Understanding Information-Seeking Behavior of Social Scientists

Meet the Experts – GESIS online talks

Knowledge technologies for the Social Science: Access to Social Science Data and Services

Dr. Dagmar Kern, 18.1.2024

Overview

- What is information-seeking behavior?

- Why is it important to understand it?

- How to research information-seeking behavior?

- How can the identified information-seeking behavior be used to support users?

- Will information-seeking behavior change in the future?

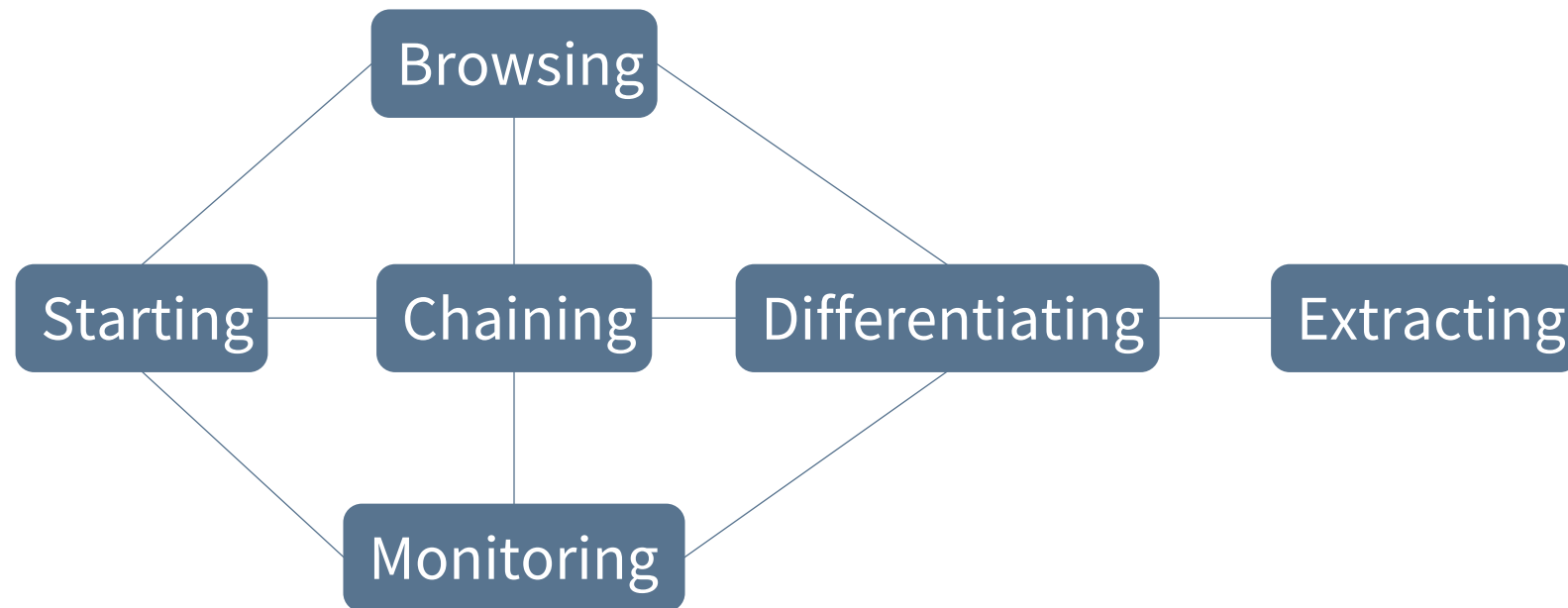# What is Information Seeking Behavior?

Definition: Information-Seeking

"The user's constructive activity of finding meaning from information in order to extend his or her state of knowledge on a particular problem or topic."
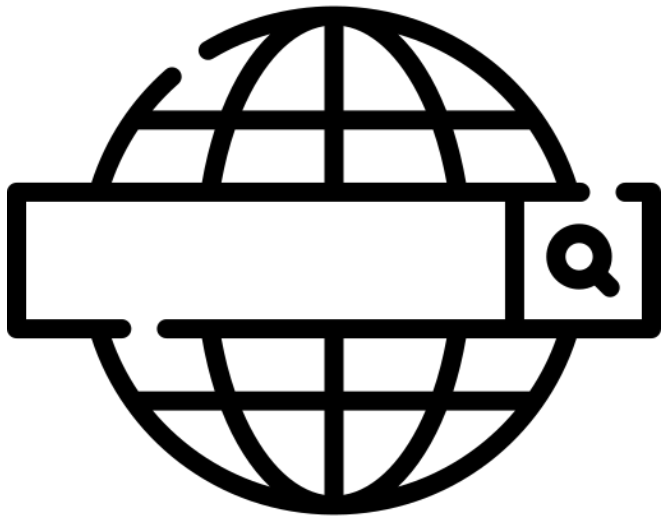
(Kuhlthau, 1991)

