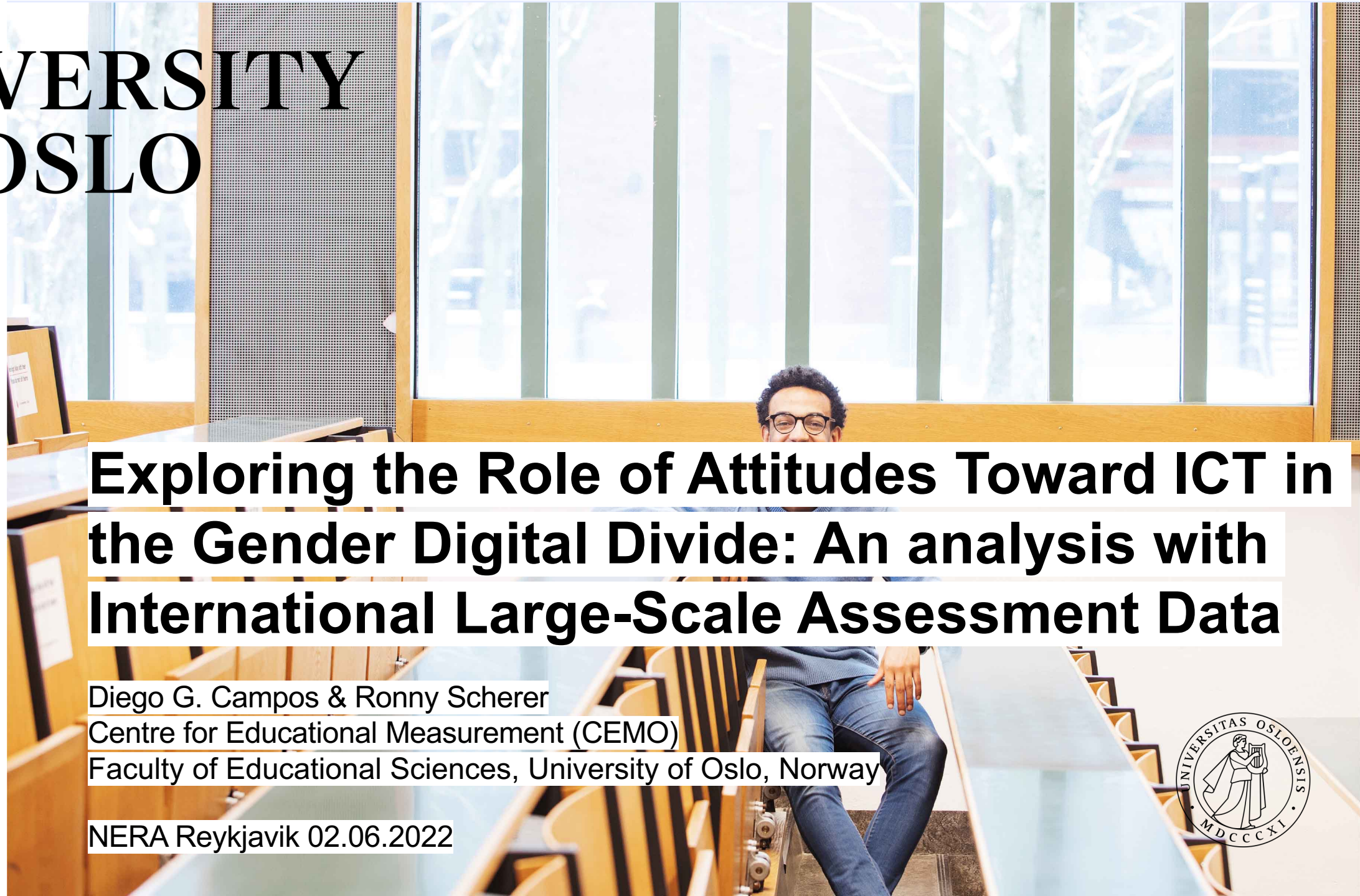

Exploring the Role of Attitudes Toward ICT in the Gender Digital Divide: An analysis with International Large-Scale Assessment Data

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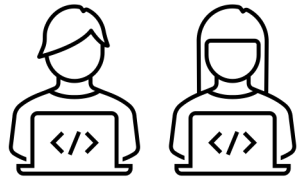
NERA Reykjavik 02.06.2022

Digital Competence

"Digital Competence is the set of knowledge, skills, attitudes that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socializing, consuming, and empowerment" (p.31)

Ferrari (2013)

Digital Competence



Digital Competence

Digital Content Creation

Safety

Problem Solving

Information and Data Literacy

Communication and Collaboration

Ferrari (2013)

1. Potential benefits of ICT for teaching and learning
2. Digital competence is necessary in our knowledge society
3. Digital divide: Employability and life chances

Siddiq, et al (2016)

