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Leibniz Institute
for the Social Sciences



The Impact of Assessment Features on Adults' Literacy Skills

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1

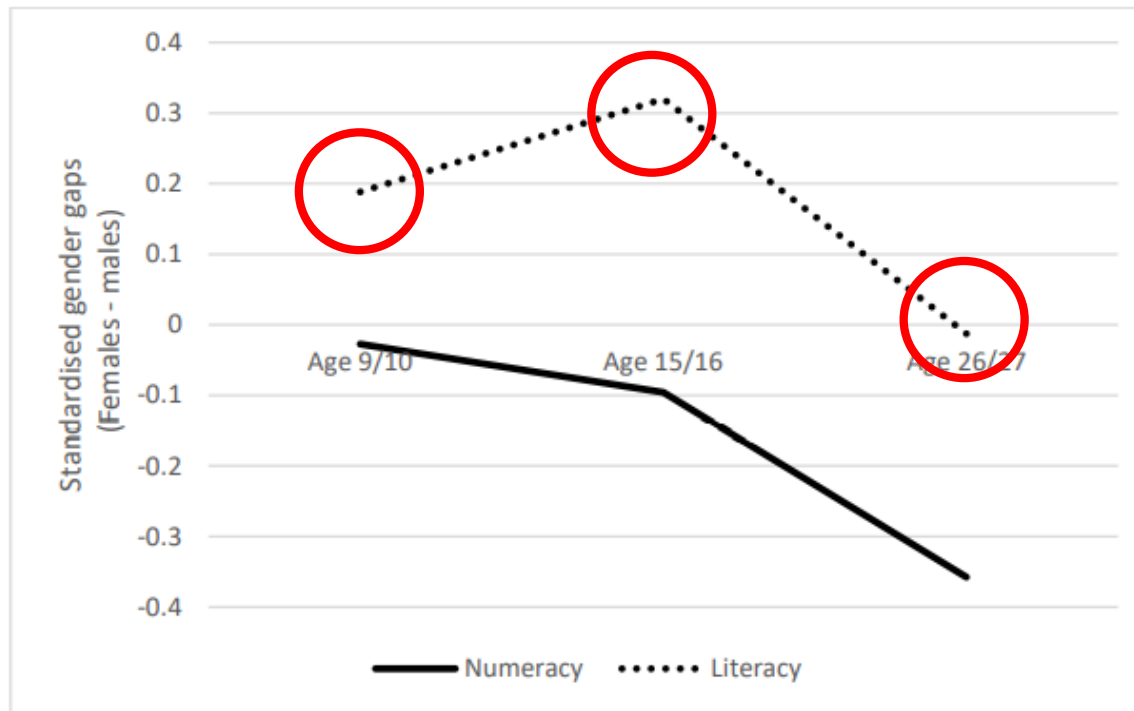
Introduction

Literacy Skills Are Important!

- **Definition of literacy in PIAAC**
 - *Understanding, evaluating, using and engaging with written texts to participate in society, to achieve one's goals, and to develop one's knowledge and potential.*
- **Literacy skills are important for...**
 - Everyday life communication, social media, education work, and societal participation

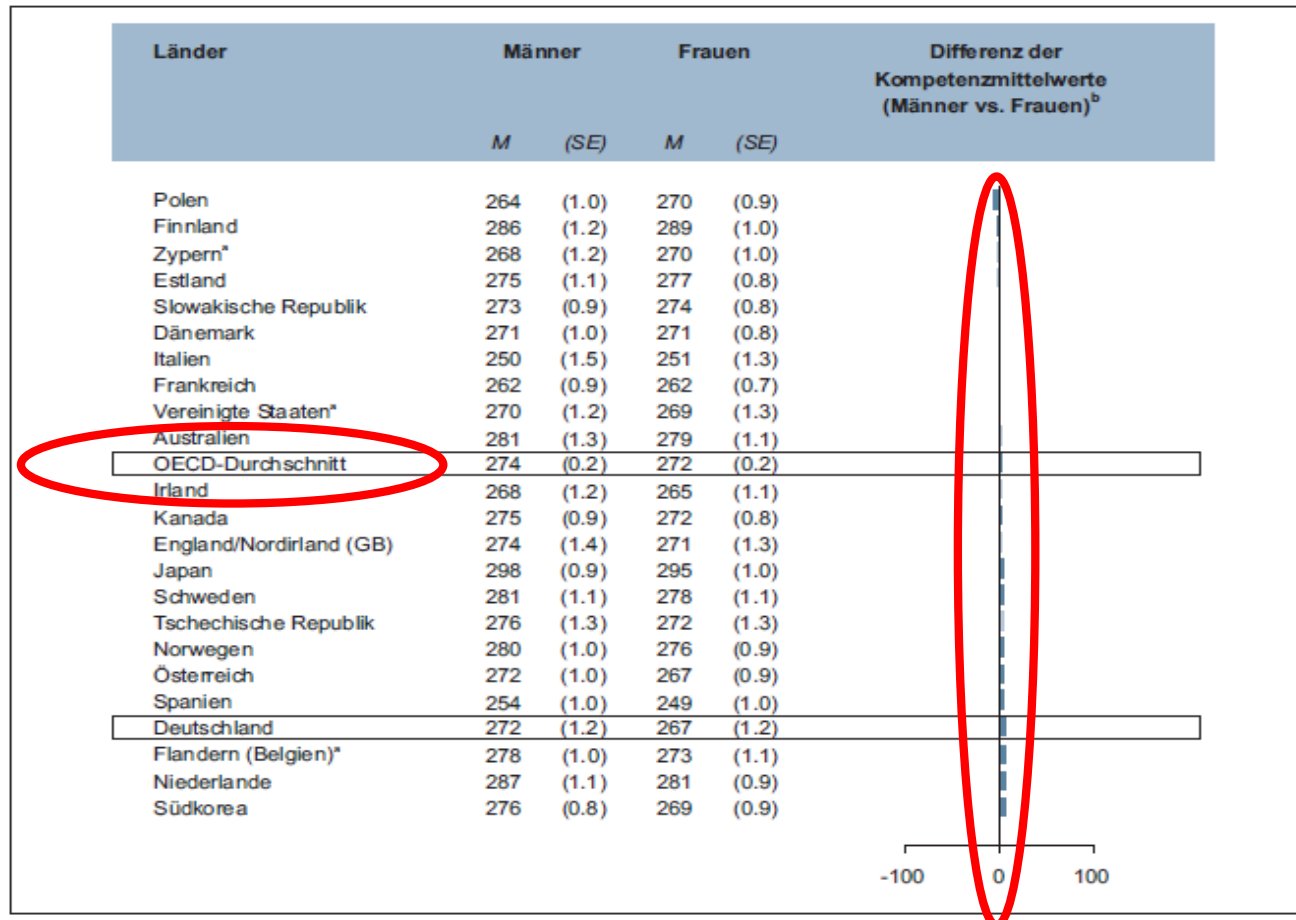
Gender Gaps in Literacy Skills in Childhood and Youth

