


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



Sándor Soós¹, András Schubert¹, Csaba Pléh²

¹ Institute for Research Organization MTA, Budapest

² Department of Cognitive Science BME, Budapest

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 Pszichológiai 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

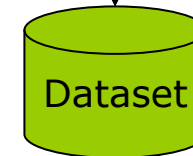


PsycINFO®

Web of Science®

MPSZ

HunPsy



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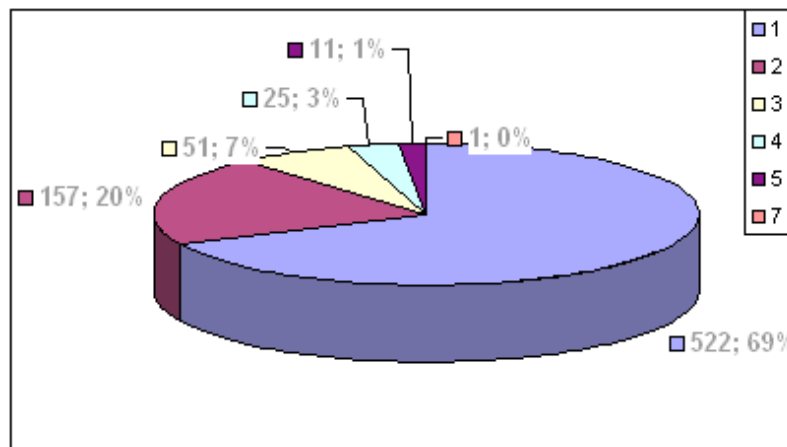
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SCIENTIFIC DISCIPLINES OR EDUCATION, SPECIAL OR LANGUAGE
& LINGUISTICS OR LINGUISTICS OR PSYCHOLOGY OR
PSYCHOLOGY, APPLIED OR PSYCHOLOGY, BIOLOGICAL OR
PSYCHOLOGY, CLINICAL OR PSYCHOLOGY, DEVELOPMENTAL OR
PSYCHOLOGY, EDUCATIONAL OR PSYCHOLOGY, EXPERIMENTAL OR
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MULTIDISCIPLINARY OR PSYCHOLOGY, PSYCHOANALYSIS OR
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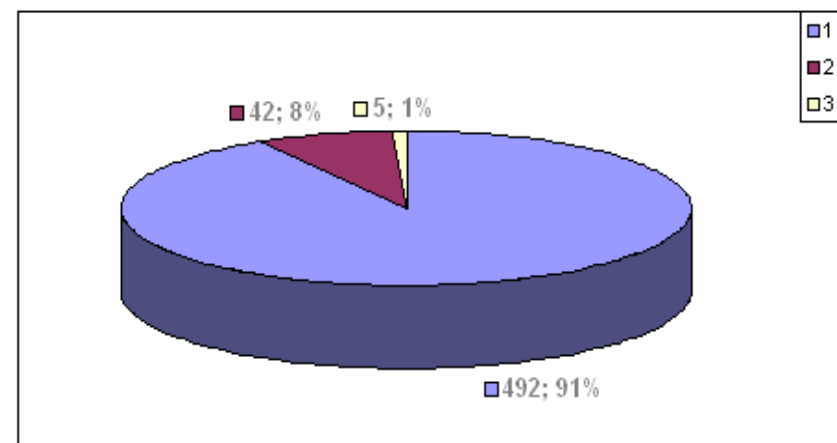
The community behind 1: authorship structures

- 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)