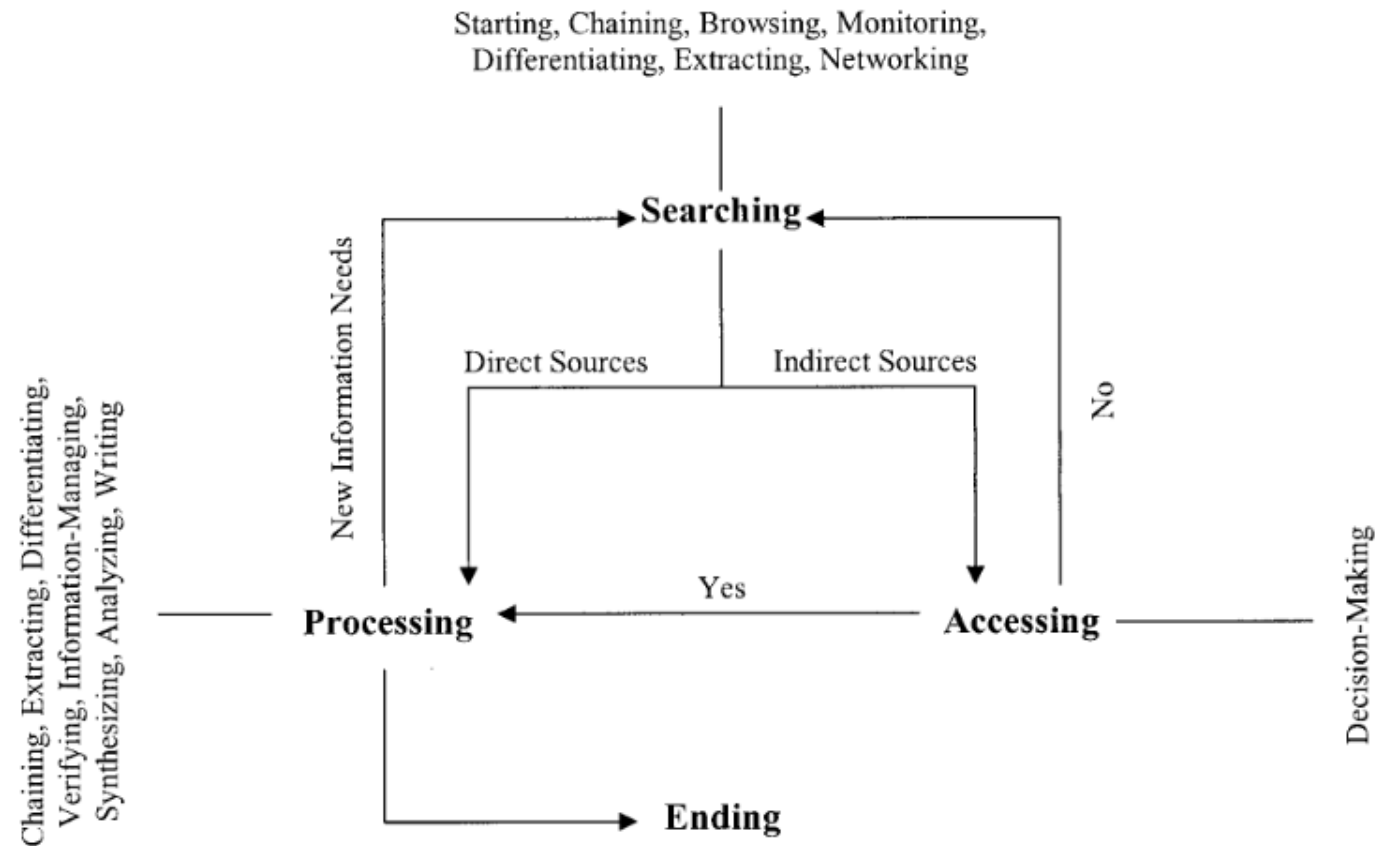designed by freepik

Ellis' Information Seeking Model (1993)

Ellis, D. (1993). Modeling the information-seeking patterns of academic researchers: A grounded theory approach. *The Library Quarterly*, *63*(4), 469-486.

Web Search

Digital Libraries

Data Repositories

...

