Supplementary Material
Die Fakten dicke! Der GESIS Podcast #4

„Gedisst wie! Bildungsungleichheit in Deutschland“
June 2021
Lydia Repke
Education is often measured and controlled for in statistical analyses without prior theoretical reflection.

What could education refer to in research?

- School attendance
- Scholastic achievement
- Competencies (e.g., reading skills)
- School, vocational, and higher education qualifications
- Relative position of an individual in the distribution of education
- Fields of study
- Duration of the educational career
Education as Socialization

... changes people, especially through the acquisition of knowledge and the development of competencies.

**Human Capital**

raises the individual’s productivity and refers to the acquisition of knowledge, competencies, values, and attitudes.

*Becker, 1964*

**Incorporated Cultural Capital**

comprises linguistic competence, cultural knowledge, and attitudes that the individual needs to be successful in the education and employment system.

*Bourdieu & Passeron, 1970*
Measurement

... of **knowledge** and **competencies** is difficult. Thus, they are often measured via **years of education** or **educational qualifications**.

**Assumption.** The more years people spend in the education system or the higher the final qualification is, the greater are the knowledge and competencies of the individual.

**Human Capital**

People invest time in education to achieve higher earnings

Common indicator: **years of education**

**Cultural Capital**

Categorical educational indicators that distinguish qualitative differences

Common indicator: educational qualifications (e.g., school types)
Educational Attainment Indicators

**Years of education**
- Measures how long a person has been exposed to the education system
- Correlates highly with knowledge, competencies, and attitudes

**Highest educational qualification**
- Reflects the duration of education/training and educational success
- Proxy for competencies

**Relative or positional measures of education**
- Include the social context (e.g., in the form of educational cohorts)
- Relative (not absolute) measure, theoretically more useful for measuring educational inequality
PIAAC

The **Programme for the International Assessment of Adult Competencies (PIAAC)** is an international large-scale study initiated by the **Organization for Economic Cooperation and Development (OECD)** and aims to assess the following key adult competencies:

- literacy,
- numeracy, and
- problem solving in technology-rich environments (Cycle 1)/adaptive problem solving (Cycle 2).

These competencies are central to information processing in modern society and constitute the foundation for the development of many other, more specific competencies.
PIAAC - Survey of Adults Skills

The survey...

- is planned to be conducted every 10 years.
- has had two cycles so far.
- interviews adults aged 16 to 65 in their country of residence.
- is based on a random sample of roughly 5,000 individuals in each participating country.
- is designed to be valid cross-culturally and internationally.
- is designed as a survey that will be repeated over time.
- allows policy makers to monitor the development of key aspects of human capital in their countries.

https://www.oecd.org/skills/piaac/about/#d.en.481111
PIAAC Cycle 1

c.a. 40 countries

• **Round 1 (2011-2012):** Australia, Austria, Belgium (Flanders), Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Japan, Korea, Netherlands, Norway, Poland, Russian Federation, Slovak Republic, Spain, Sweden, United Kingdom (England and Northern Ireland), United States

• **Round 2 (2014-2015):** Chile, Greece, Indonesia, Israel, Lithuania, New Zealand, Singapore, Slovenia, Turkey

• **Round 3 (2017):** Ecuador, Hungary, Kazakhstan, Mexico, Peru, United States
PIAAC Cycle 2

33 countries

- **Round 1 (2022-2023):** Australia, Austria, Belgium (Flanders), Canada, Chile, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Netherlands, New Zealand, Norway, Poland, Portugal, Russian Federation, Singapore, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom (England), United States
Main Elements of the Survey