#authors/publication



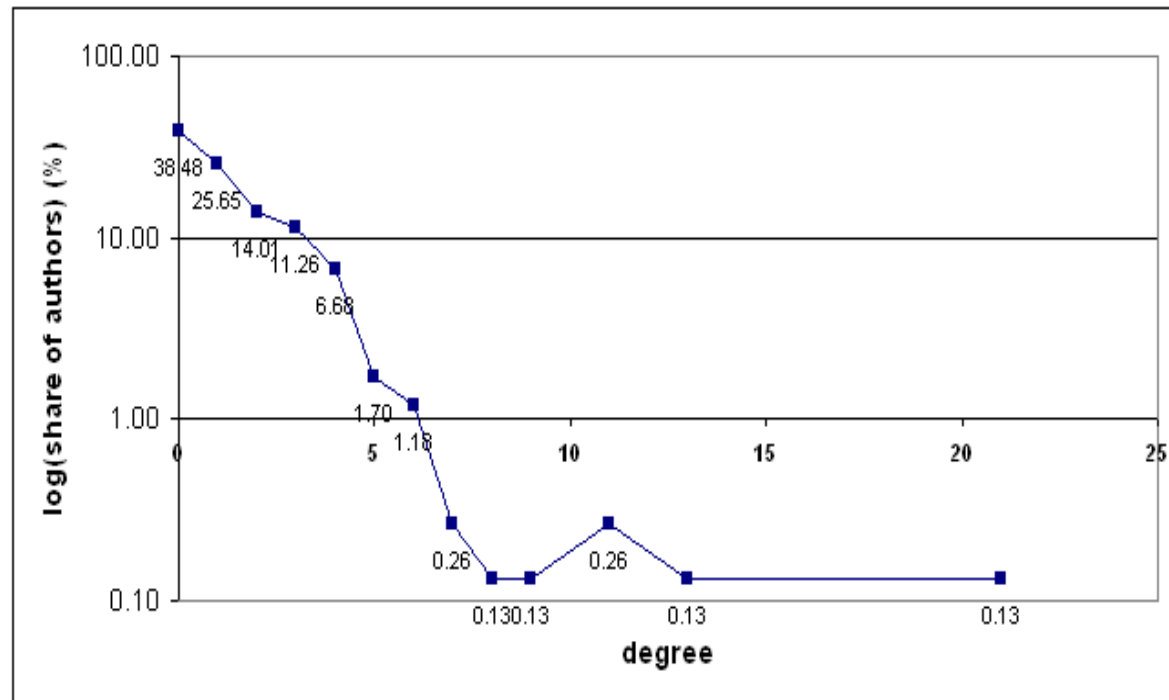
Distribution of link weights



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

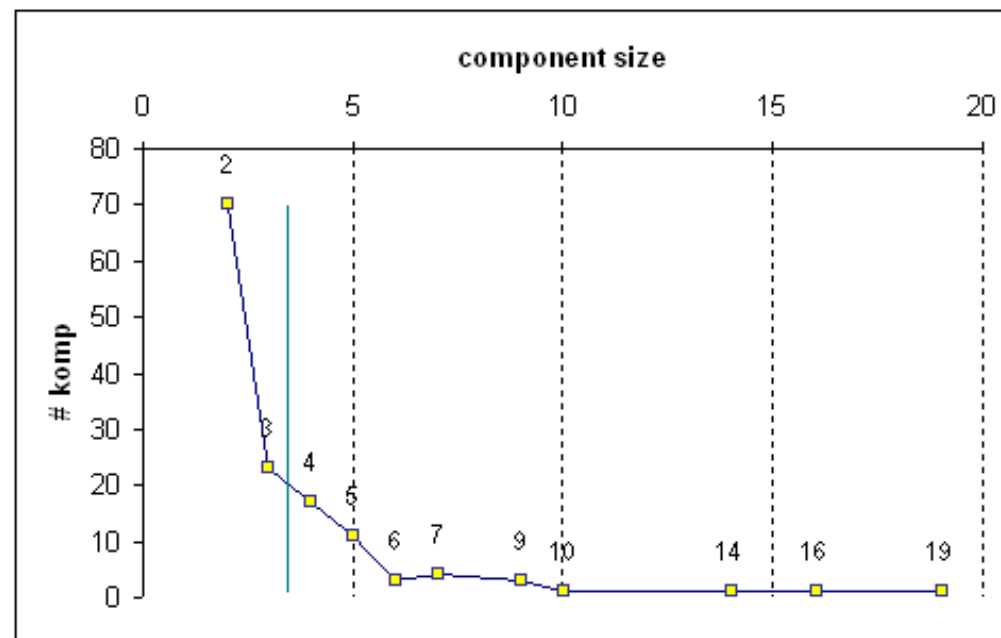
degree distribution



The community behind 1: authorship structures

- Structural properties of the network
 - Connected components: actual communities
 - Three major communities