Images from Flaticon.com (Vectors Tank)

Ellis' extended Information Seeking Model by Meho & Tibbo (2003)

Starting, Chaining, Browsing, Monitoring, Differentiating, Extracting, Networking

Searching

New Information Needs

Direct Sources   Indirect Sources

No

Chaining, Extracting, Differentiating, Verifying, Information-Managing, Synthesizing, Analyzing, Writing

Decision-Making

Processing ← Yes → Accessing

Ending

Meho, L. I., & Tibbo, H. R. (2003). Modeling the information-seeking behavior of social scientists: Ellis's study revisited. *Journal of the American society for Information Science and Technology*, *54*(6), 570-587.

Information Seeking vs. Information Retrieval

8
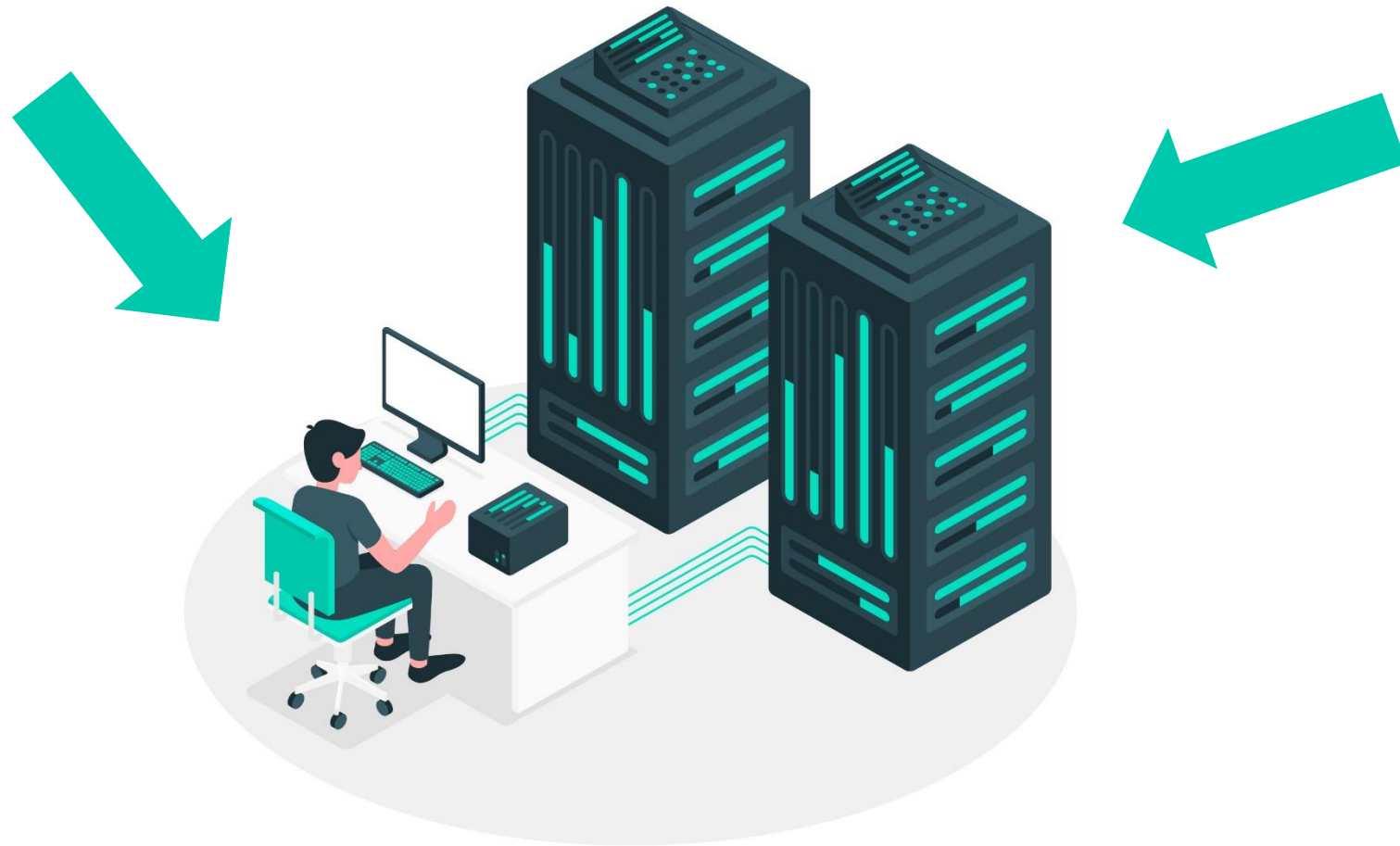
Why is it important to understand information-seeking behavior?
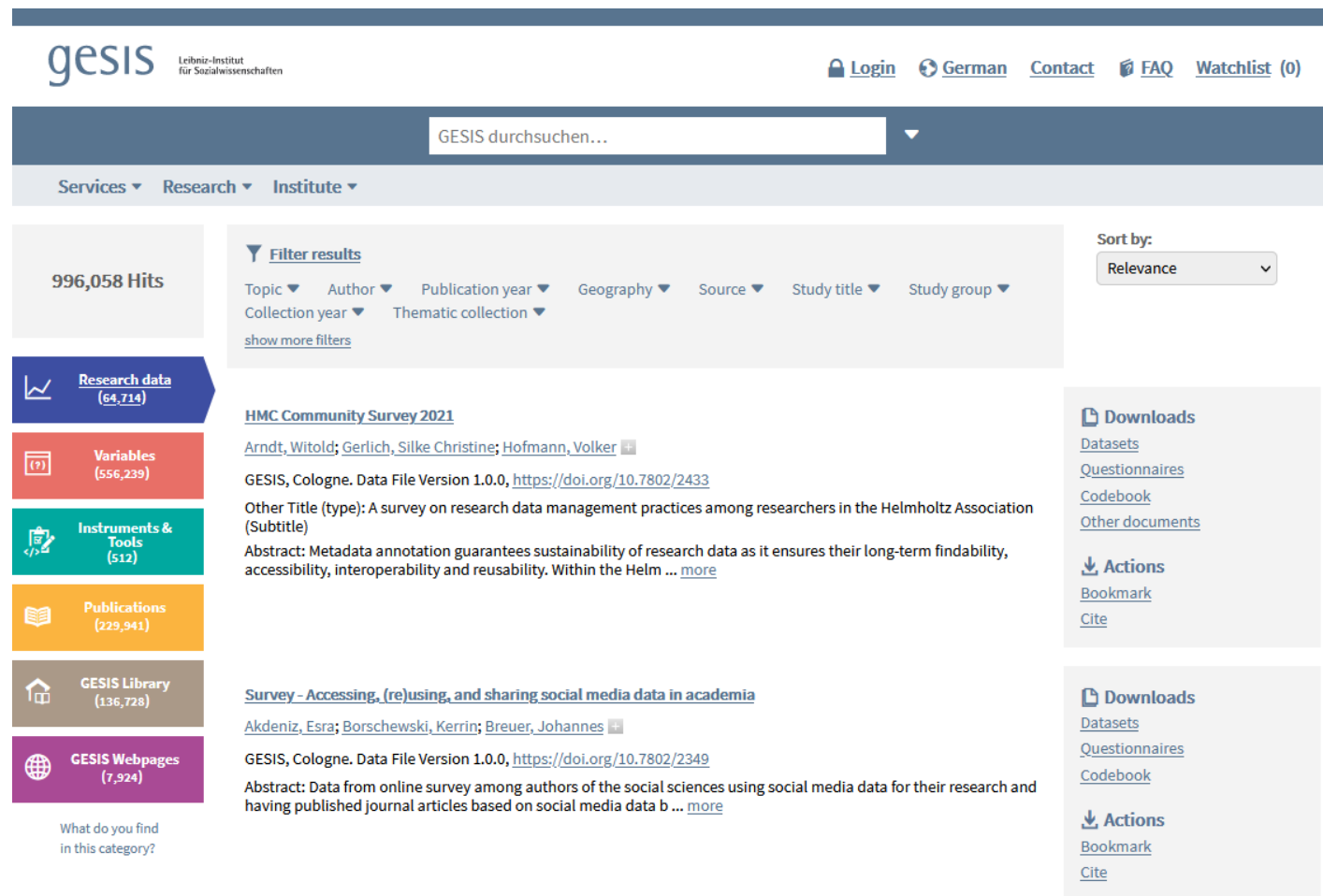
… to make our users happy!