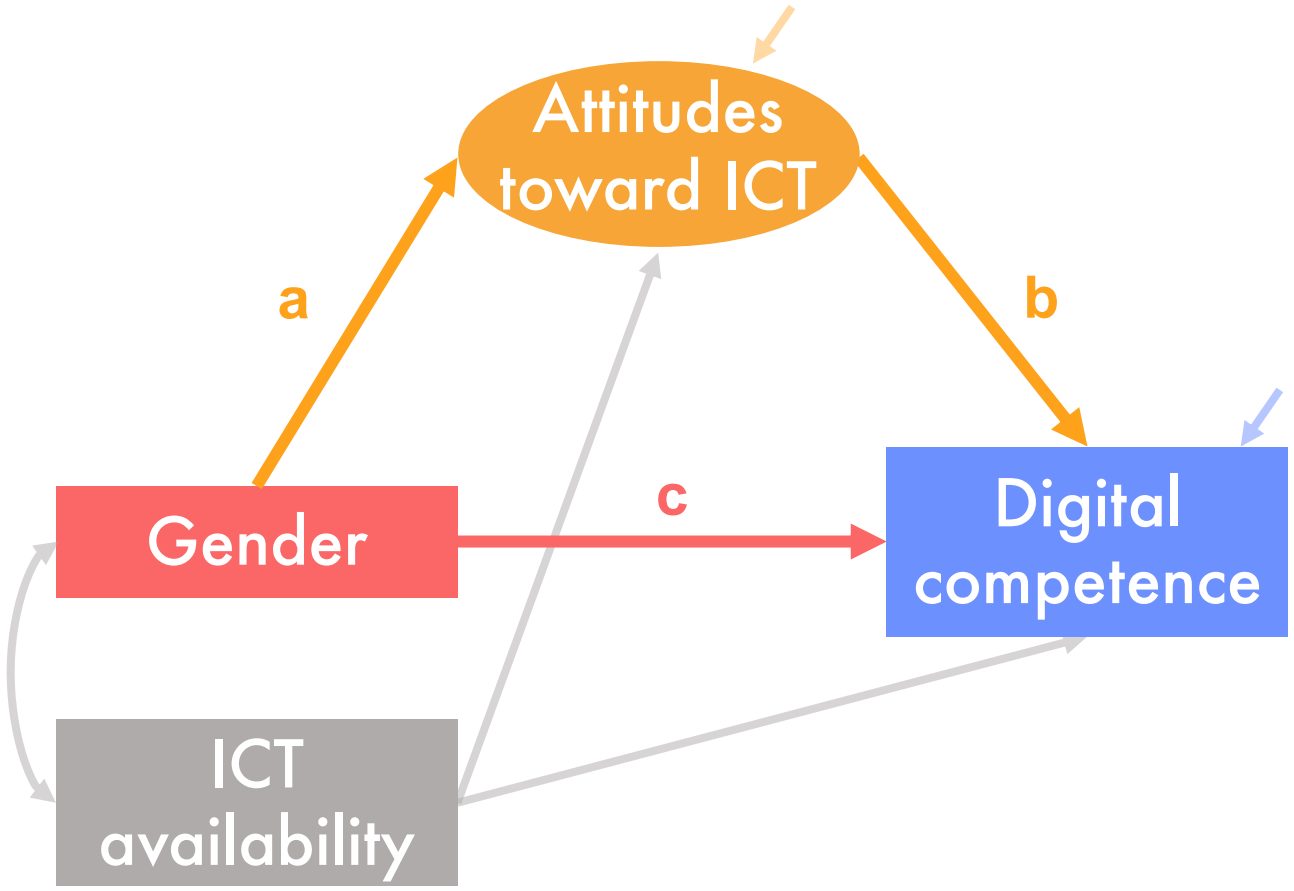
Digital Divide

Access	Knowledge, Skills, and Attitudes	Outcomes
Students belonging to low SES groups, women, and those living in rural areas have more difficulties in accessing digital resources (OECD, 2015)	Students' advanced ICT skills are largely associated with background (Hargittai, 2010), attitudinal (Greene, et al., 2014), and cognitive characteristics (van Deursen & van Diepen, 2013)	ICT can facilitate students' access to digital information, support self-directed and student-centered learning (Fu, 2013; Jeong & Hmelo-Silver, 2016; Kim et al., 2018)

Research Goals

Synthesize the evidence on the

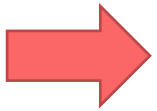
- Gender differences in digital competence after controlling for other relevant divides
- Mediating role of students' attitudes toward ICT for these differences



Sample

Study sample:

- ICILS 2013
- ICILS 2018



- K-12 student samples
- At least one measure of ICT attitudes
- Performance-based measure of digital competence
- Representative, random, and large-scale student samples
- Sufficient reported effect sizes or available raw data to generate them

Methods

ICILS 2013

- **Digital Competence:**
  Computer and information literacy
- **Attitudes towards ICT:**
  Interest
  Self-concept general
  Self-concept advanced

- 21 Countries and benchmarking cities
  Girls: 29,331 (3,014,806)
  Boys: 30,096 (3,111,925)

ICILS 2018

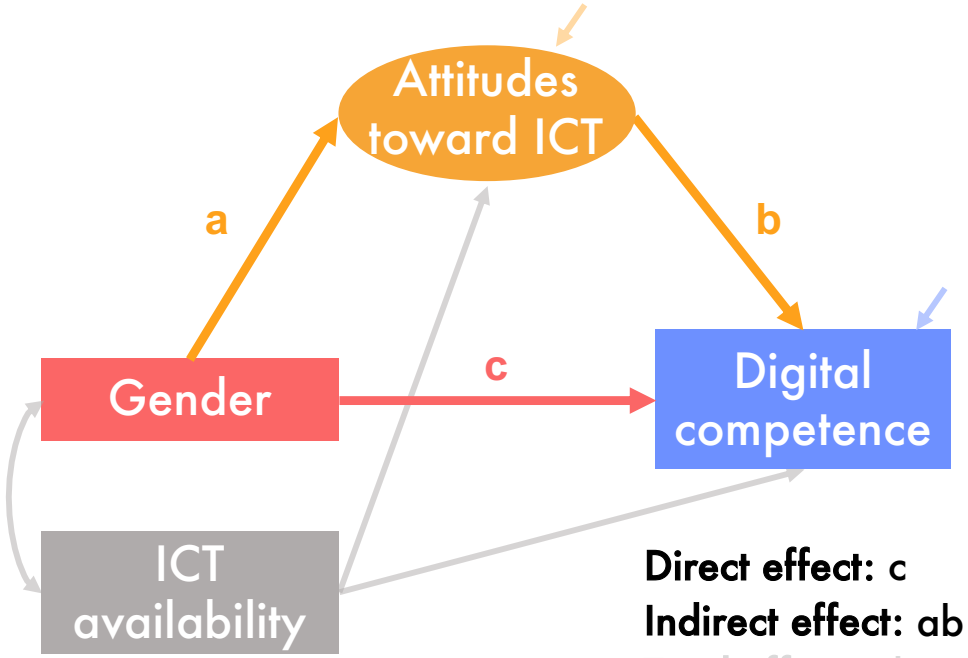
- **Digital Competence:**
  Computer and information literacy
  Computational thinking
- **Attitudes towards ICT:**
  Positive attitudes
  Negative attitudes
  Future expectations
  Self-concept general
  Self-concept advanced

- 14 Countries and benchmarking cities
  Girls: 22,765 (3,596,847)
  Boys: 23,789 (3,748,033)

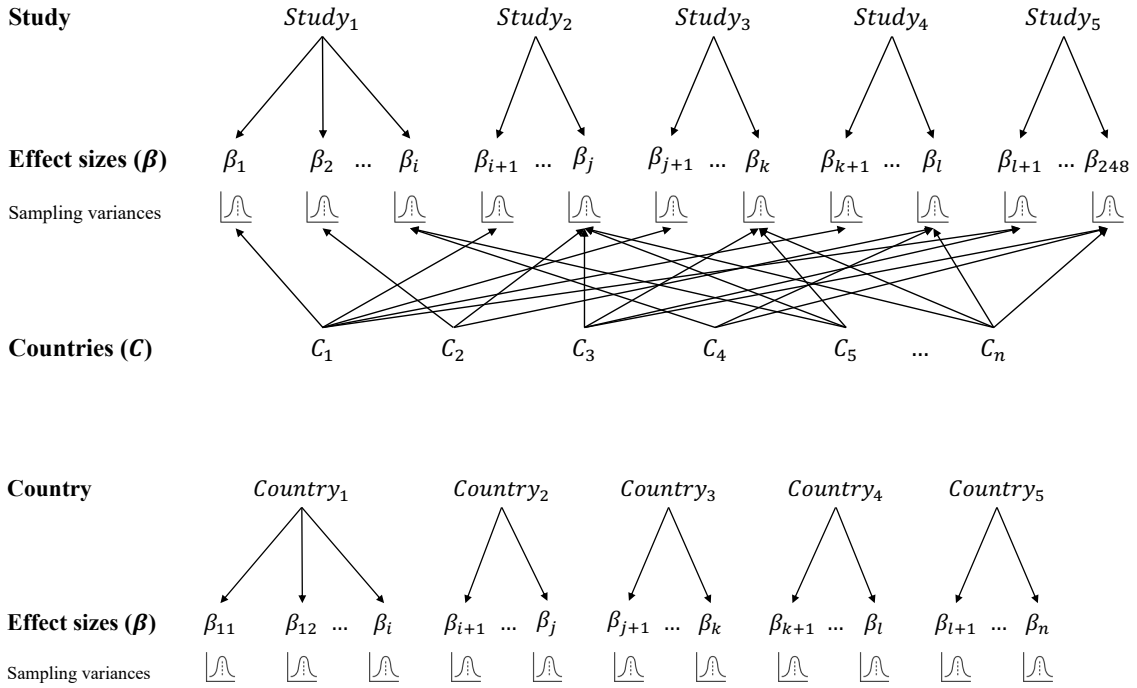
Methods

Two-stage IPD meta-analysis:

Stage 1:
Effect size generation via SEM



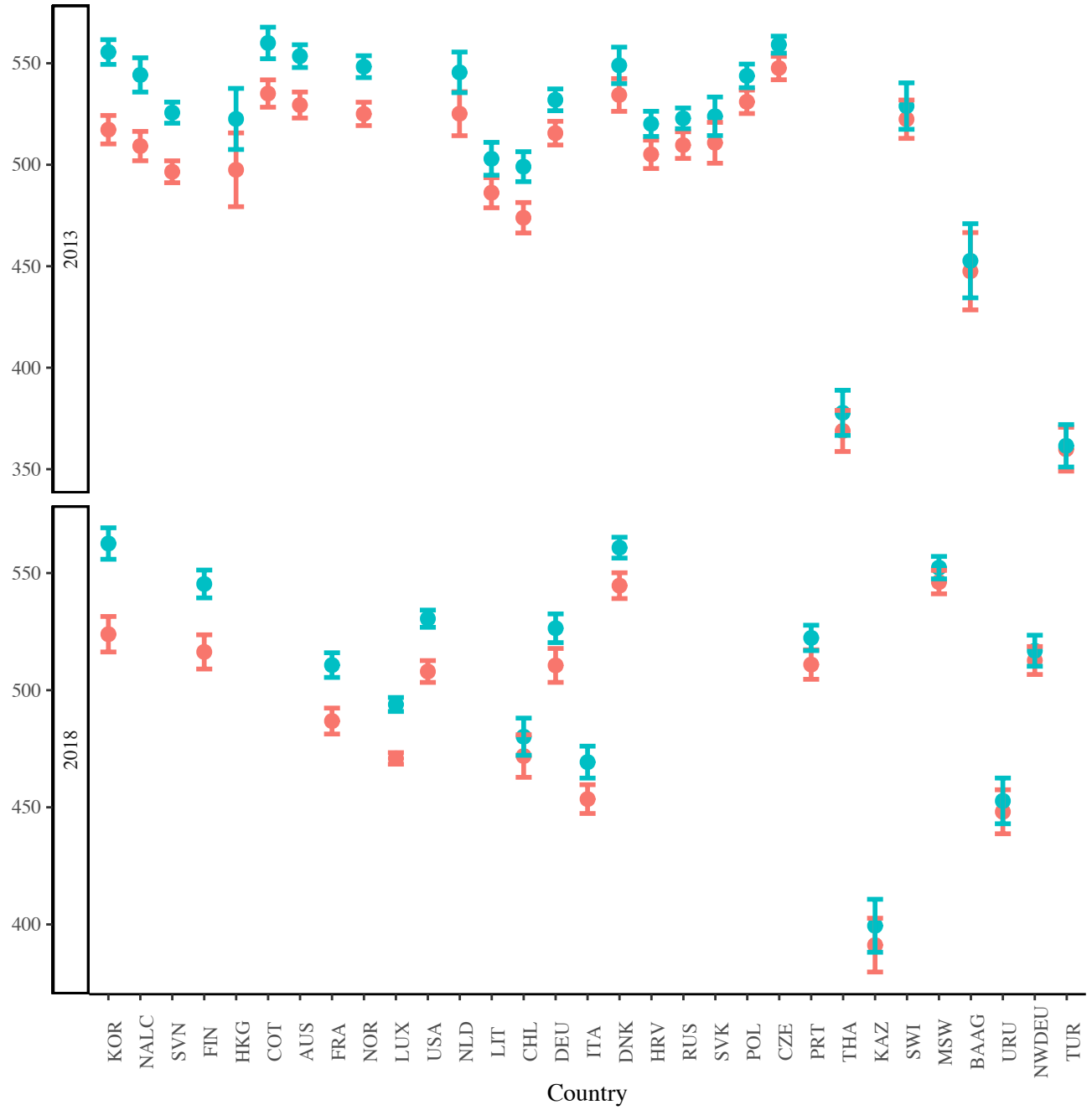
Stage 2:
Random-effects meta-analysis



Results

Gender differences in digital competence

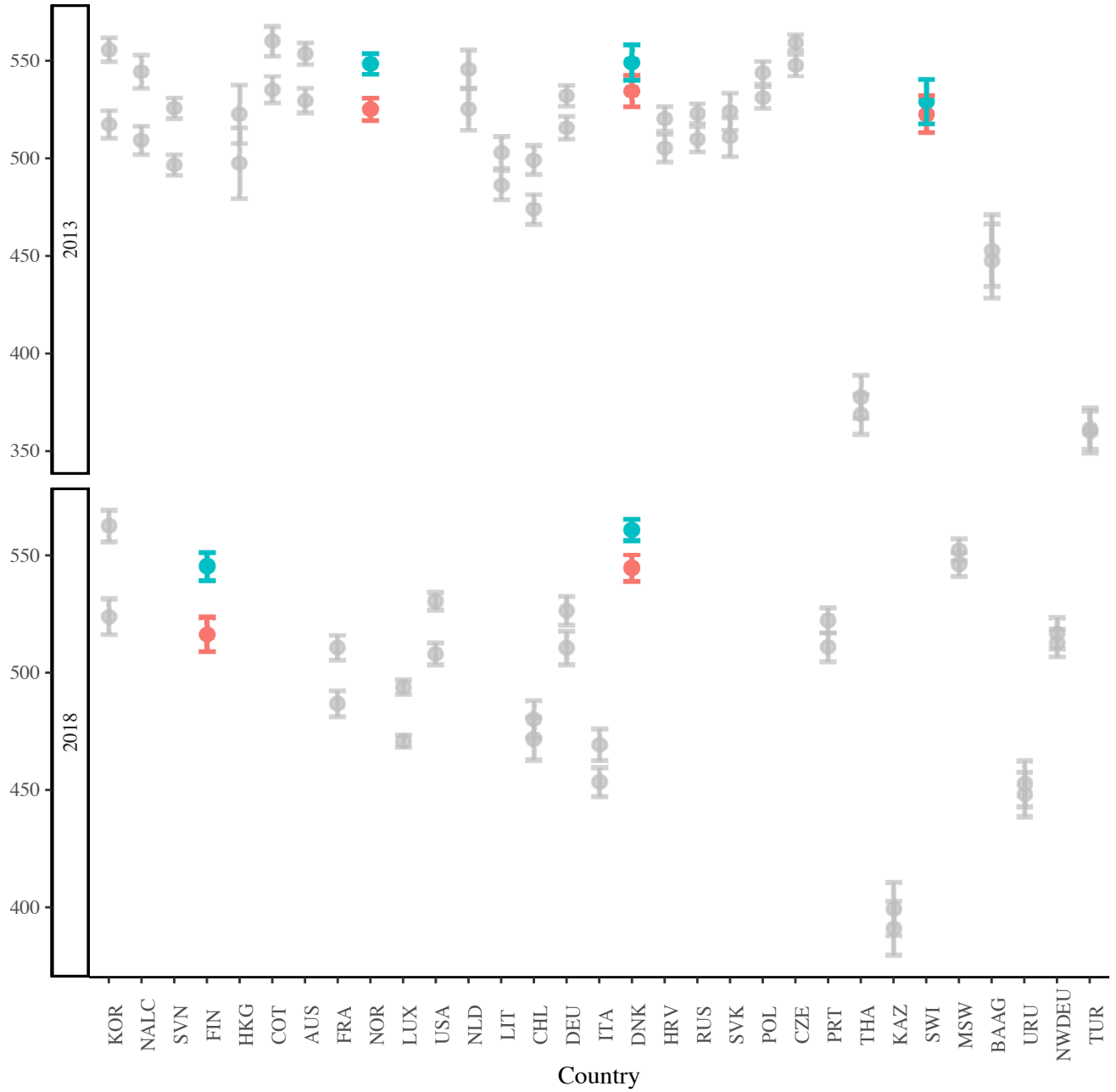
- Girls have higher scores in digital competence than boys
- There is considerable variation across countries



