Magyar Pszichológiai Szemle: Tendencies in the Core Journal of Hungarian Psychology (An Exploratory Study)

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Overview: The approach

- The issue: Mapping the core journal of psychology in Hungary (*Hungarian Review of Psychology, MPSZ*)
- Rationale: MPSZ as core journal: reflecting trends and developments in Hungarian psychology
- Approach:
  - empirical (based on bibliographic data)
  - exploratory approach (generating hypotheses)
- Theoretical framework: infoscience applied to S&T:
  - science and technology mapping
  - bibliometrics (BM),
  - datamining (DM),
  - social network analysis (SNA)
- Materials: PsychINFO (MPSZ), ISI WoS (HunPsy)
- Comparison with a suitable contrast corpus: HunPsy
Overview 2: The results

- The community behind
  - Authorship structures (SNA, DM)
  - Dynamics of the community of contributors (SNA, DM)
  - Community dynamics: author collaborations along the time dimension (SNA)

- The research trends
  - Thematic coverage: thematic diversity and prominence (DM)
  - Thematic coverage: dynamics of thematic clusters (DM)
  - Conceptual map (DM, SNA)

- The „intellectual background”
  - Age of citations (BM)
  - Comparative analysis of citation profiles for MPSZ and HunPsy (BM)

- Main strategy: seeking for convergence
Materials

- The journal under study
  - Magyar Psихолógiakkal Szemle (MPSZ)
  - Founded in 1928
  - Language: Hungarian
  - Volumes: 63

- Scope of present analysis:
  - 1963-2007
  - # publications ~ 800

- Source of data:
  - PsychInfo

- Source of contrast data:
  - Web of Science

- Contrast data: HunPsy
  - Corpus of Psychology publications
  - Source: International scholarly journal
  - At least one author with Hungarian affiliation
  - Relevant period

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Date: 2009.03.03.
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Refined by: Subject Areas='BEHAVIORAL SCIENCES OR EDUCATION & EDUCATIONAL RESEARCH OR EDUCATION, SCIENTIFIC DISCIPLINES OR EDUCATION, SPECIAL OR LANGUAGE & LINGUISTICS OR LINGUISTICS OR PSYCHOLOGY OR PSYCHOLOGY, APPLIED OR PSYCHOLOGY, BIOLOGICAL OR PSYCHOLOGY, CLINICAL OR PSYCHOLOGY, DEVELOPMENTAL OR PSYCHOLOGY, EDUCATIONAL OR PSYCHOLOGY, EXPERIMENTAL OR PSYCHOLOGY, MATHEMATICAL OR PSYCHOLOGY, MULTIDISCIPLINARY OR PSYCHOLOGY, PSYCHOANALYSIS OR PSYCHOLOGY, SOCIAL'

Timespan=All Years. Databases=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH.

Results: 1726
The community behind 1: authorship structures

- Authorship structures
  - Main aim: to reveal the community structure
  - Community: group of collaborating authors
  - Definitive relation: co-authorship
  - Formalization: structure and content of co-authorship network (SNA)
  - Weighted graph, weight = #articles-in-common

- Basic statistics for the author network extracted for MPSZ (1963-2007)

  ![Authorship network statistics]

  #authors/publication

  Distribution of link weights

  ![Link weight distribution]
The community behind 1: authorship structures

- Structural properties of the network
  - Degree distribution: a few has many collaborators, many has few (cf. scale-free)
  - "Usual" co-author net

Degree distribution
The community behind 1: authorship structures

- Structural properties of the network
  - Connected components: actual communities
  - Three major communities
The community behind 1: authorship structures

- Three major communities (1963-2007)
  - Combining titles and coauthor graphs yields three well represented research fields

1. Psycholinguistics: central au, international links
The community behind 1: authorship structures

- Three major communities (1963-2007)
  - Combining titles and coauthor graphs yields three well represented research fields

2. Environmental psychology: central au, international links
The community behind 1: authorship structures

- Three major communities (1963-2007)
  - Combining titles and coauthor graphs yields three well represented research fields

3. Developmental and comparative psychology: core group
The community behind 2: Dynamics of the community of contributors

- The annual marginal increment in the pool of authors (1963-2007)
  - Turnover: \( \#\text{new authors}(t)/\#\text{authors}(t) \) on the average
  - Indicates a very "open" community

![Graph showing the turnover rate over the years from 1963 to 2007 with a turnover value of 0.72.](image)
The community behind 2: Dynamics of the community of contributors

- Network dynamics at a glimpse in ten equal periods (1963-2007)
  - Only connected components are pictured period
  - Edge weights are indicated with colors
  - Period 1-5: more single coauthorship, few communities, 6-10: vice versa
  - Period 2, 10 (67-72, 2003-2007): presence of main communities
The community behind 2: Dynamics of the community of contributors

- Network dynamics at a glimpse in ten equal periods (1963-2007)
  - In detail: the three main components can be assigned to two distinct periods

![Diagram of network dynamics](image)
The community behind 2: Dynamics of the community of contributors

- Network dynamics: quantitative analysis (1963-2007)

1-3. changes in the pool of clusters: as can be seen in the visualization.

5. weight is around 1: collaboration usually covers 1 publication.