… to improve our digital services

GESIS Search

https://search.gesis.org

Information-Seeking behavior research as part of the User-Centered design process

Understand and specify the context of use.

Specify the user requirements.

Produce design solutions to meet user requirements.

Evaluate designs against requirements.

ISO 9241-210:2019 (en) Ergonomics of human-system interaction — Part 210: Human-centred design for interactive systems
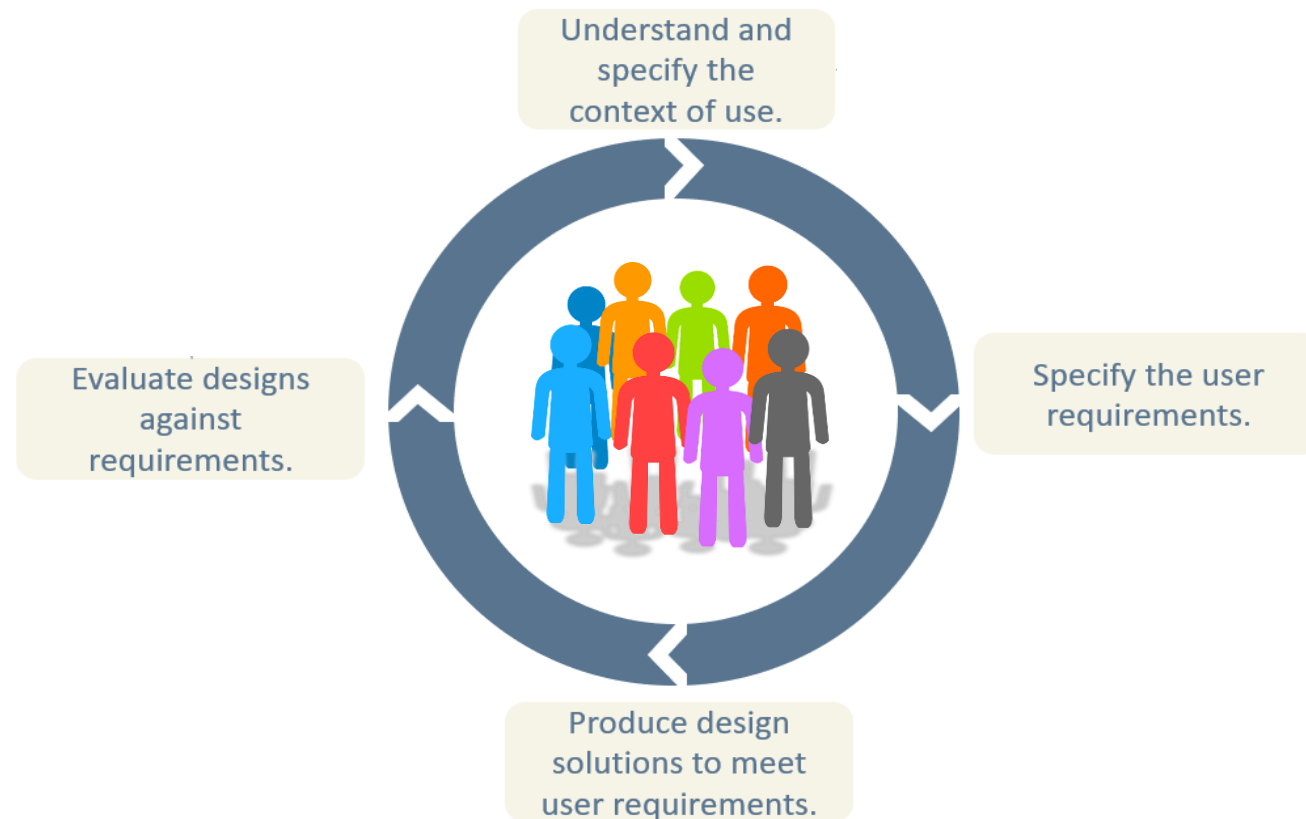
How to research information-seeking behavior?

Research Methods

- Diary study
- Questionnaires
- Log-file Analysis
- Interviews
- Observations

Research Methods

- **Diary Study**
- Questionnaires
- Log-file Analysis
- Interviews
- Observations

Diary study @ GESIS (1)

- 12 German Social Science researchers (5 female, 7 male)
- Task: Protocol information needs over a period of two weeks and provide information about the approach you used to meet the information need

➢ 54 individual statements

Kern, D., & Hienert, D. (2018). Understanding the information needs of social scientists in Germany. *Proceedings of the Association for Information Science and Technology*, *55*(1), 234-243.

Diary study @ GESIS (2)

Outcome: Categories of information needs

• Literature

• Research data

• Variables in research data

• Support for data analysis

• …

Kern, D., & Hienert, D. (2018). Understanding the information needs of social scientists in Germany. *Proceedings of the Association for Information Science and Technology*, *55*(1), 234-243.

Research Methods

- Diary Study
- **Questionnaires**
- Log-file Analysis
- Interviews
- Observations

Meet the Experts

gesis Leibniz Institute for the Social Sciences

Online Questionnaire @ GESIS (1)

- 337 participants German Social Science researchers (Professors, Postdocs, PhD students)

- Task 1: "Check each of the 9 statements that corresponds to your own information need."

