

Indicator-Based Monitoring of an Interdisciplinary Field of Science The Example of Educational Research

Dr. Andreas Oskar Kempf, M.A.(LIS)
Leibniz-Institute for the Social Sciences (GESIS)

Ute Sondergeld, M.A., Wiss. Dok.
German Institute for International Educational Research (DIPF)

Contents

1. Project Overview
2. Project Context and Objective
 - „Empirical Turn“ in Educational Research
 - New Governance Model in Research Funding
 - Data Sources
3. Research Indicators
4. Findings
 - 4.1 Analysis of Project Data
 - 4.2 Analysis of Publication Data
5. Summary
6. Outlook

1. Project Overview

- Title:
Development and Changing Dynamics of a Heterogeneous Social Science Field. Using the Example of Educational Research
- Duration:
05/2011 - 04/2014
- Funding:
Leibniz Association (SAW funding measure)
- Project Lead:
German Institute for International Educational Research (DIPF)
- Project cooperation between:



Leibniz Institute
for the Social Sciences



2. Project Context and Objective

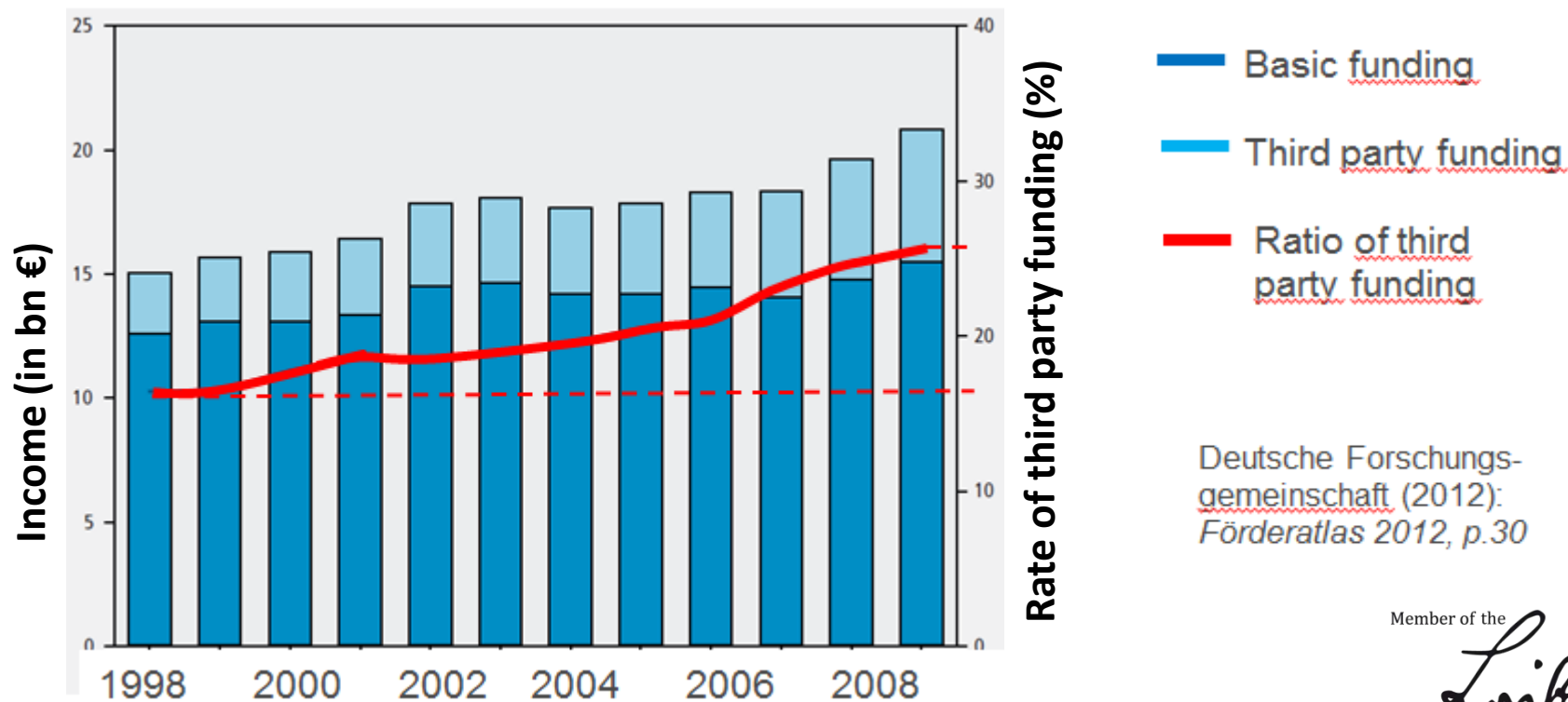
„Empirical Turn“ in Educational Research

- DFG Research Units / Priority Programmes for Empirical Education Research (2000/2002)
- Introduction of National Educational Standards (2003)
- Agreement on a National Report on Education (2004)
- Framework Programme for the Promotion of Empirical Educational Research (BMBF) (2007)