Results

Gender differences in digital competence

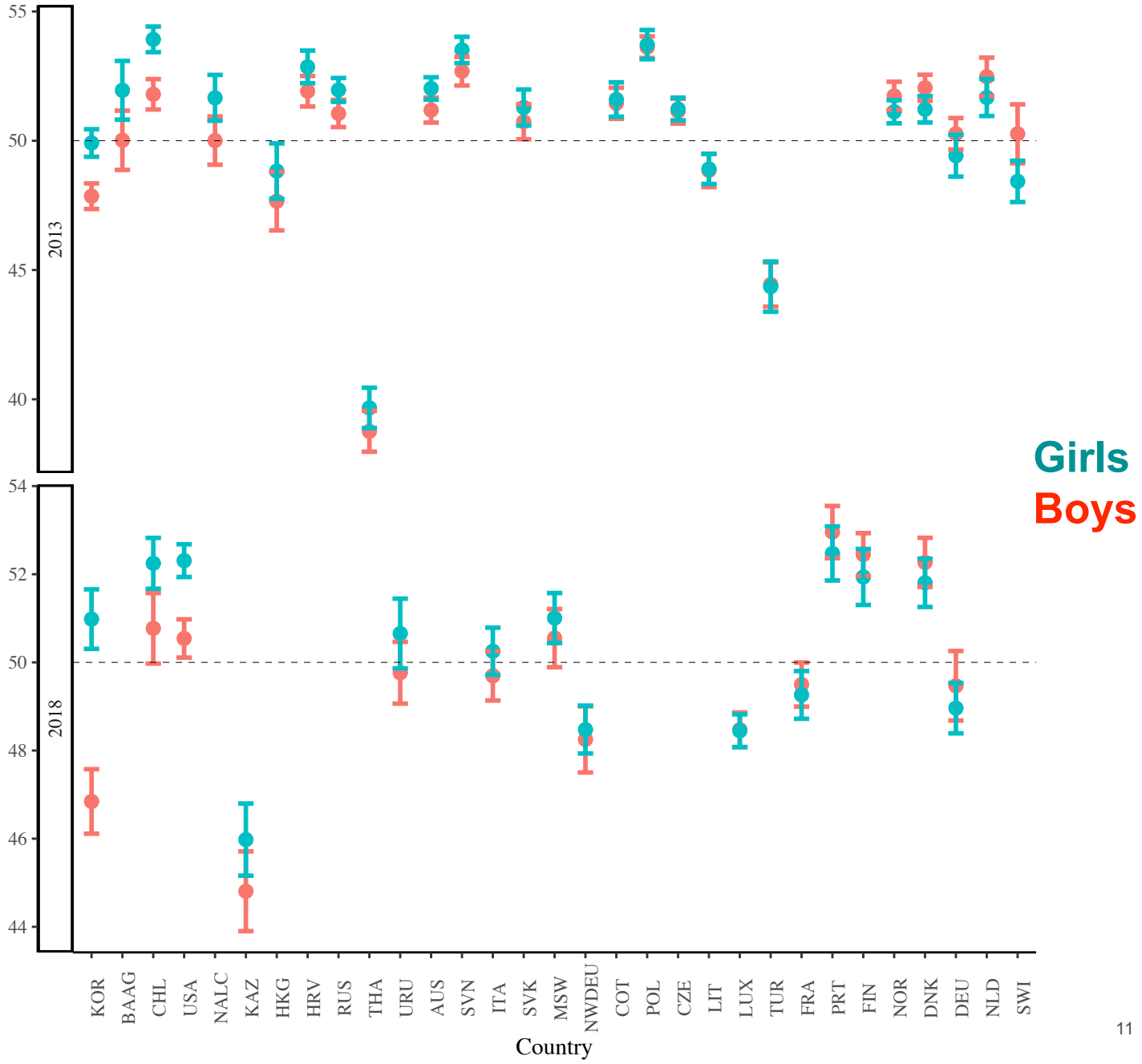
- Gender differences in Nordic countries tend to be small and in favor of girls