- Task 2: "If you're thinking about the last week, what information were you looking for in the context of your scientific work?"
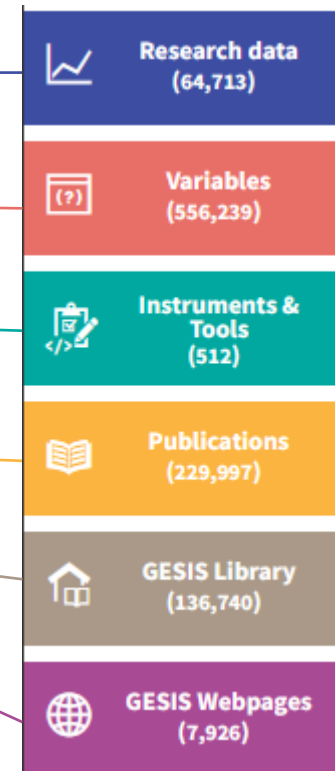
→ 331 information needs

Kern, D., & Hienert, D. (2018). Understanding the information needs of social scientists in Germany. *Proceedings of the Association for Information Science and Technology*, *55*(1), 234-243.

Online Questionnaire @ GESIS – Results Task 1

I'm looking for	Number (n=337)	Category
… literature on a specific topic.	293	Literature
… for full texts, which I can download directly.	287	Literature
… national and/or international research data.	216	Research data
… social science items and scales to create a questionnaire.	171	Measurement instruments
… information about which variables are contained in certain research data.	163	Variables in research data
… for clues as to whether certain research data are suitable for answering my research question.	159	Research data
… variables collected in various studies to compare them.	154	Variables in research data
… research data mentioned in a paper.	134	Research data
… for cooperation partners for a research project.	62	Networking / Cooperation

Kern, D., & Hienert, D. (2018). Understanding the information needs of social scientists in Germany. *Proceedings of the Association for Information Science and Technology*, *55*(1), 234-243.

Online Questionnaire @ GESIS – Results Task 2

Outcome: Categories of information needs and use cases

- Research data
- Variables
- Support for data analysis
- Literature

Research data
(64,713)

Variables
(556,239)

Instruments &
Tools
(512)

Publications
(229,997)

GESIS Library
(136,740)

GESIS Webpages
(7,926)

Kern, D., & Hienert, D. (2018). Understanding the information needs of social scientists in Germany. *Proceedings of the Association for Information Science and Technology*, *55*(1), 234-243.

Research Methods

- Diary Study
- Questionnaires
- **Log-file Analysis**
- Interviews
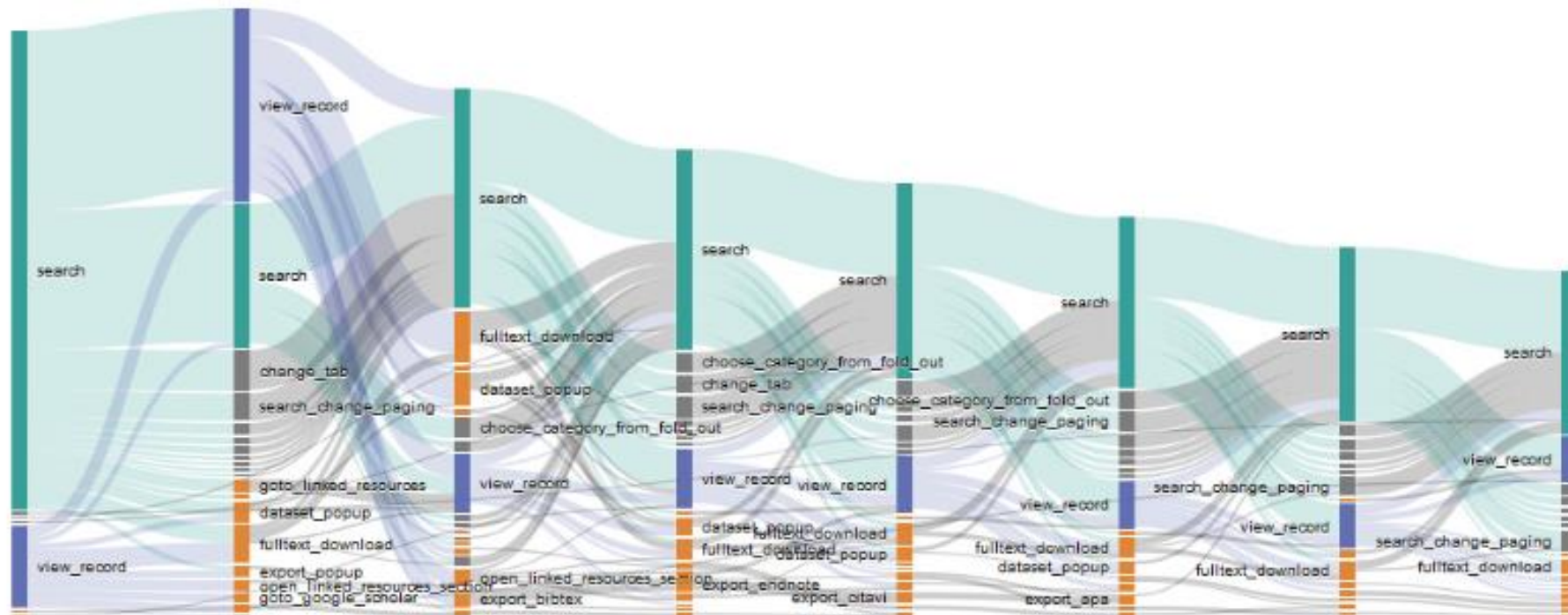- Observations