Project Context

New Governance Model in Research Funding

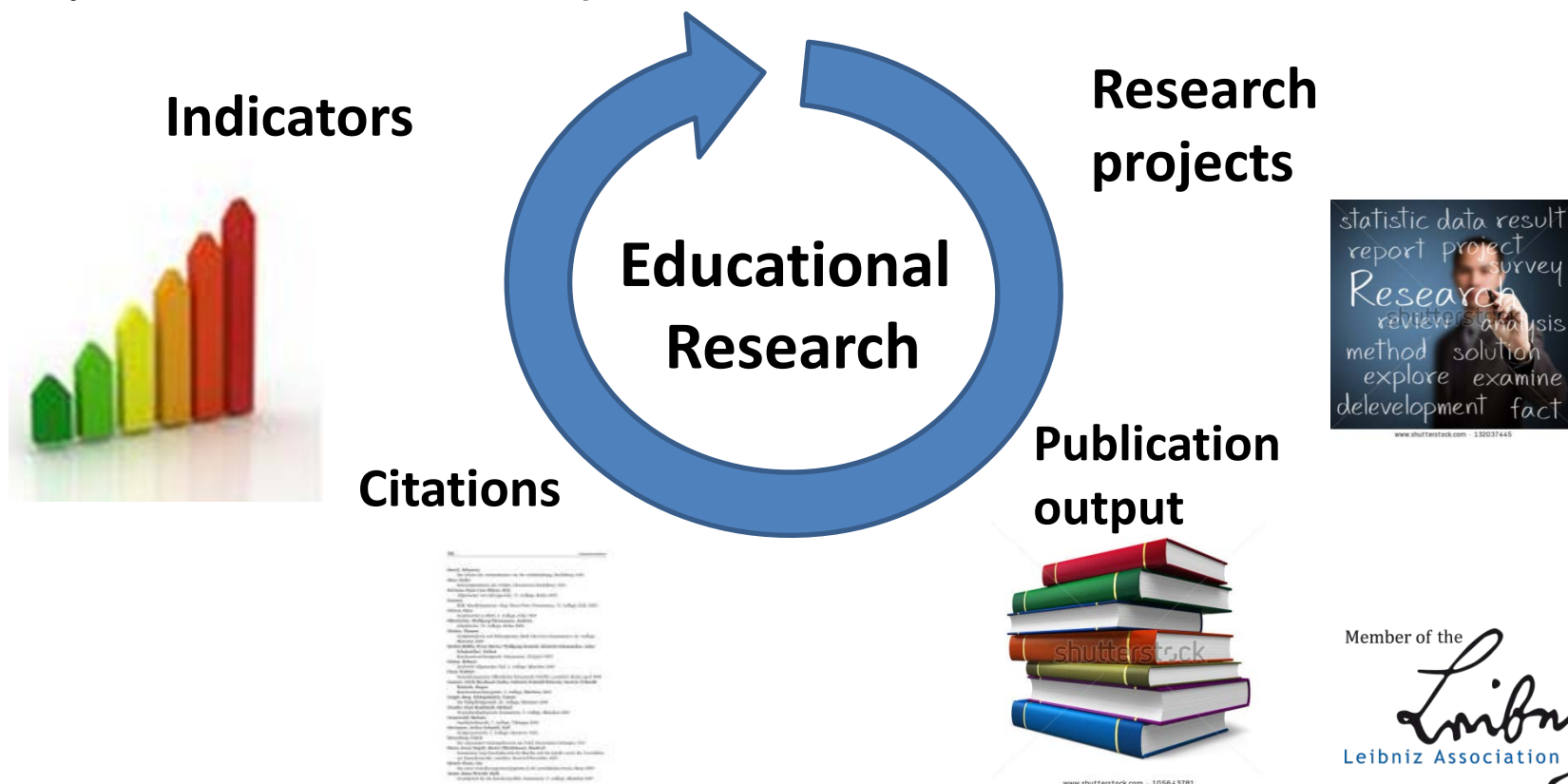
Basic and third party funding in higher education institutions in Germany over time



Deutsche Forschungsgemeinschaft (2012):
Förderatlas 2012, p.30

Project Objective

- Analysis of the structure and development of and within educational research
- Analysis of communication processes within educational research



Data Sources

Project Data

- Sources:
 - SOFIS (GESIS)
 - BMBF Framework Programme
- Coverage: 9139 projects
- Period: 1995-2009 (end of project)

Analysis of Reception

- Web of Science, Scopus, Google Scholar

Publications

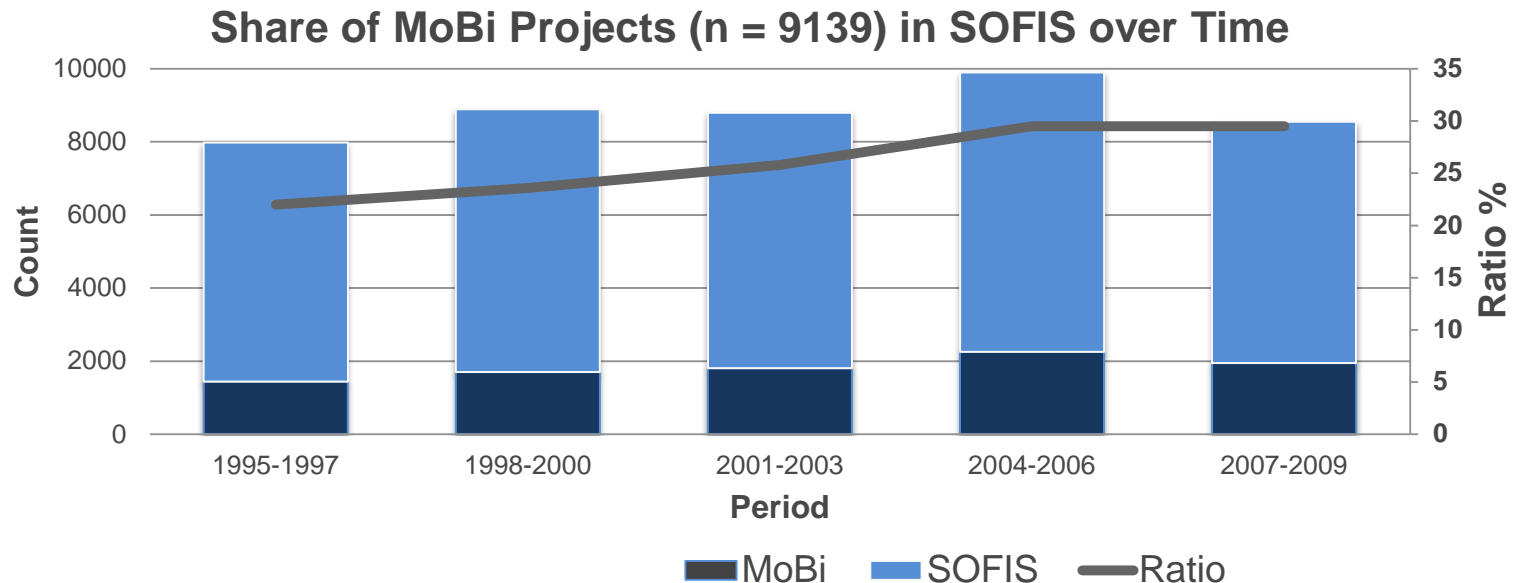
- Random sample of 270 projects of the core disciplines: educational sciences, psychology, sociology; periods: 1995-97, 2006-08
- Data collection of research output
- Coverage: about 2.000 publications