Results

Gender differences in self-concept

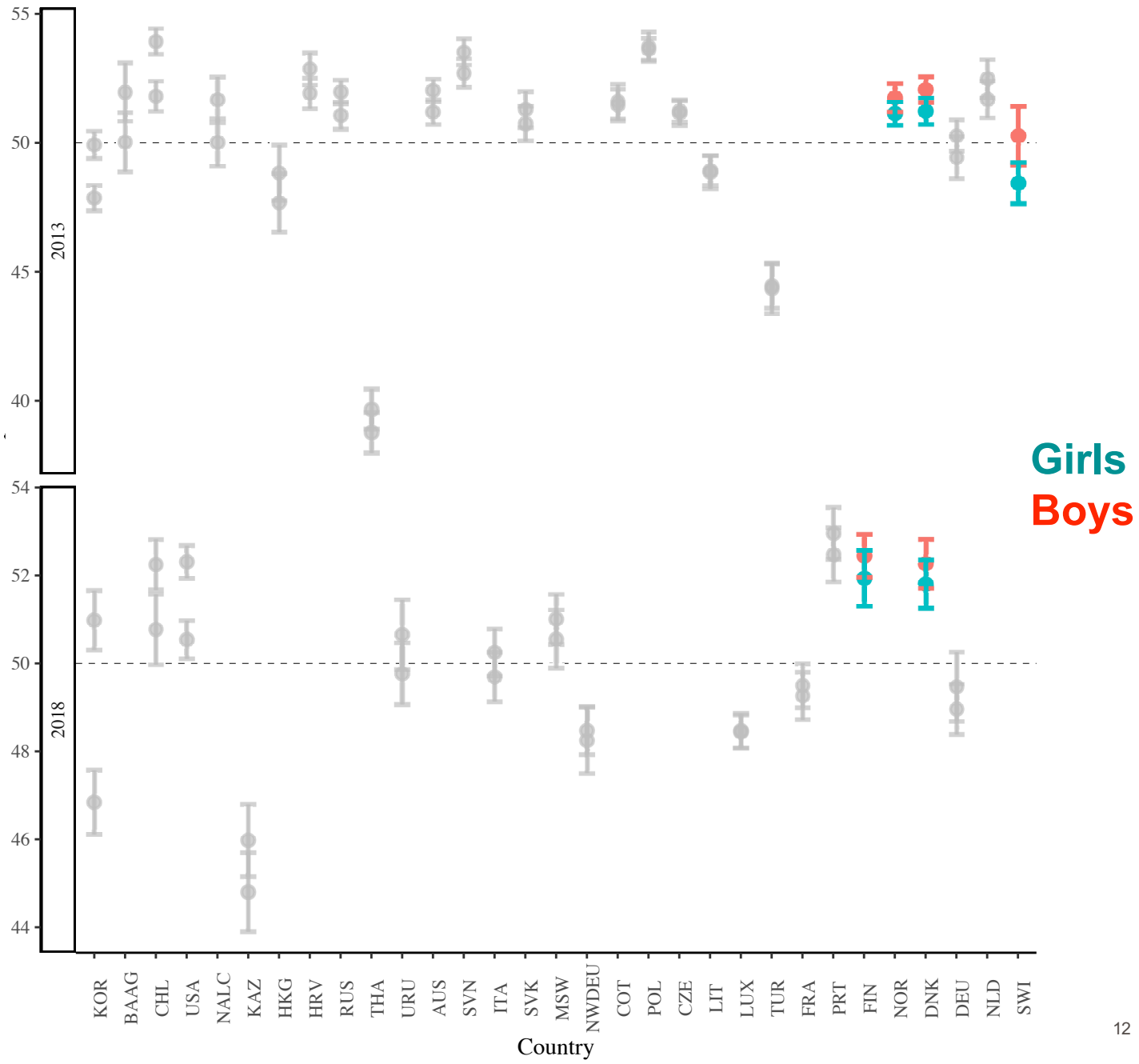
- Girls tend to have a higher self-concept in digital competence than boys



Results

Gender differences in self-concept

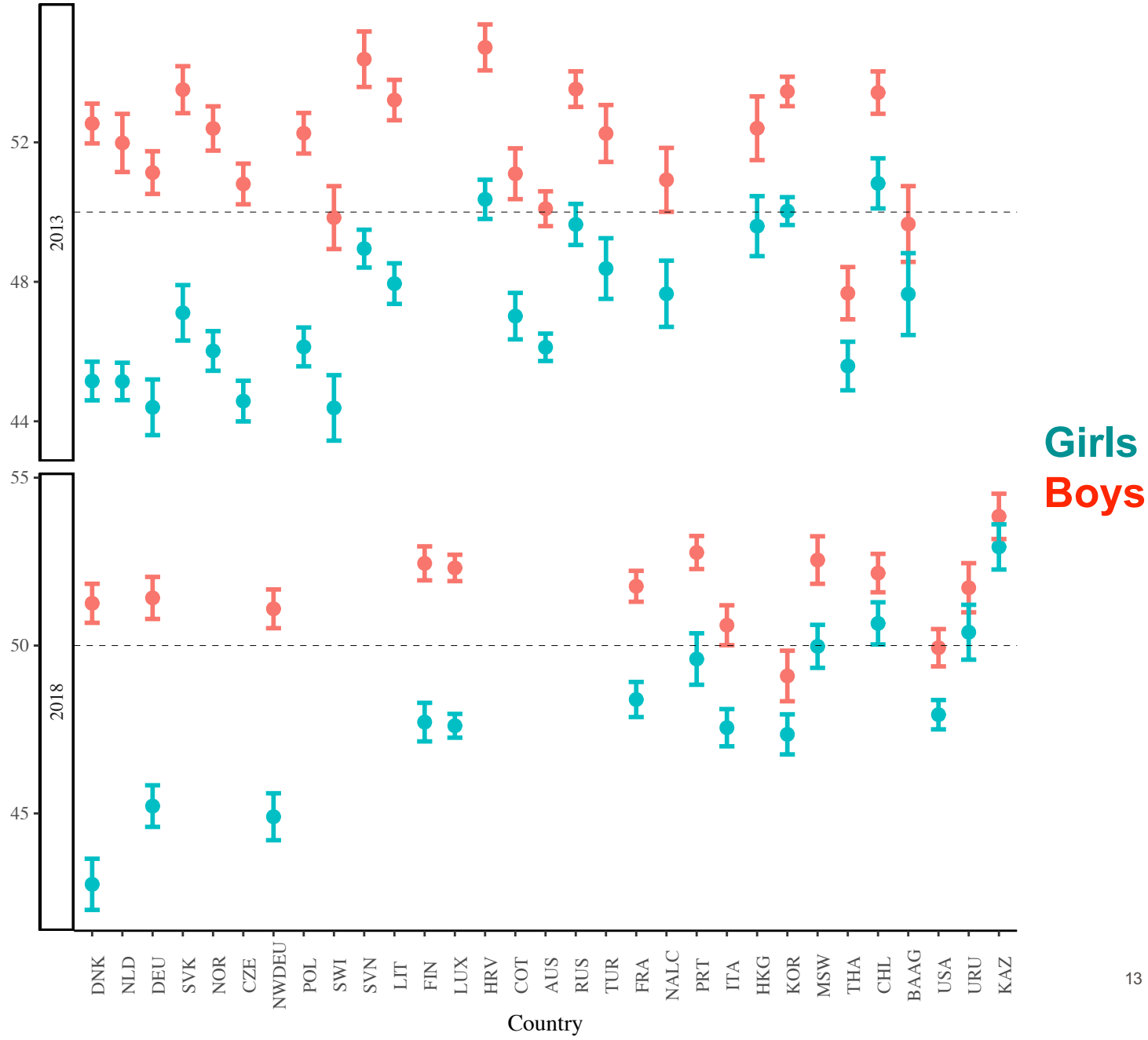
- In the Nordic countries, the differences between boys and girls are small and favor boys



