Development of a user-friendly app for exploring and analyzing research topics in psychology

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Background and Aim

Keeping track of the developments in a scientific field can be challenging, especially for nonexperts.

Most database interfaces are great for experts, but hard to use for **novices** who want to see "what's going on" in research and find literature without using complex search terms.

A topic-guided approach to database contents can help to make scientific publications accessible to a broader audience.

Method and Results

Data: ***N* = 329,240 psychological publications** (1980–2017) from the German-speaking countries documented in PSYNDEX database were included. Standardized publication keywords were employed as input for topic modeling (Bittermann & Fischer, 2018).

Software: The interface was built as a **Shiny App** for the R programming language (Chang et al., 2018).

Analysis: Topics were identified using **Latent Dirichlet Allocation** (Blei et al., 2003) following the best-practice recommendations by Maier et al. (2018). Trends were determined sensu Griffiths & Steyvers (2004).

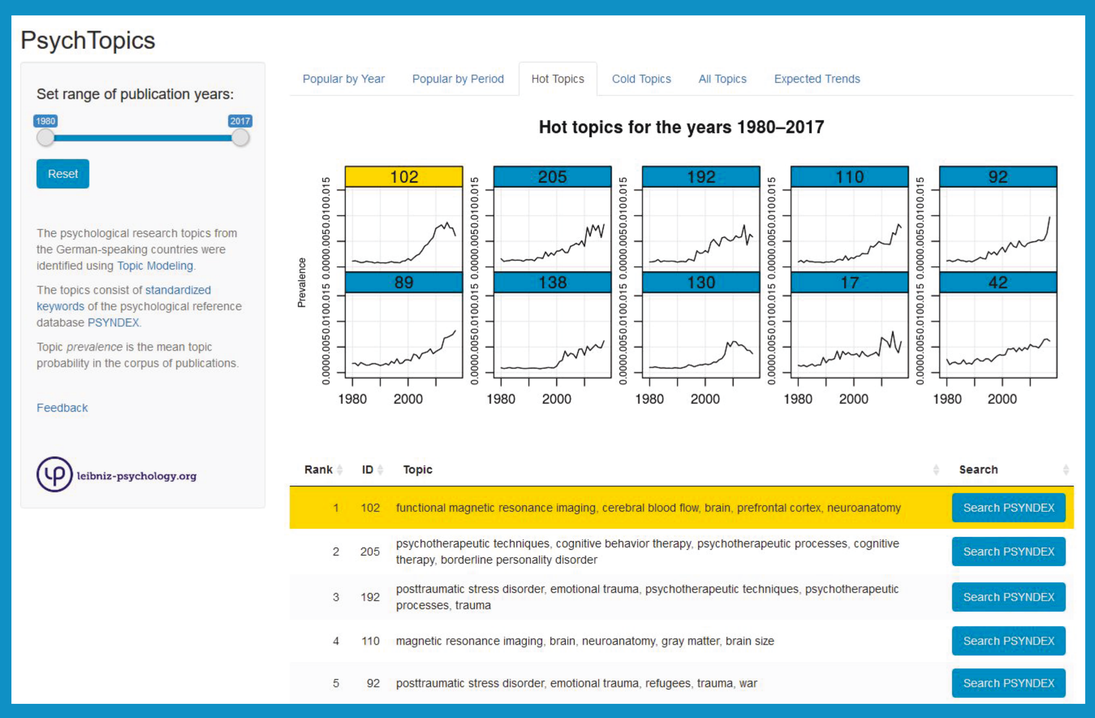
Results: The final model comprised 213 topics. For each topic, the five terms with the highest probabilities were included in the app. In the current version, the user can choose from **six different topic views** (see Features).