7-8. Density ~ 1/betweenness centrality: the structure rarely indicates a real community (not only 1 article).
The research trends 1: Thematic diversity and prominence

- Content analysis
- Proxy for thematic trends: PsychInfo categories
  - 4-digit code and thesaurus: indicates hierarchical field-specific classification
  - Many-to-many mapping: articles may belong to more than 1 category
- Basic statistics for thematic profile: frequency distribution of category assignments
The research trends 1: Thematic diversity and prominence

- Measuring thematic dynamics: the annual marginal increment in topics
- Most of the topics are introduced up to the 80’s
The research trends 1: Thematic diversity and prominence

- Illustration of topical increment
- *General* topics are introduced in the early period
- Applied topics are gradually accumulated through time

<table>
<thead>
<tr>
<th>Year</th>
<th>New Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>Psychometrics &amp; Statistics &amp; Methodology:2200, Sport Psychology &amp; Leisure:3700</td>
</tr>
<tr>
<td>1986</td>
<td>Cardiovascular Disorders:3295, Psychoanalytic Theory:3143</td>
</tr>
<tr>
<td>2005</td>
<td>Intelligent Systems:4100, Military Psychology:3800, Sex Roles &amp; Women's Issues:2970</td>
</tr>
</tbody>
</table>
The research trends 1:
Thematic diversity and prominence

- Aim: to measure the distribution and development of topics over time
- Chosen indicator: Shannon-Wiener formula for entropy/diversity
  \[ H = \sum p_i \times \log(p_i) \]
- Features: proportional to
  - (1) number of categories
  - (2) evenness of distribution of individuals over categories
- Applied to each year (1963-1975) w.r.t. category codes
  - Individuals: category assignments (tokens)
  - Categories: Category codes (types)
  - Shows the diversity of topics in each year (how many topics, how balanced topical scene)
- Applied to each category w.r.t. years
  - Bit unusual
  - Shows important features of the distribution of topics over time
  - High entropy topics cover more years, more evenly: stable topics
  - Low entropy topics appear only in a few years in high concentration: bursty topics
  - Combined with frequency data, used as a grouping variable
The research trends 1: Thematic diversity and prominence

- Diversity across the years with a moving average of three-year periods
The research trends 1: Thematic diversity and prominence

- Stable topics: most of them are concentrated in the first ten years
The research trends 1:
Thematic diversity and prominence

- Bursty topics: usually in the second half (educational psychology)
The research trends 2: Thematic coverage: dynamics of thematic clusters

- Thematic coverage: dynamics of thematic clusters (DM)
  - Clustering exercise for ten periods
  - Proximity of documents is defined by their relative position in the code hierarchy
The research trends 3: Conceptual map

- Bottom-up approach: co-word map
  - Units of analysis: author-generated keywords
  - Organization principle: joint occurrences of keywords
  - Advantage over categories: less room for indexer bias
The research trends 3: Conceptual map

- Hierarchical clustering of co-word map
  - Conducted on a more relaxed set of central concepts
  - Clustering is based on # of shared neighbours (topological criterion)

<table>
<thead>
<tr>
<th>cluster</th>
<th>keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>places; anxiety; high school students; gender differences; age differences; psychophysics; psychology; crisis; personality; performance; well being; environment; psychological theories; human environment; religion; family therapy; religion psychology; religious experience; married couples</td>
</tr>
<tr>
<td>2</td>
<td>adolescents; health behavior; brain activity; individual differences; verbal intelligence; blind children; psychometrics; cognitive abilities; learning difficulties; socialization; research; developmental dyslexia; reading disabilities; intelligence; child development; stress; heredity; history; behavior genetics; creativity; prematurely born children; environmental influences; 6-14 yr olds; world concepts; concept development; childhood development; problem solving; infants; cognitive development; preschoolers</td>
</tr>
<tr>
<td>3</td>
<td>working memory; central nervous system; cognitive processes; attention; theories; students; dyslexia; spatial orientation; mismatch negativity; event-related potentials; speech perception; emotions; cats; monkeys; language; children</td>
</tr>
<tr>
<td>4</td>
<td>environmental psychology; social processes</td>
</tr>
<tr>
<td>5</td>
<td>Hungary; decision making; risk perception; history of psychology; trends; academic achievement; elementary school students; adults; college students; literature review; stuttering; development of aggressive behavior; Rosenzweig Picture Frustration Study; secondary school students; kindergartners; nursery school students; stutterers; aggressive behavior; autogenic training; personality development; Soviet psychology</td>
</tr>
<tr>
<td>6</td>
<td>Hungarian Psychological Association</td>
</tr>
</tbody>
</table>
The „intellectual background”: age of citations

- Citation (reference) analysis: age distribution
  - Distributional approach to the dimension of references
  - Comparing MPSZ and HunPsy

- High Price index and correlation with the HunPsy data
The „intellectual background” 2: Comparing with HunPsy

- Journal references are compared in MPSZ and HunPsy
  - Analysis is conducted with a size-adjusted random sample of HunPsy

- Developmental and environmental psychology is favoured in this background of MPSZ as contrasted with behavioral psy and psychophisiology in HunPsy
General conclusions

- Different types of analyses converge
- MPSZ has been played the role of being a review type journal: maintaining an extremely open community (see citation patterns as well).
- Diverse in topics, still has clear orientation (cognitive, developmental, personality psychology) and thematic centers (educational psy, religion psy etc.).
- Its character has been set very early, and remained stable.
- MPSZ has reflected international trends (see Robins, Gosling, Craik (1999)) (role of cognitive psychology) and has even anticipated such trends (early role for neuroscience)
- MPSZ has an up-to-date view on psychology as derived from the intellectual background, similar to that of the HunPsy corpus
- The role of Hungary-related applied research is strong → policy for the role of national scholarly journals?