Results

Gender differences in self-concept advanced

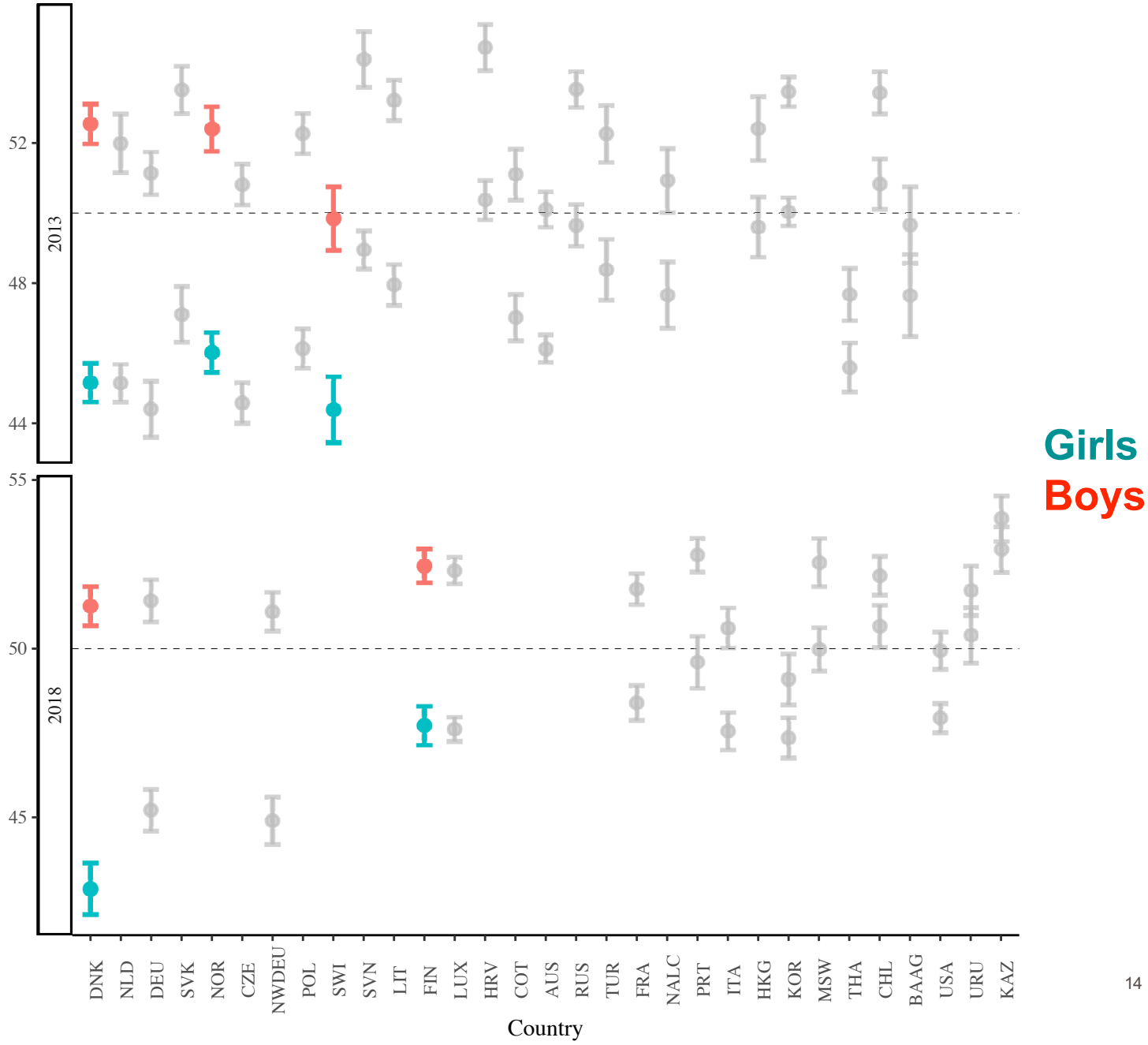
- Boys tend to have a higher self-concept specific than girls



Results

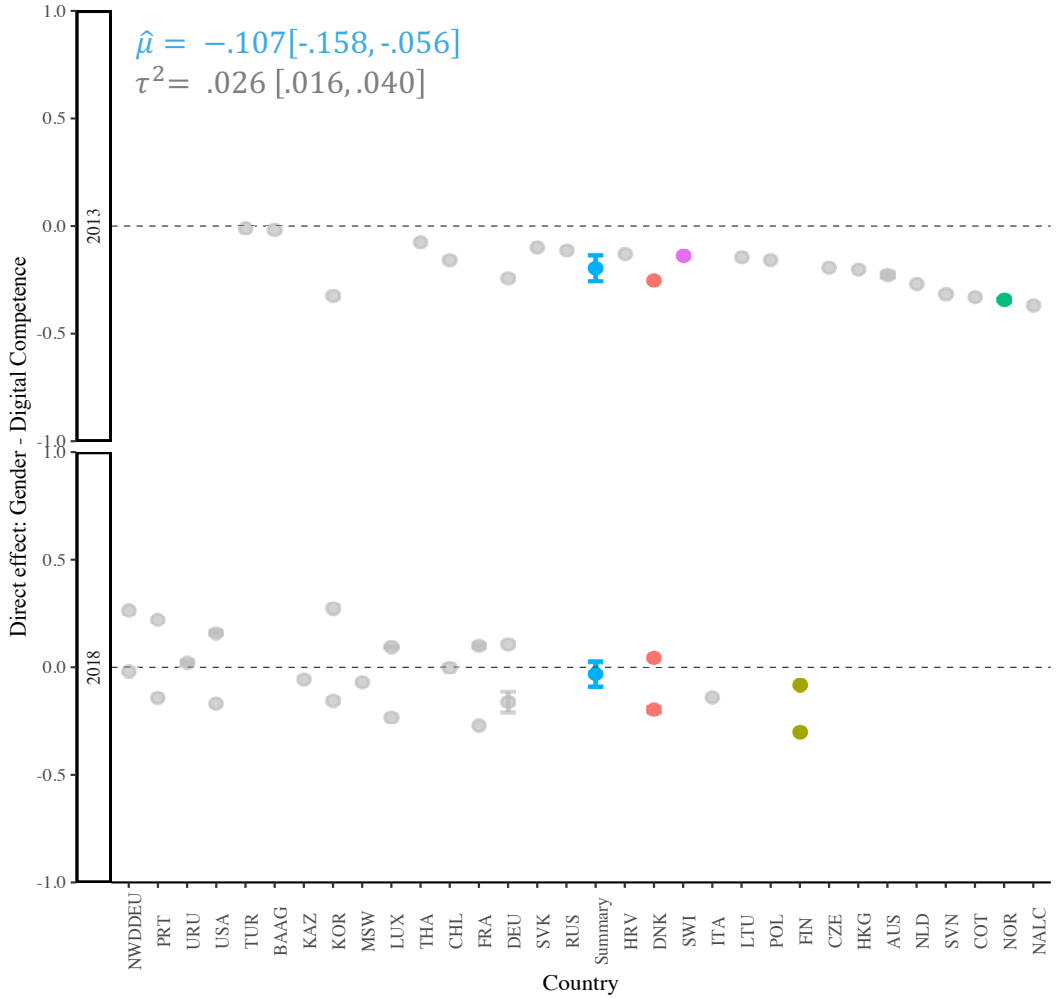
Gender differences in self-concept advanced