4.1 Analysis of Project Data

Research Activity Over Time (1/2)

Hypothesis

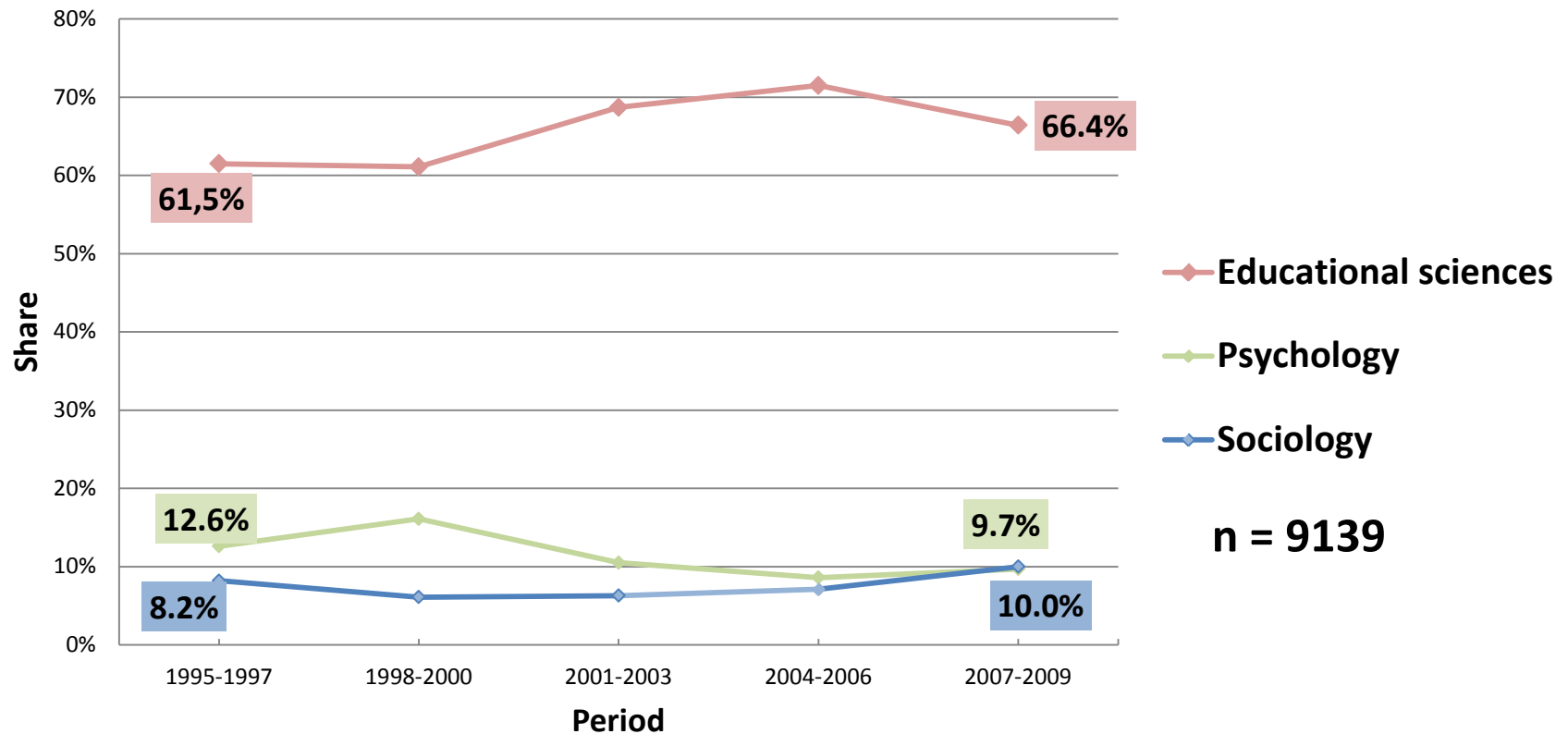
An increase of research activity within educational research



Results

Growing interest in educational research

Research Activity: Core Disciplines Over Time (2/2)

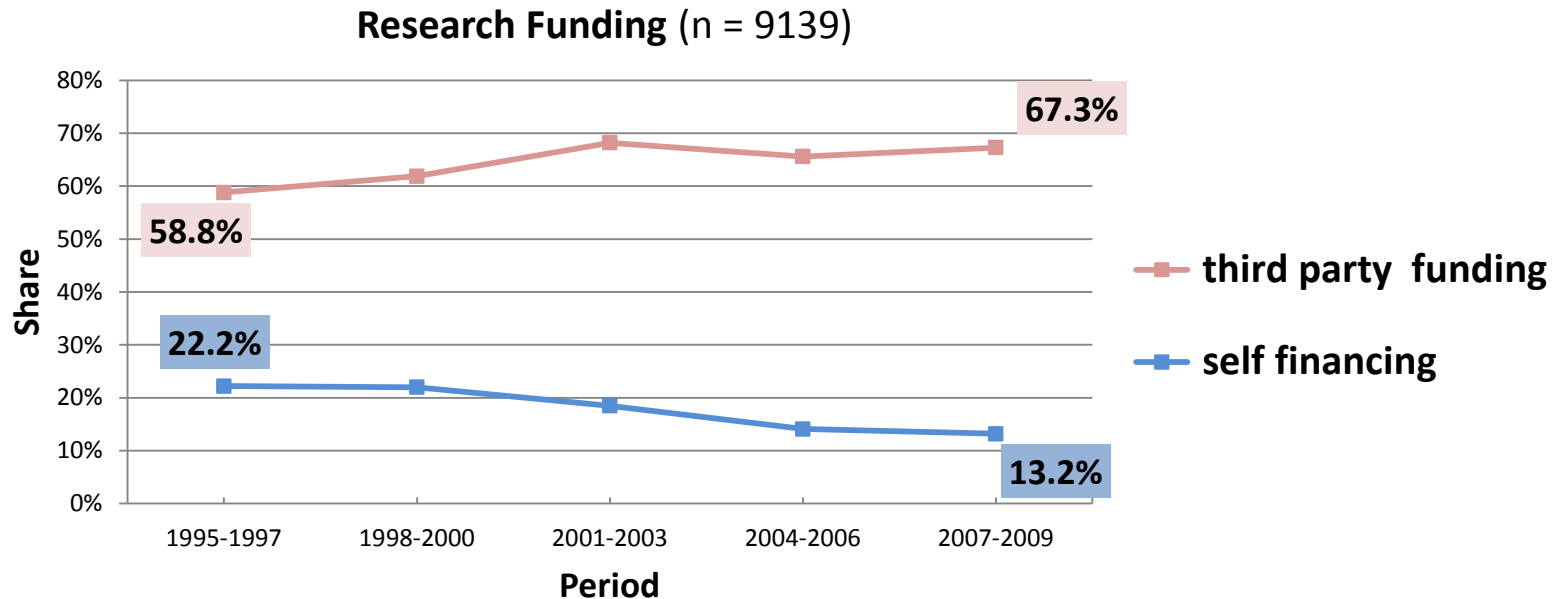


Decline in psychological projects

Research Funding Over Time (1/2)