Figure 3.1. Evolution of gender gaps in numeracy and literacy



(Borgonovi et al., 2018)

Gender Gaps in Literacy Skills in Adulthood



Open Questions

- *Why do gender differences in literacy increase throughout the childhood/adolescence but decrease or even disappear during the adulthood?*

Developmental

- Are men “catching up” or are women “losing” skills?

Methodological

- Are some literacy assessments (PIRLS, PISA) more prone to gender differences than others (PIAAC)?

Previous Evidence on Assessment Features & Gender

- **Text types**

Boys read short & non-continuous texts better.

- **Item format**

Boys respond better to multiple-choice items than open-ended questions (with written response).

- **Aspect of reading**

Boys respond better to „access & retrieve“ tasks than to „evaluate & reflect“ tasks.

(Solheim & Lundetræ, 2018)

The Present Study

- Our **goal** is to investigate the impact of assessment features on gender differences in literacy skills among adults.
- Our study is **important** for accurately estimating & interpreting gender gaps in literacy skills.
- Our study is **useful** for constructing a literacy test that is free from gender response bias.

2

Method

Data & Sample


- **Data:**
 - PIAAC (Germany)
 - Collected in 2011-2012
- **Sample:**
 - Adults (16-65 years old)
 - N = 4512 (computer-based data only)
 - Gender ratio: approx. 50%

Measures

■ Assessment Features

1. Text topics: community, education, personal, work
 2. Text format: continuous, non-continuous, mixed
 3. Cognitive strategy: access and identify; integrate and interpret; evaluate and reflect
 4. *Text length: short, medium/long
 5. *Numerical content of text: low, medium, high
 6. *Gender-typicality: feminine, masculine, neutral
- *our own classification

Sample Item



Look at the list of preschool rules. Highlight information in the list to answer the question below.

What is the latest time that children should arrive at preschool?

Preschool Rules

Welcome to our Preschool! We are looking forward to a great year of fun, learning and getting to know each other. Please take a moment to review our preschool rules.

- Please have your child here by 9:00 am.
- Bring a small blanket or pillow and/or a small soft toy for naptime.
- Dress your child comfortably and bring a change of clothing.
- Please no jewelry or candy. If your child has a birthday please talk to your child's teacher about a special snack for the children.
- Please bring your child fully dressed, no pajamas.
- Please sign in with your full signature. This is a licensing regulation. Thank you.
- Breakfast will be served until 7:30 am.
- Medications have to be in original, labeled containers and must be signed into the medication sheet located in each classroom.
- If you have any questions, please talk to your classroom teacher or to Ms. Marlene or Ms. Tree.

Context: personal	Length: short
Strategy: access & identify	Numerical content: some
Format: non-continuous	Gender bias: slightly female

Statistical Analysis

- **Linear probability model**
- **DV:** a probability of solving an item correctly with certain assessment features
- **IV:** gender (female or male)
- **Controlling variables:**
 - Education levels, native language
 - Employment status, children, and reading behavior
 - Item difficulty, core items, sequence of skill domains
 - (Correlated) assessment features

3

Results

The Impact of assessment features on gender differences

No

Text topics

Gender typicality

Cognitive strategy

Yes

Text Length

Text format

Numerical content

Assessment Features Matter...

- **Text length:** men have 9% higher probability of solving items correctly for short-texts.
- **Text format:** men have 14% higher probability of solving items correctly for non-continuous texts.
- **Numerical content:** men have 4-6% higher probability of solving items correctly for texts with medium-high numerical content.
- **Text topic:** men have 4-5% higher probability of solving items correctly for texts with “Education” content.

4

Discussion

Key Findings

- Overall, PIAAC literacy test is a gender neutral assessment in terms of assessment features.
- Gender differences depend on some assessment features but not others.
- Text length, format, and numerical content matter for gender differences.
- Text topics, gender-typicality, cognitive strategy do not matter much for gender differences.

Limitations and Future Directions

- No test items in PIAAC which require a written response (open-ended questions).
- The results limited to only computer-based items.
- The results limited to literacy in German language.
- More research is needed to disentangle the evolution of gender differences throughout the life course.

Implications and Conclusions

“Why are gender differences in literacy observed for children/adolescents but not for adults?”

- We don't know the answer yet...but some gender differences (often observed in younger cohorts) may be due to assessment features.
- More cautions are needed when interpreting gender differences in literacy scores.
- Our findings may be helpful for more gender-neutral test constructions.



Thank you for your attention!

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