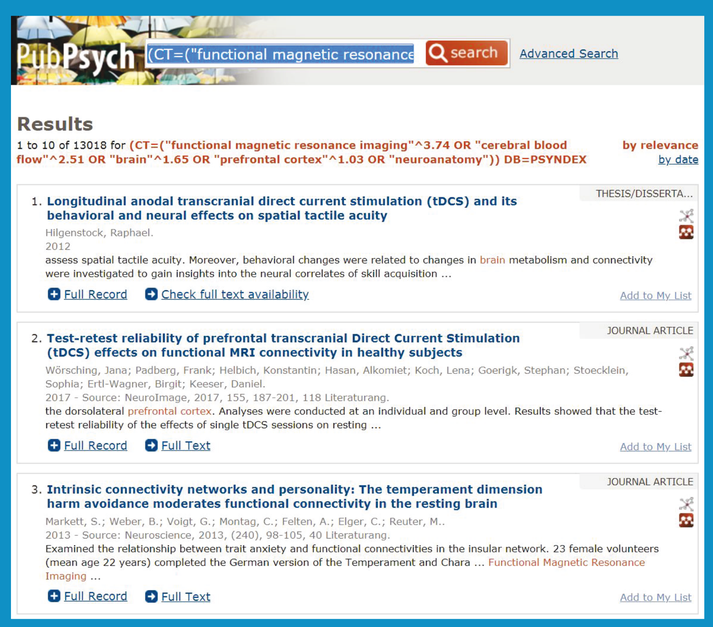
Features

Set the range of publication years

Trends are calculated dynamically

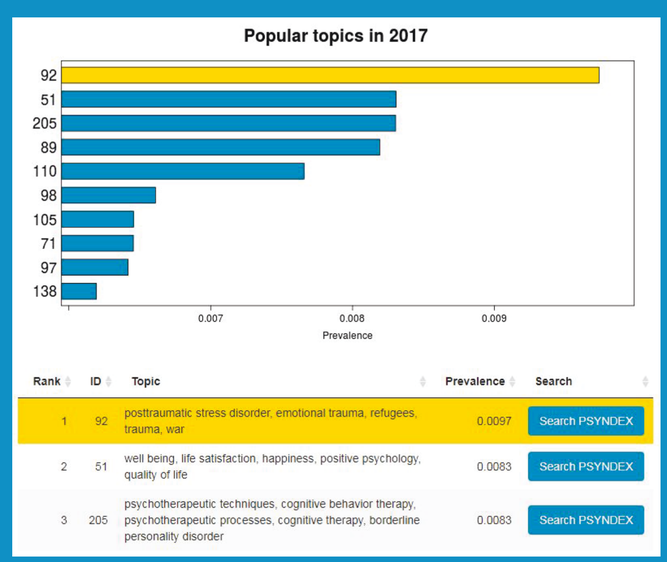
Switch between different views





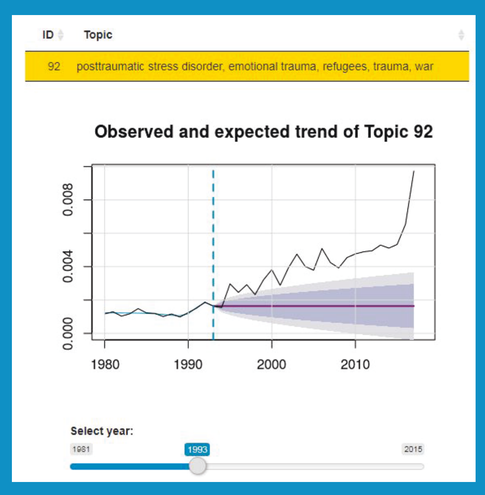
Find relevant literature for each topic

The terms in the search query are weighted according to the term probabilities in the topic model



Find the most popular topics by year or within a range of years

Compare the observed with the expected course at a desired point in time



Conclusions & Outlook

Initial user experiences confirm the app's ease of use. The implemented search queries help to clarify the topics' contents and offer a low-threshold starting point to literature search. User studies will be conducted to further improve the app.

Future developments may include:

- Displaying topics with a high/low degree of empirical evidence ➜ research synthesis or explorative research
- Using social media as additional source ➜ identifying even the most current topics
- Better support for smaller screens

The app is open-source software and can be **applied to other databases** with only few modifications necessary.

The code is available at PsychArchives.org: http://dx.doi.org/10.23668/psycharchives.2410

Try the demo here:

https://abitter.shinyapps.io/psychtopics/

References:

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