Hypothesis

An increase in third party funding



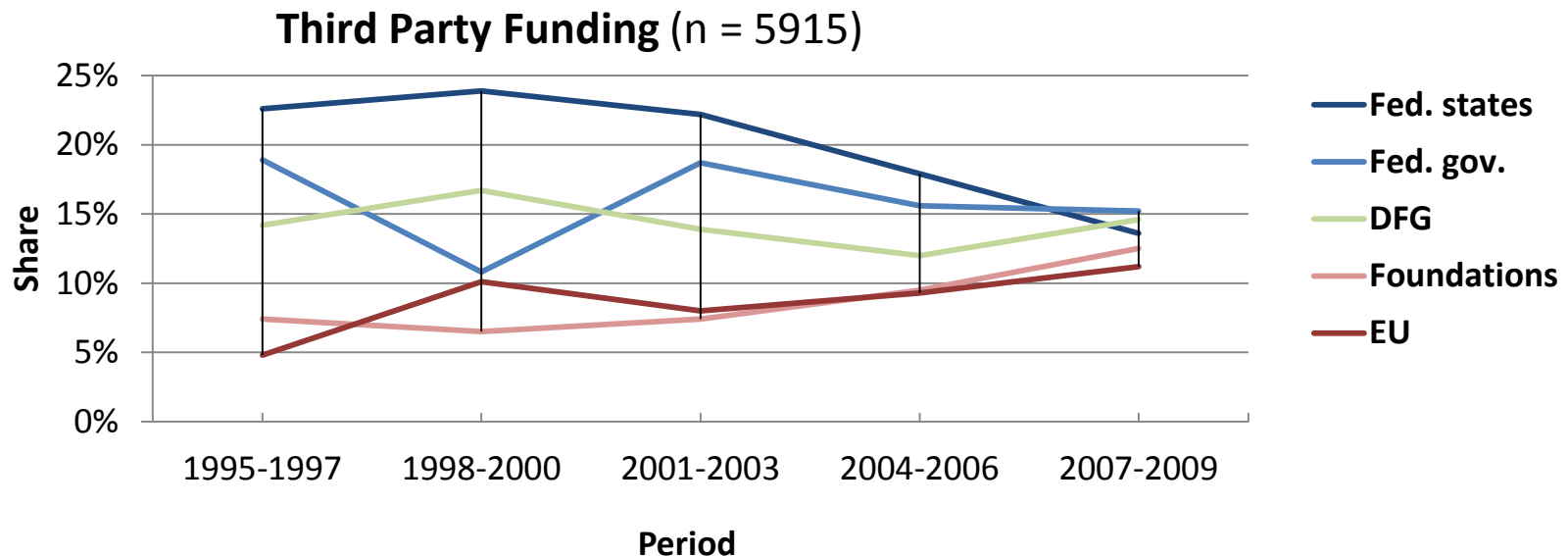
Results

In total, there is an increase in third party funding and a decline in self-financing of projects over time.

Funding Bodies Over Time (2/2)

Hypothesis

Increase in the share of funding by foundations and the EU.



Results

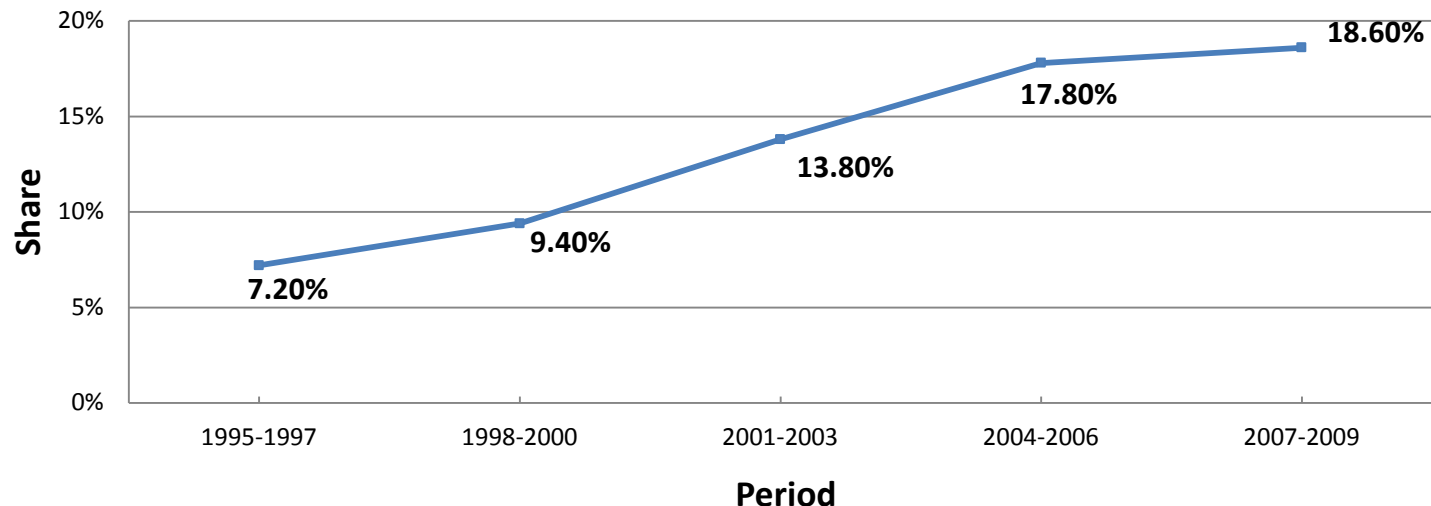
There, indeed, is an increase in the share of funding by foundations and the EU. Differences in funding sources diminish.