<table>
<thead>
<tr>
<th>Background Questionnaire</th>
<th>Skills Use Module</th>
<th>Socio-emotional Skills (Cycle 2)</th>
<th>Direct Assessment</th>
<th>Employer Survey (Cycle 2, optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Demographic characteristics</td>
<td>• Cognitive skills</td>
<td>• Individual attributes, behaviors, and beliefs (such as conscientiousness, open-mindedness, self-efficacy, relationships with others)</td>
<td>• Literacy</td>
<td>• Skills needs of enterprises, strategies to address skill gaps, business factors affecting demand for skills</td>
</tr>
<tr>
<td>• Education and training</td>
<td>• Interaction and social skills</td>
<td></td>
<td>• Numeracy</td>
<td></td>
</tr>
<tr>
<td>• Social and linguistic background</td>
<td>• Physical skills</td>
<td></td>
<td>• Problem solving in technological rich environments (only Cycle 1)</td>
<td></td>
</tr>
<tr>
<td>• Employment status and income</td>
<td>• Learning skills</td>
<td></td>
<td>• Adaptive problem solving</td>
<td></td>
</tr>
<tr>
<td>• Social outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Quality of the work environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Blue elements are new in Cycle 2.

[https://www.oecd.org/skills/piaac/piaacdesign/](https://www.oecd.org/skills/piaac/piaacdesign/)
PIAAC Cycle 1 - Main Results

An overview of the main results of Cycle 1 Round 1 can be found in the PIAAC results brochure.

You can read more results from PIAAC Cycle 1, working papers, thematic reports, and other publications here.
Data Access

To get an **overview** of all the available PIACC data, check out this [publication](#).

To access and play with the **data**, go [here](#).

The **Research Data Center PIAAC** provides information on available PIAAC datasets on its [website](#). To download PIAAC data, [registration](#) (for public use files) or signing a [data distribution contract](#) (for scientific use files) is required. Some documents, such as variable reports and questionnaires, are available without registration. Furthermore, PIAAC data users have the possibility to work with more sensitive PIAAC data (e.g., regional data) at the [GESIS Secure Data Center](#).

Questions about the German PIAAC data? Ask here: [fdz-piaac@gesis.org](mailto:fdz-piaac@gesis.org).
A **practical guide** on how to analyze the PIAAC data in Stata can be found [here](#).

The material includes videos, slides, data, and syntax.

**Video 1** - Introduction to PIAAC Data  
**Video 2** - Data Access and First Steps in Stata  
**Video 3** - Stata-Ado *piaactools*  
**Video 4** - Stata-Ado *repest macro*
Replication and Meta-Analysis
Replication refers to researchers conducting a repeated study of a project that typically has been published in a peer-reviewed journal or book. (Given, 2008)

Purpose

is to determine whether the basic findings of the original study hold for other participants and circumstances. (Makel et al., 2012)
Meta-Analysis

Meta-Analysis is a statistical tool for estimating the mean and the variance of an underlying population effect based on a collection of studies addressing seemingly the same research question.

(Field & Gillett, 2010)

Purpose

is to objectify literature reviews using statistics to discover how big an effect is and what moderates it.

(Field, 1999)
Steps of a Meta-Analysis

According to Field & Gillett (2010), there are six basic steps of a meta-analysis:

1. **Do a literature search** (based on your research question; e.g., on ISI Web of Knowledge, PubMed, Google Scholar)
2. **Decide on “objective” inclusion criteria for studies** (formulate criteria as precise as possible)
3. **Calculate the effect sizes** (need to represent the same effect and are all expressed in the same way)
4. **Do the basic meta-analysis** (estimate is a weighted mean of the effect sizes)
5. **Do some more advanced analysis** (e.g., publication bias analysis, moderator analysis)
6. **Write it up** (e.g., follow guidelines of Rosenthal, 1995)
PISA

The **Programme for the International Student Assessment (PISA)** is an international large-scale study initiated by the Organization for Economic Cooperation and Development (OECD) and aims to assess 15-year-olds’ ability to use their:

- reading,
- mathematics, and
- science knowledge and skills to meet real-life challenges.

The study was first performed in 2000 and then repeated every three years. It allows policy makers to monitor and improve the education policies and outcomes in their country.

[https://www.oecd.org/pisa/](https://www.oecd.org/pisa/)
Johan Hattie identified 256 influences on student achievement based on a meta-analysis of 1,200 meta-analyses. The average effect size of all interventions was 0.4.