Log File Analysis – GESIS Search

Figure 6: First eight user actions in n=6,812 sessions with positive actions. Search actions in green, view_record actions in blue, positive signals in orange, other actions in grey.

Hienert, D., Kern, D., Boland, K., Zapilko, B., & Mutschke, P. (2019, June). A digital library for research data and related information in the social sciences. In *2019 ACM/IEEE Joint Conference on Digital Libraries (JCDL)* (pp. 148-157). IEEE.

Research Methods

- Diary Study
- Questionnaires
- Log-file Analysis
- **Interviews**
- Observations

Image: Tumisu from Pixabay

Research Methods

- Surveys
- Diary
- Log-file Analysis
- Interviews
- **Observations**

Image: Welcome to All ! ツ from Pixabay   25

Observational study @ GESIS (1)

- Focus on Dataset search

- 12 Social Scientists

- Observations at their workplaces

- Task: "In the context of your research, you need research data. For today, you decide to start with the search for research data."

Krämer, T., Papenmeier, A., Carevic, Z., Kern, D., & Mathiak, B. (2021). Data-seeking behaviour in the social sciences. *International Journal on Digital Libraries*, *22*, 175-195.

Observational study @ GESIS (3)

- **Key finding**
  - Literature search is an important part of dataset search.
  - Tools are unknown
  - Tools are creatively misused
  - Relevance assessment is very complex
  - Accessibility to datasets is limited
  - Dataset search suffers from missing interlinks
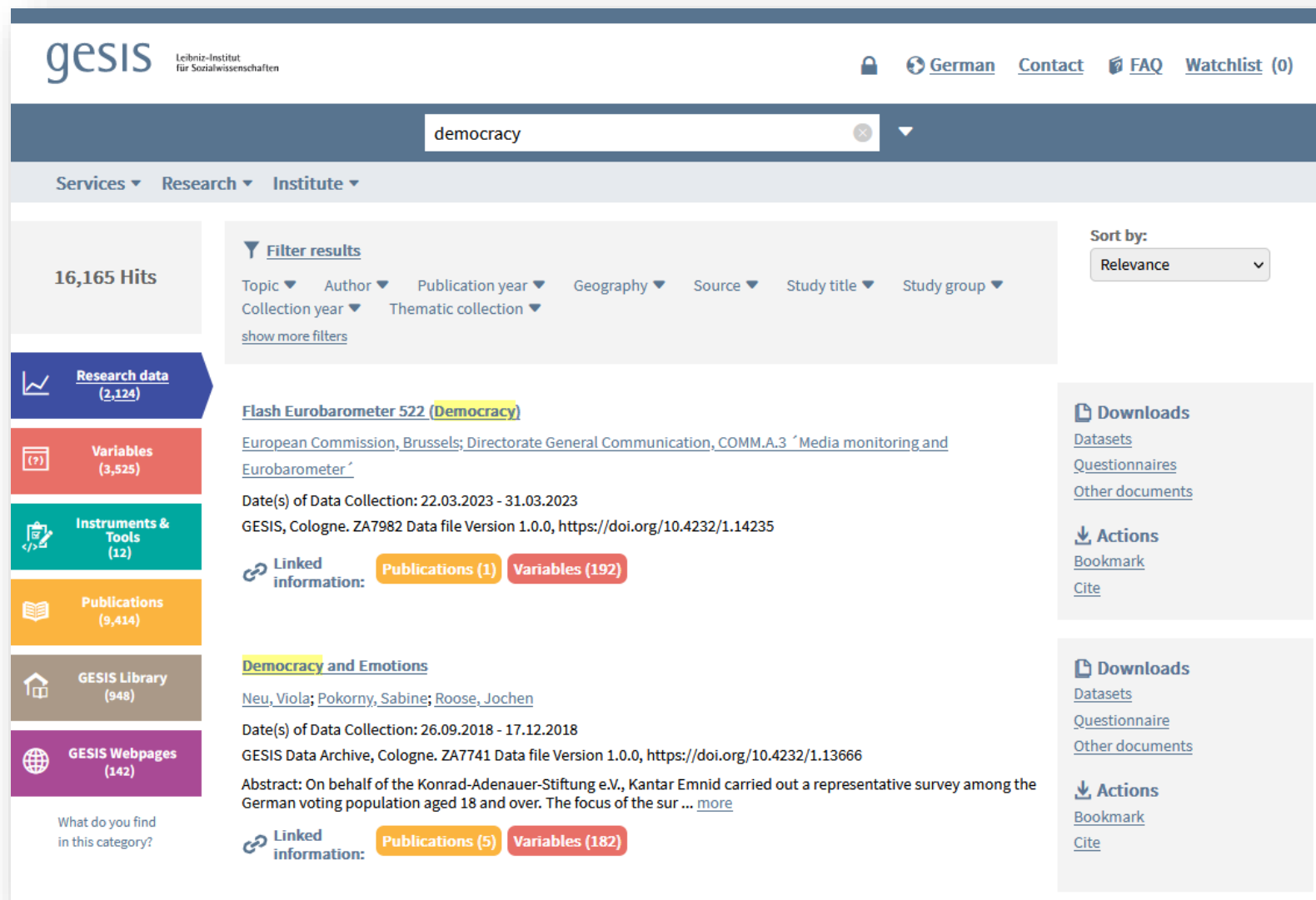 - Dataset search literacy is low