Research Cooperation Over Time (1/2)

Hypothesis

A growth in national and international cooperations

Percentage of Cooperation Projects over Time (n = 7260)



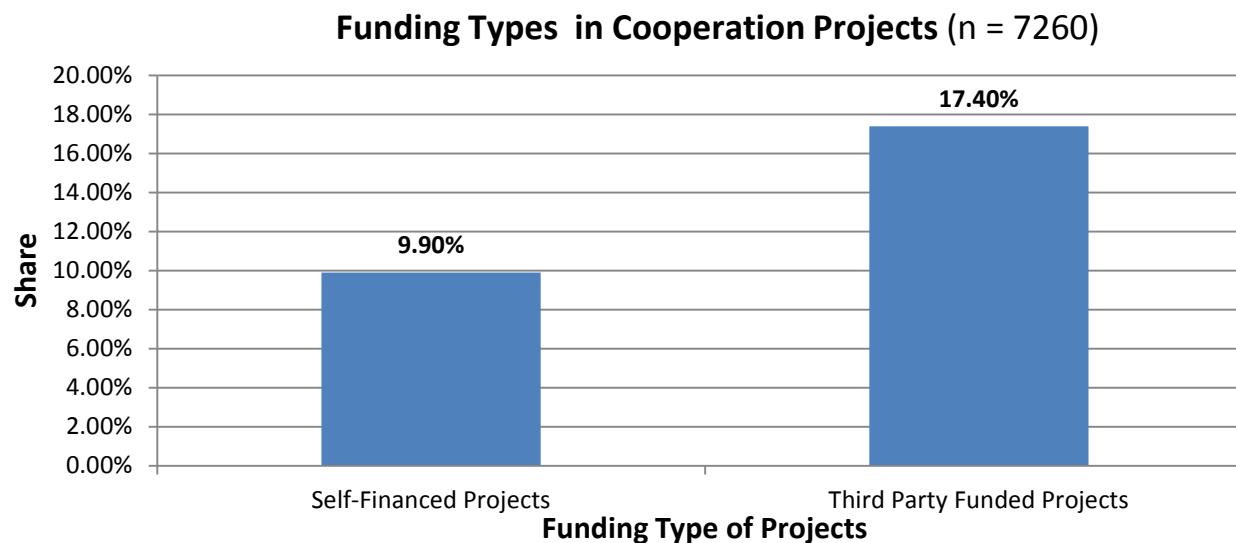
Results

Networking among research institutions increases

Research Cooperation Over Time (2/2)

Hypothesis

A higher proportion of cooperation projects in third party funded than in in-house projects



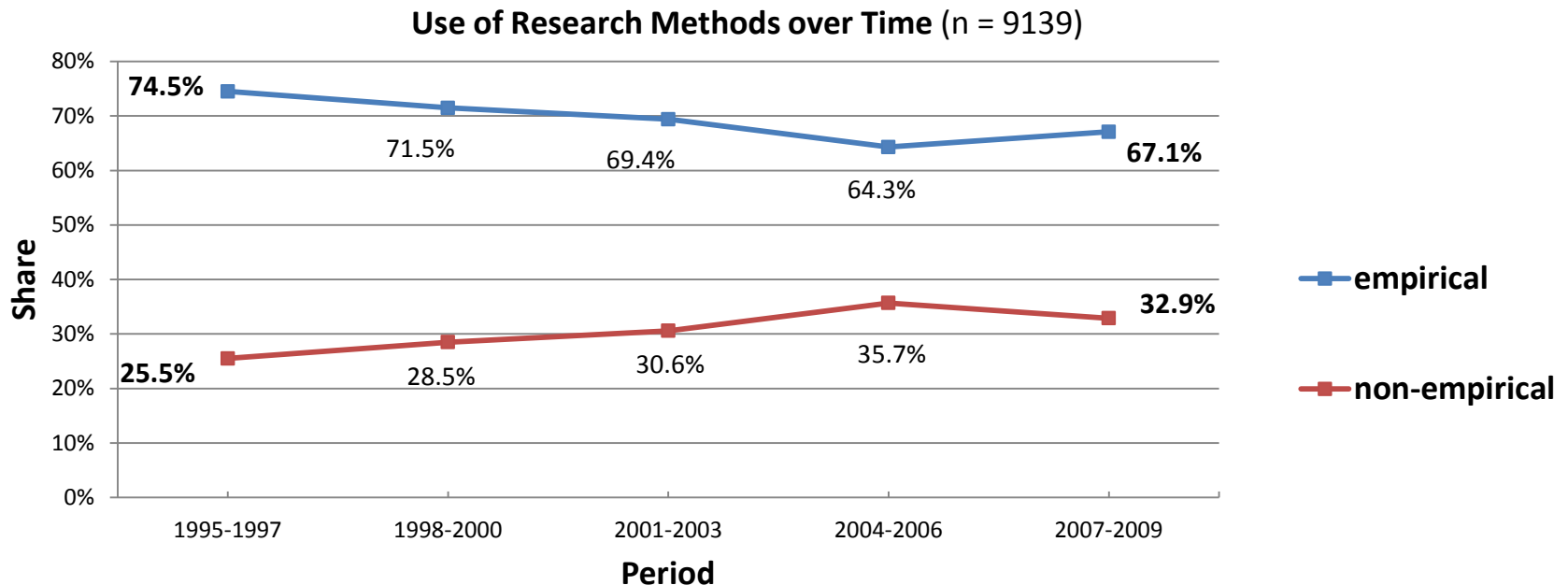
Results

The share of cooperations is higher in third party funded than in self-financed projects.

Empirical Research Methods

Hypothesis

Increase in the use of empirical research methods



Results

There is an increase in the use of empirical methods between the last two time blocks.