Dräger & Müller (2020)

Wealth stratification in the early school career in Germany

Parents' social background predicts their children's educational achievement, thus reproducing social inequality between generations. This finding is internationally well-known and a constant cause for public and academic discussion. But which aspects of parental social background are relevant in this context? So far, research has identified parents' education, occupation and income ...

Scientific article
https://doi.org/10.1016/j.rssm.2020.100483

Blog article
Socioeconomic Inequality in Children’s Achievement from Infancy to Adolescence: The Case of Germany

Jan Skopek & Giampiero Passaretta

Social Forces, soaa093, https://doi.org/10.1093/sf/soaa093
Published: 16 October 2020 Article history

Abstract

When in children’s lives do gaps by family socioeconomic status (SES) in cognitive skills emerge, how large are they before children enter school, and how do they develop over schooling? We study the evolution of achievement gaps by parental education from birth to adolescence in Germany. We exploit data from fifty-seven tests taken from the age of seven months to sixteen years by the National Educational Panel Study. Because Germany has one of the most stratified education systems in the Western World, we hypothesized that achievement gaps will grow particularly during tracked secondary schooling. However, our findings show that SES gaps emerge and expand long before children enter school and then remain stable throughout their school careers. Because gaps stop growing, we tentatively conclude that schooling decreases inequality in learning by family SES.

Mannheim Corona Study

The Mannheim Corona Study (MCS) is a project of the German Internet Panel that examines the social changes caused by the Corona pandemic in Germany. The MCS is divided into three stages:

1. MCS Data Collection
2. Detailed Data Analysis
3. Further Data Collection Within the GIP

https://www.uni-mannheim.de/en/gip/corona-study/
Corona-Krise verstärkt Bildungsungleichheit


15. April 2020
Klaus Hurrelmann und Dieter Dohmen

https://deutsches-schulportal.de/expertenstimmen/das-deutsche-schulbarometer-hurrelmann-dohmen-corona-krise-verstaerkt-bildungsungleichheit/
Leibniz Education Research Network (LERN)

The LERN network is a research alliance of 25 institutions from the Leibniz Association.

https://www.leibniz-bildung.de/en/
The IWM was founded in 2001. The research done at the IWM focuses on knowledge processes and how they are influenced by digital media. The main application fields are: teaching and learning with digital media in schools and universities, knowledge-related Internet usage, knowledge work with digital media, and knowledge transfer in museums and exhibitions.

Invited Experts
Assessment of Competencies

Prof. Dr. Beatrice Rammstedt is the Vice-President of GESIS – Leibniz Institute for the Social Sciences (GESIS) and the scientific director of the department Survey Design and Methodology. She is specialized in psychological assessment, survey design, and methodology.

beatrice.rammstedt@gesis.org

Click here for a list of interesting publications on PIAAC by Beatrice Rammstedt and her colleagues.
Education and Wealth

Dr. Nora Müller

is one of the PIs of the research project “The Effect of Parental Wealth on Educational Decisions.”

Her research focuses on wealth and educational inequality, subjective well-being, family processes, and labor market research.

nora.mueller@gesis.org

Knowledge Construction

Prof. Dr. Ulrike Cress

is the director of the Leibniz-Institut für Wissensmedien (IWM). She leads the Knowledge Construction lab and is part of the speaker group of the Leibniz Research Network Educational Potentials (LERN). She is an expert in educational and media psychology.

u.cress@iwm-tuebingen.de
References I


References II


Image Sources

Darkmoon_Art on Pixabay
Hermann Traub on Pixabay
Gerd Altmann on Pixabay
PublicDomainPictures on Pixabay
Naldo Universe on Pixabay
Gerhard G. on Pixabay

Icon Sources

All icons were taken from Microsoft PowerPoint and adapted by Lydia Repke.
Enjoy (social) data(ing)!

podcast@gesis.org
https://podcast.gesis.org
Der Sommer wird gut [The summer will be good]

Carolin Kebekus feat. Karl Lauterbach – La Vida sin Corona ...

https://www.youtube.com/watch?v=gP-KmiLC6NY