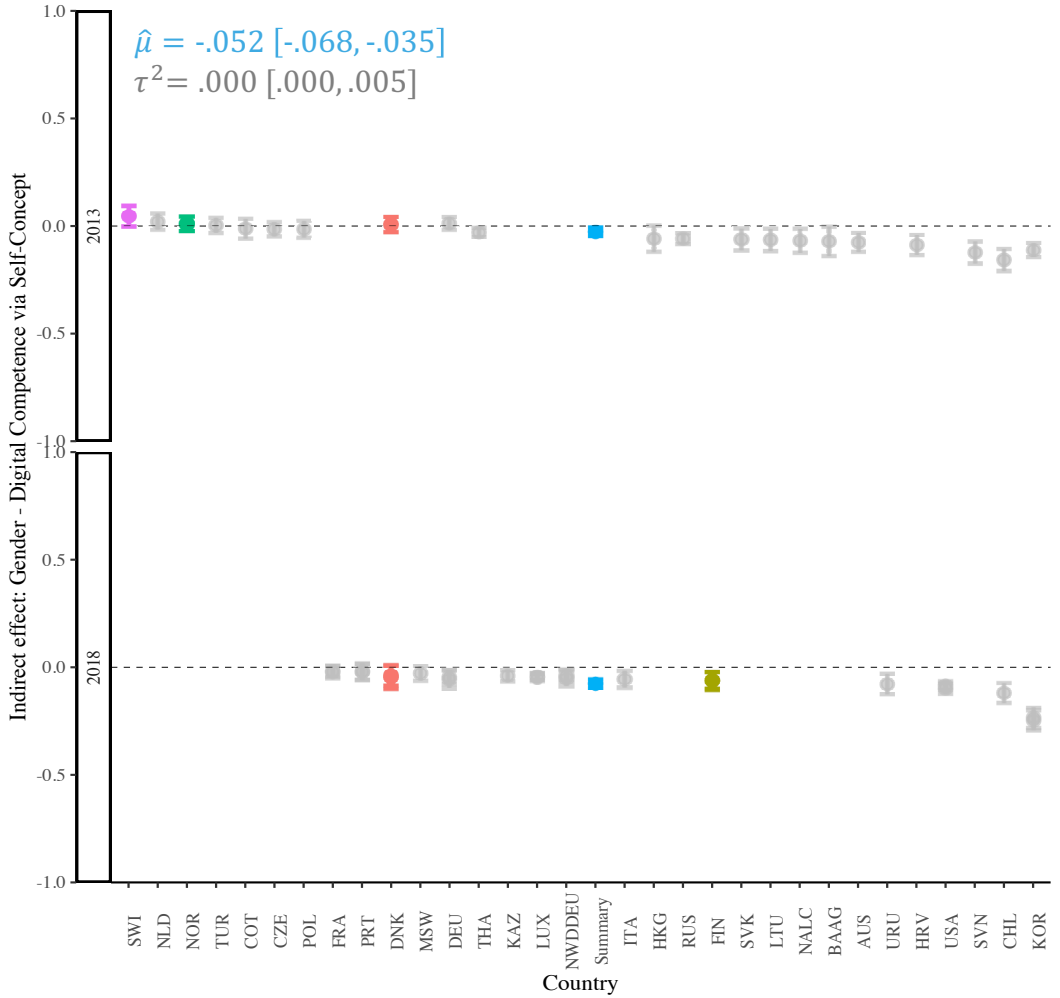
- Nordic students rank among those with the largest differences in self-concept advance



Results

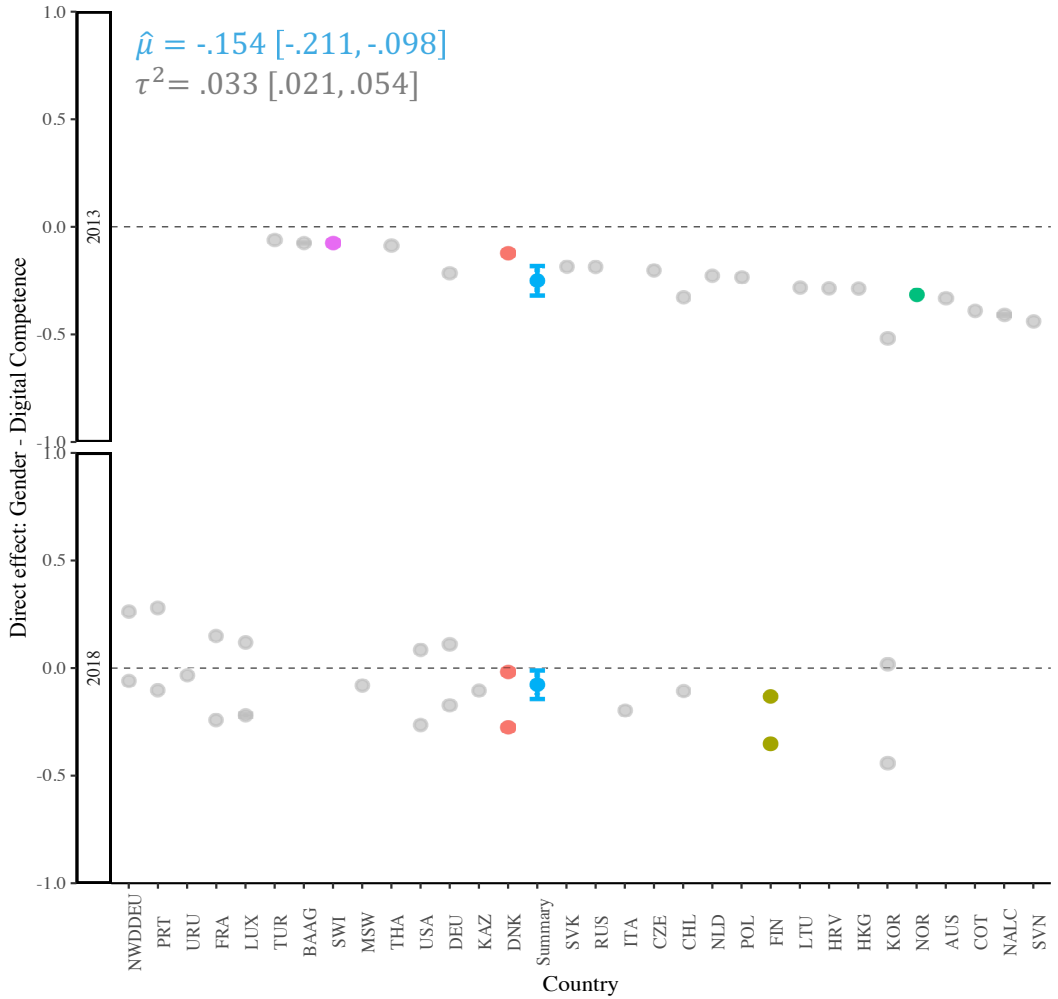
Meta-Analytic Models: Gender differences in ICT via self-concept