4.2 Analysis of Publication Data

4.2 Analysis of Publication Data – First Results

Input	Human resources Infrastructure (equipment, laboratory space etc.) Financial resources		
Output	Prizes	<pre> graph TD BI(Bibliometric indicators) --> P(Performance) BI --> S(Structure) P --> A(Activity) P --> R(Reception) S --> C(Cognitive) S --> Col(Collaboration) </pre>	Patent indicators Other: - PhD - Habilitation - Speeches - Board Memberships - Stipends
Efficiency	Various Input/Output relations	Inter and intra-institutional comparisons	

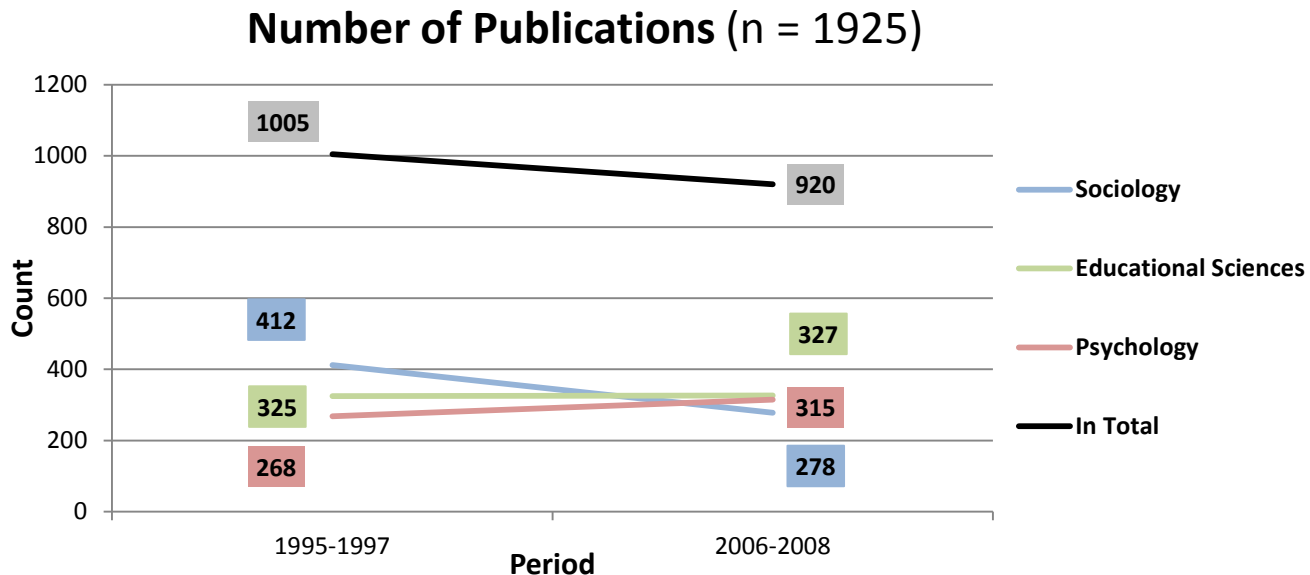
Hinze/Glänzel (2012)
based upon Hornbostel
1999: p. 59.

Member of the

Publication Activity

Hypothesis

An increase in the number of publications.



Results

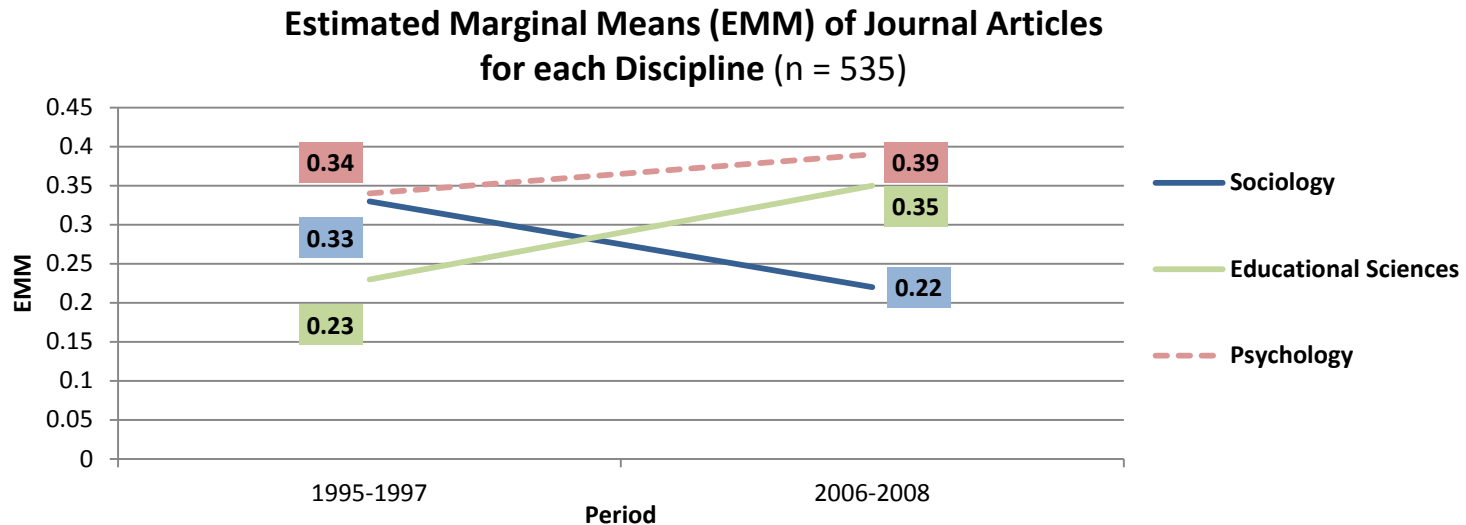
The number of publications in total declines.

Likewise, discipline-specific differences seem to decline.

Discipline-Specific Publication Types (1/3)

Hypothesis

A greater number of journal articles in psychology than in sociology or in educational sciences.