Meet the Experts – 15.02.2024
Five Ways to Turn your Dataset into Click Bait

Krämer, T., Papenmeier, A., Carevic, Z., Kern, D., & Mathiak, B. (2021). Data-seeking behaviour in the social sciences. *International Journal on Digital Libraries*, *22*, 175-195.

What do we do with the knowledge about information-seeking behavior?

… derive requirements for the GESIS Search and other digital GESIS products

Will information-
seeking behavior
change?

- Natural Language Search
- Conversational Search

designed by freepik.com

Genuine information need of social scientist (1)

- Online-Survey (72 Social Scientists)

- Task 1: "For answering your current research question, you need quantitative data. You have already searched for data but did not find a suitable dataset yet. You meet a colleague in the coffee corner. You know that your colleague has a great overview of your research topic. You tell her about your struggle to find relevant data. Your colleague offers help and asks you to describe exactly what data or variables you are looking for."

Papenmeier, A., Krämer, T., Friedrich, T., Hienert, D., & Kern, D. (2021). Genuine information needs of social scientists looking for data. *Proceedings of the Association for Information Science and Technology*, *58*(1), 292-302.

Genuine information need of social scientist (2)

Request: "I am looking for representative surveys of the population that collects the personal attitudes towards democratic principles."

Request: "I am looking for data on occupational and financial consequences of the corona crisis on older workers."

Papenmeier, A., Krämer, T., Friedrich, T., Hienert, D., & Kern, D. (2021).
Genuine information needs of social scientists looking for data. *Proceedings of the Association for Information Science and Technology*, *58*(1), 292-302.

Interested in participating in our user studies?

Contact me:

Dagmar.kern@gesis.org

Take away message

Information seeking behavior is about **people** and the **processes** they use when seeking information. There are research methods helping us to understand the processes in order to provide support systems that are a pleasure to use.

The people, behaviors, processes, systems, and information involved are **constantly changing** and adapting, but one thing remains the same: we'll always want information to make sense of the world.

Expert contact & GESIS consulting

Contact: you can reach the speaker via e-mail:
dagmar.kern@gesis.org

GESIS Consulting: GESIS offers individual consulting in a number of areas – including survey design & methodology, data archiving, digital behavioral data & computational social science – and across the research data cycle.

Please visit our website www.gesis.org for more detailed information on available services and terms.

Upcoming talks

- 15.02.2024: Five ways to turn your dataset into click bait

- 14.03.2024: Searching the social sciences with GESIS Search

- 11.04.2024: How knowledge graphs can help you to share research data and information

- 16.05.2024: Opportunities and challenges of Large Language Models for the social sciences

- 13.06.2024: Preserving and analysing large-scale Twitter data

- 11.07.2024: Introduction to scholarly information extraction

- Please visit our meet-the-experts website:

- https://www.gesis.org/en/services/sharing-knowledge/consulting-and-guidelines/meet-the-experts

Thank you for participating!