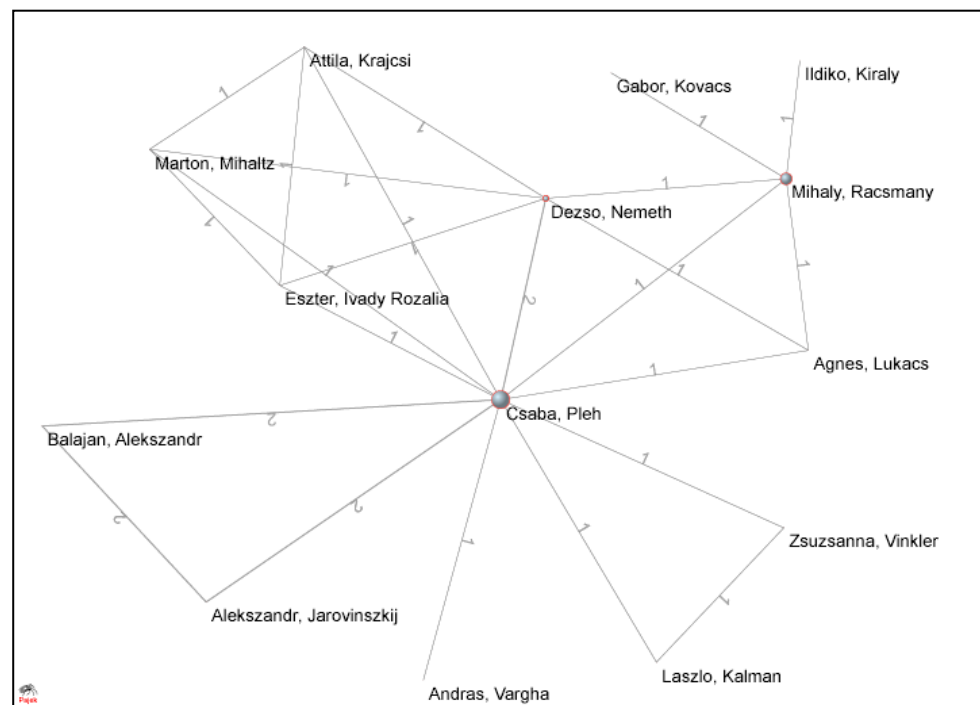
Component size distribution



The community behind 1: authorship structures

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

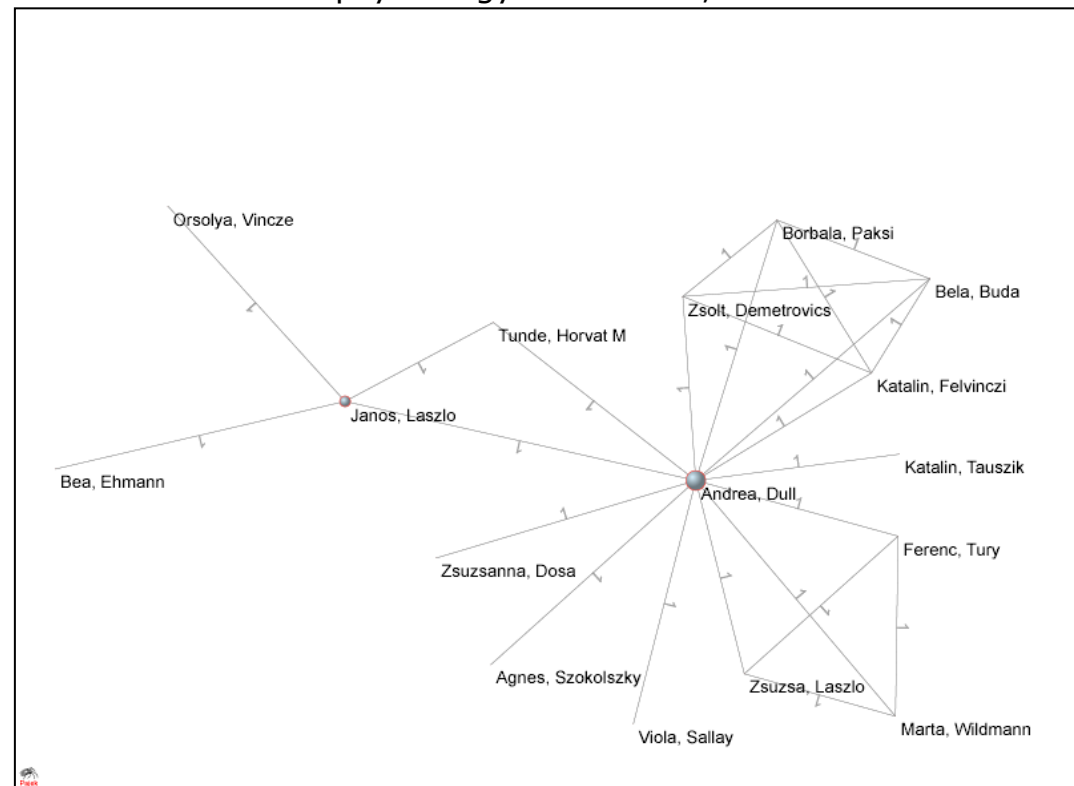