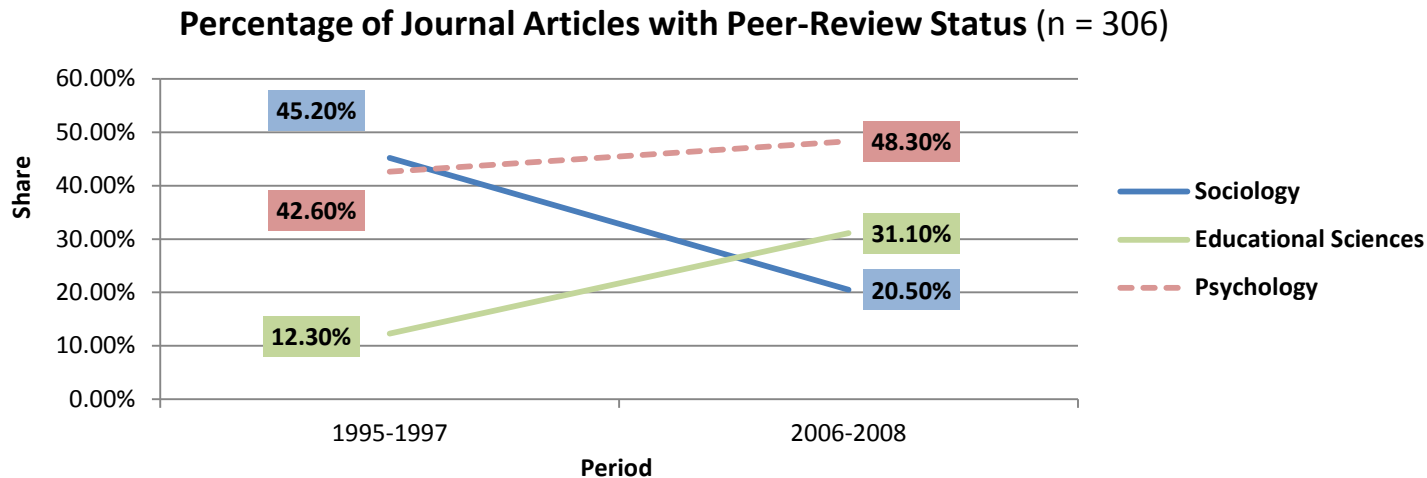
Results

In psychology there is a preference for publishing in journal articles. Over time, a significant increase in the number of journal articles is measurable in educational sciences. In sociology the number of journal articles *decreases* significantly.

Publication Types (2/3) Peer-Review Status of Journal Articles

Hypothesis

A greater number of publications with peer-review status in psychology



Results

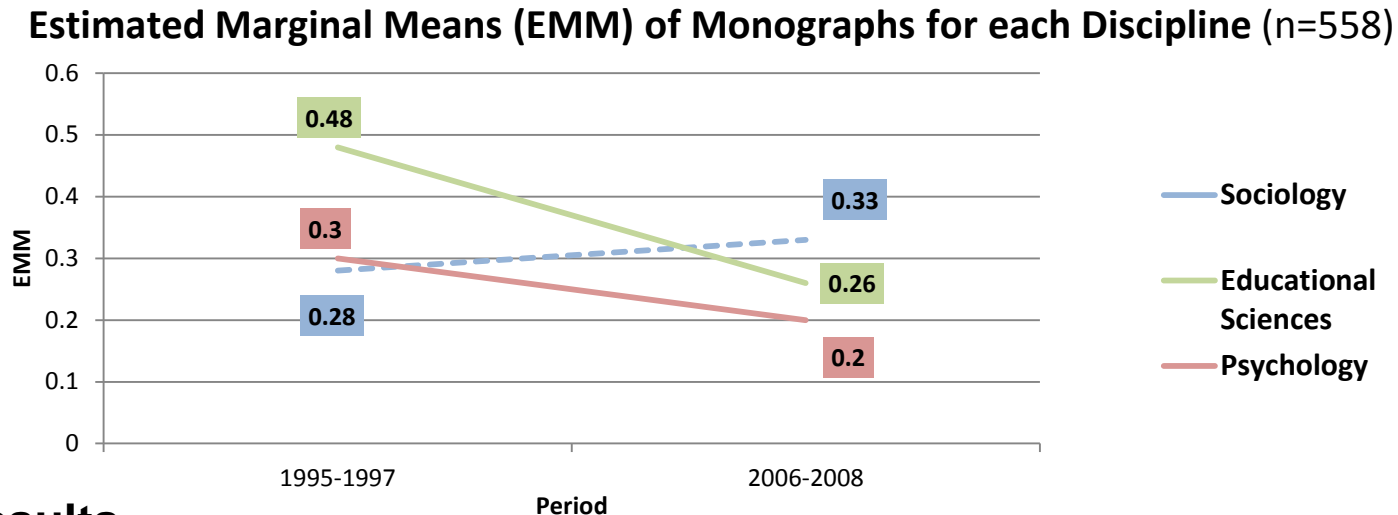
In general psychological projects publish more often in peer-reviewed journals than the other disciplines do.

Over time we measured a significant decrease in sociological and a significant increase in educational projects.

Discipline-Specific Publication Types (3/3)

Hypothesis

A greater number of monographs in sociology and educational sciences than in psychology



Results

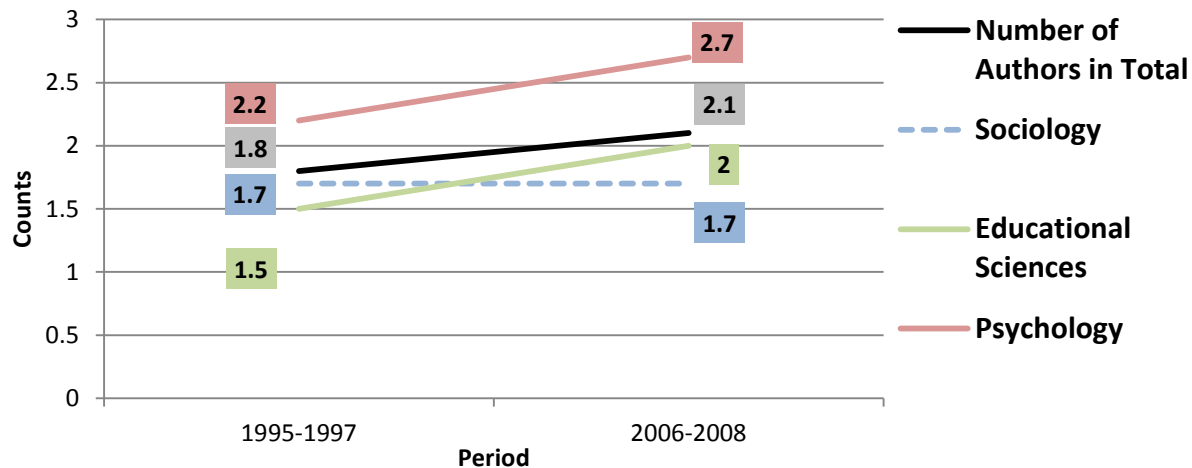
Monographs are more often published in educational sciences and in sociology than in psychology. In psychology and in educational sciences publishing in monographs decreases significantly. In educational sciences this decrease is most pronounced.