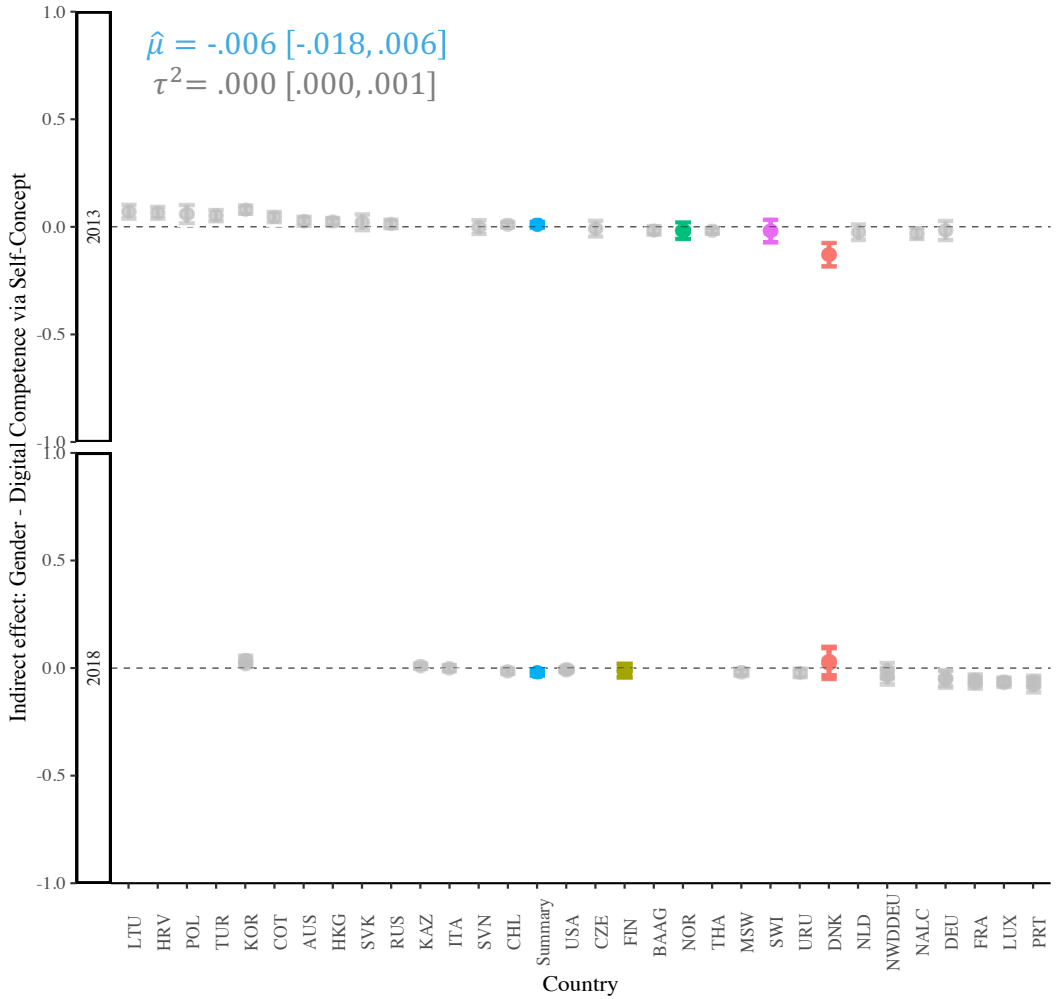




Results

Meta-Analytic Models: Gender differences in ICT via self-concept advanced





Conclusions

- Gender gaps in digital competence are not explained by differences in attitudes towards ICTs
- Girls demonstrate higher digital competence than boys, even after adjusting for differences in access and attitudes towards ICTs
- The gender digital divide is more pronounced than in other traditional domains: mathematics and science

Mullis, et al. (2020)

Photo by John Schnobrich on Unsplash

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Questions?

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Digital Divide

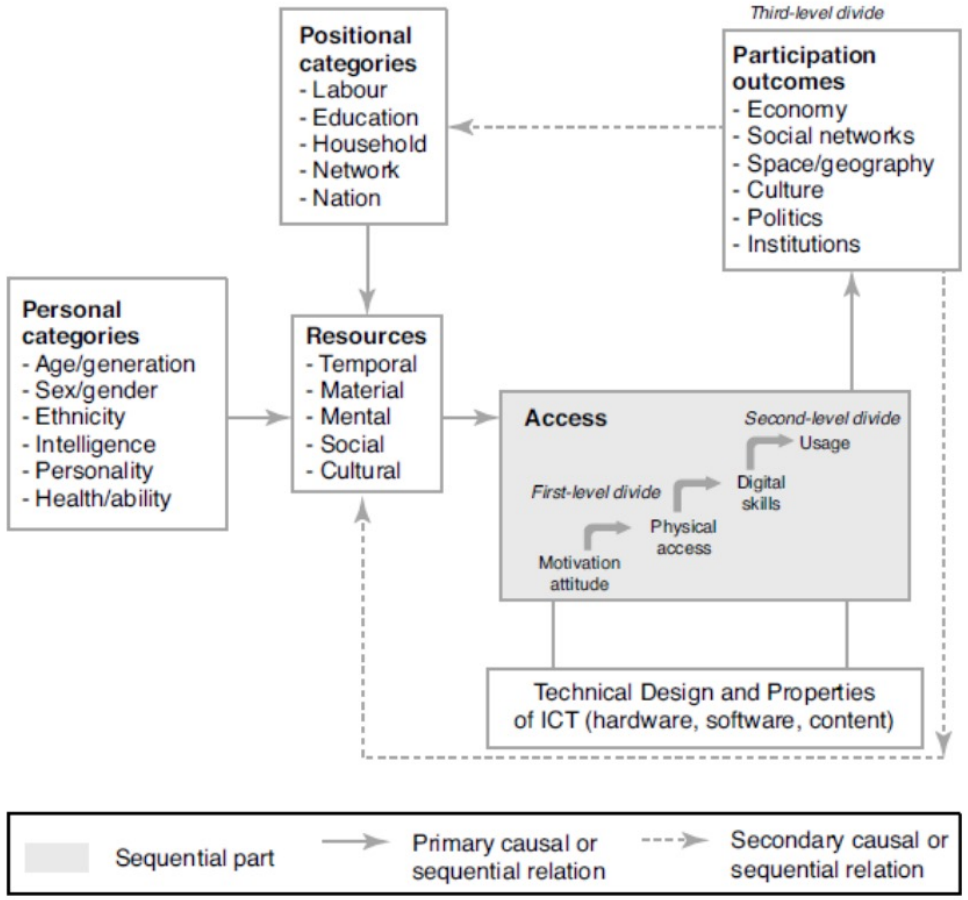
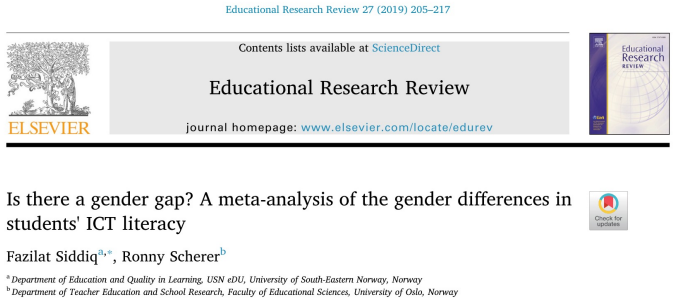


Figure 2.3. A causal and sequential model of digital media access

The interaction between the first and second digital divide.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Is there a gender gap? A meta-analysis of the gender differences in students' ICT literacy

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Van Dijk, (2020)