1. Psycholinguistics: central au, international links



The community behind 1: authorship structures

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

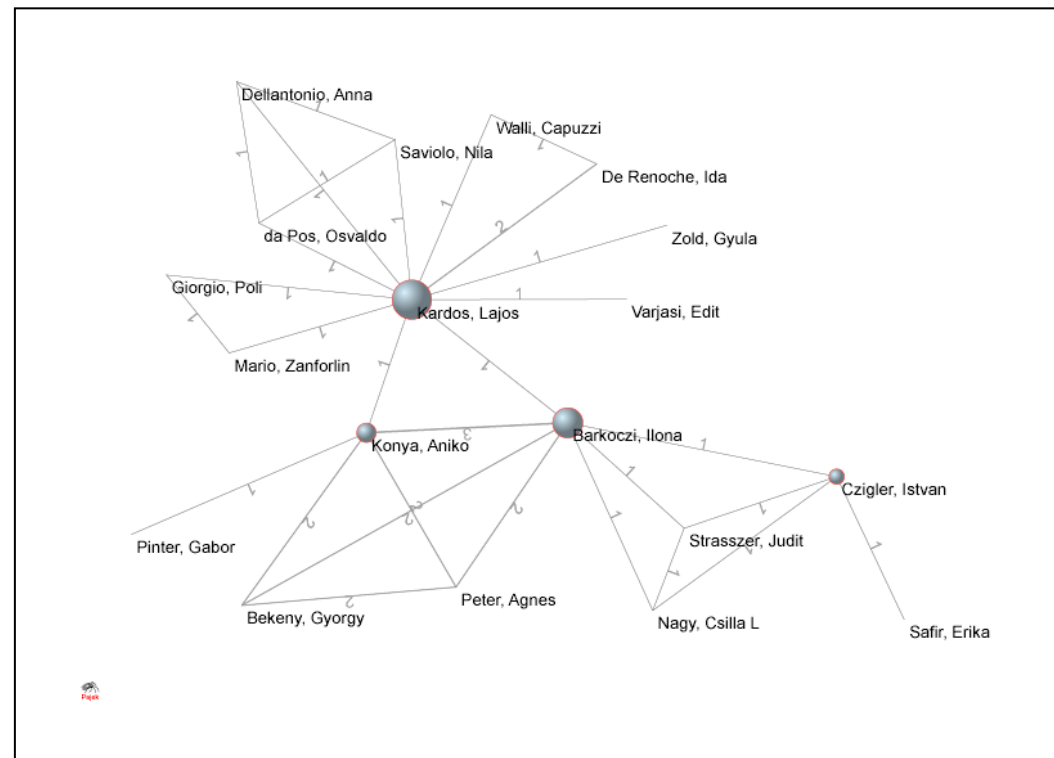
2. Environmental psychology: central au, international links