Multi-Authorship

Hypothesis

An increase in the number of authors per publication

Estimated Marginal Means (EMM) of Authors per Publication (n = 1925)



Results

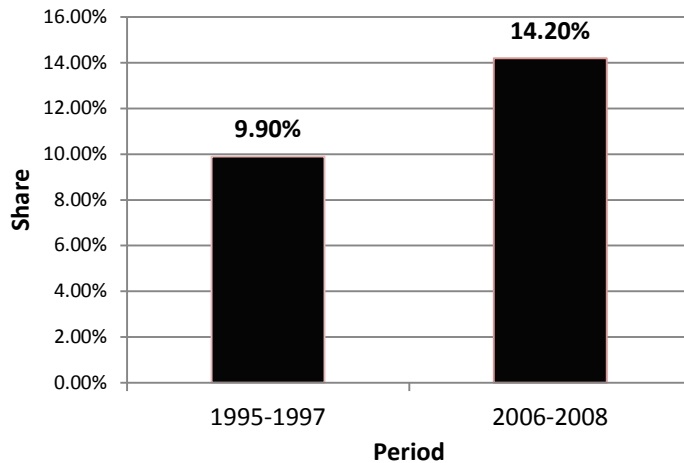
Over time, the number of authors in total per publication grows significantly due to a significant increase in psychology and in educational sciences.

International Character of Publications

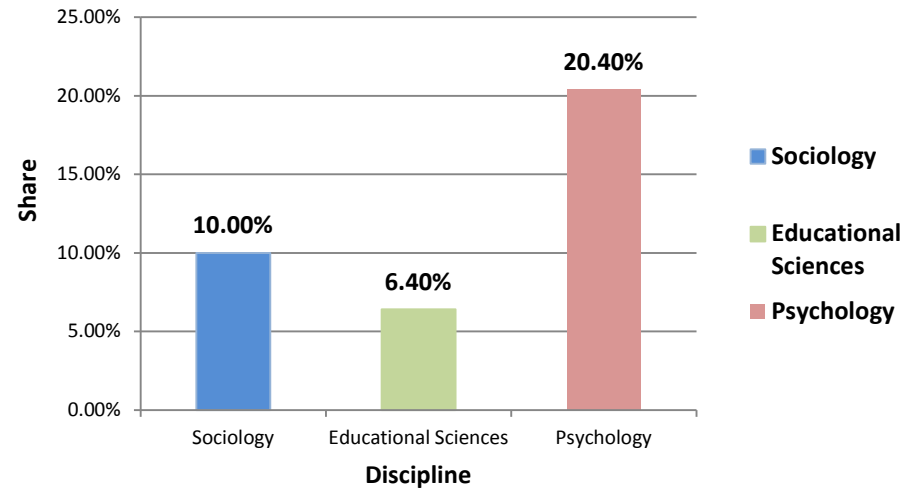
Hypothesis

Number of publications written in English increases.

Percentage of Publications Written in English in Total (n = 1925)



Discipline-Specific Differences in English Publication (1995-07 + 2006-08) (n = 1925)



Results

The number of publications written in English increases significantly. Comparing the three core-disciplines, psychological publications have the highest share of publications written in English.

5. Summary

Research projects in educational research are characterized by:

- a growing importance in the Social Sciences,
- an increase in third-party funding,
- a growing diversity in funding sources,
- an increase in networking activities among research institutes,
- a slow increase in the use of empirical research methods since the year 2005.

Publishing in educational research is characterized by:

- an increase in networking of authors,
- an internationalization effect over time,
- disciplinary differences; over time publishing in educational research seems to align to psychological publication behaviour.

6. Outlook

- Further analysis on the interrelation between research projects and publications,
- Thematic analysis of projects,
- Further analysis of publication data,
- Reception analysis of publications,
- Indicator specification.

Acknowledgements



DIPF

Educational Research and Educational Information

Alexander Botte
Ute Sondergeld



Jürgen Wiesenhütter
Dr. Gabriel Schui
Katja Singleton
Veronika Kuhberg-Lasson



Dr. Sybille Hinze
Valerie Aman
Marion Schmidt



Leibniz Institute
for the Social Sciences

Peter Mutschke
Dr. Philipp Mayr
Karima Haddou ou Moussa
Dr. Andreas Oskar Kempf

Thank you for your attention!

Contact:

Dr. Andreas Oskar Kempf, M.A.(LIS)
Leibniz-Institute for the Social Sciences (GESIS)
andreas.kempf@gesis.org

Ute Sondergeld, M.A., Wiss. Dok.
German Institute for International Educational Research (DIPF)
sondergeld@dipf.de

Bibliography

- Deutsche Forschungsgemeinschaft (2012) Förderatlas 2012. Kennzahlen zur öffentlich finanzierten Forschung in Deutschland. Weinheim.
 URL: http://www.dfg.de/download/pdf/dfg_im_profil/evaluation_statistik/foerderatlas/dfg-foerderatlas_2012.pdf (20.05.2013)
- Hinze, Sybille/Glänzel, Wolfgang (2012) Scientometric Indicators in Use: An Overview. Präsentation im Rahmen der European Summer School for Scientometrics (ESSS), Leven, Juli 2012.
 URL: <http://www.scientometrics-school.eu/images/2012Hinze.pdf> (25.05.2013)
- Hornbostel, Stefan (1999): *Welche Indikatoren zu welchem Zweck: Input, Throughput, Output.* In: Röbbcke, Martina/Simon, Dagmar (Hrsg.): *Qualitätsförderung durch Evaluation? Ziele, Aufgaben und Verfahren von Forschungsbewertungen im Wandel.* Dokumentation des Workshops vom 20. und 21. Mai 1999. Wissenschaftszentrum Berlin für Sozialforschung.
 URL: <http://skylla.wzb.eu/pdf/1999/p99-003.pdf> (23.05.2013)