The community behind 1: authorship structures

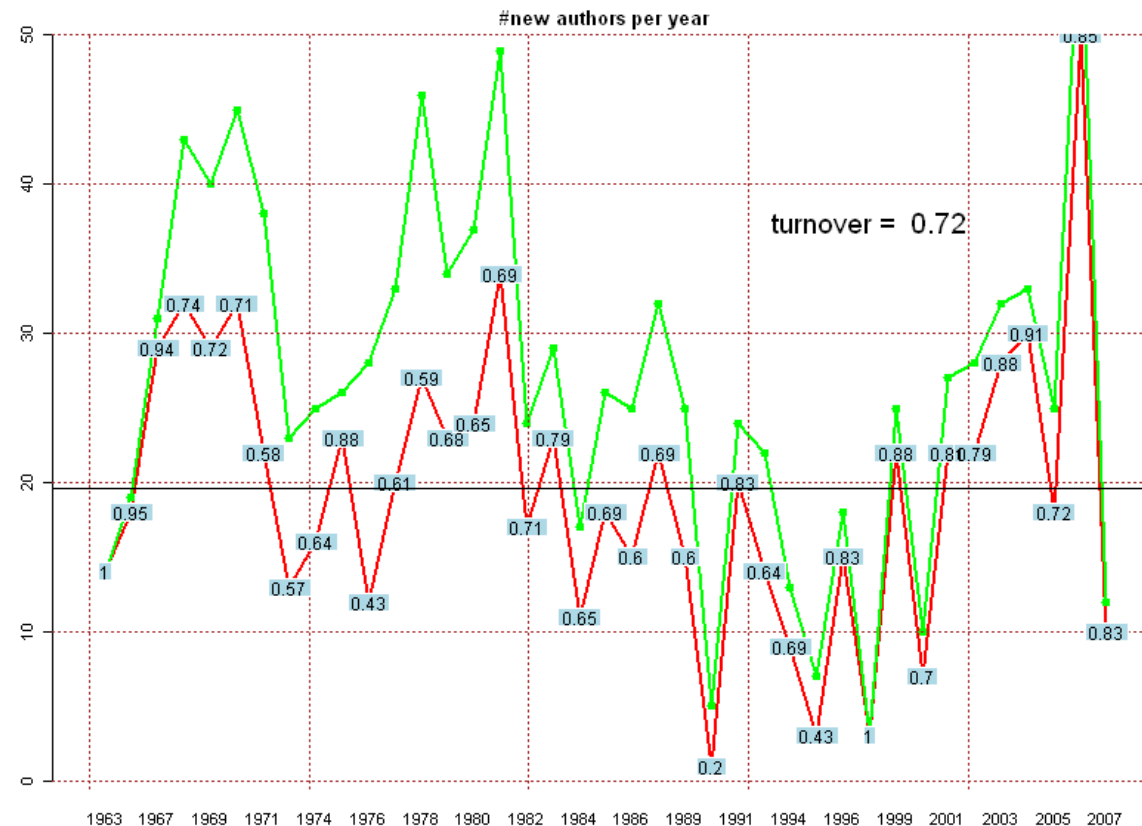
- Three major communities (1963-2007)
 - Combining titles and coauthor graphs yields three well represented research fields

3. Developmental and comparative psychology: core group



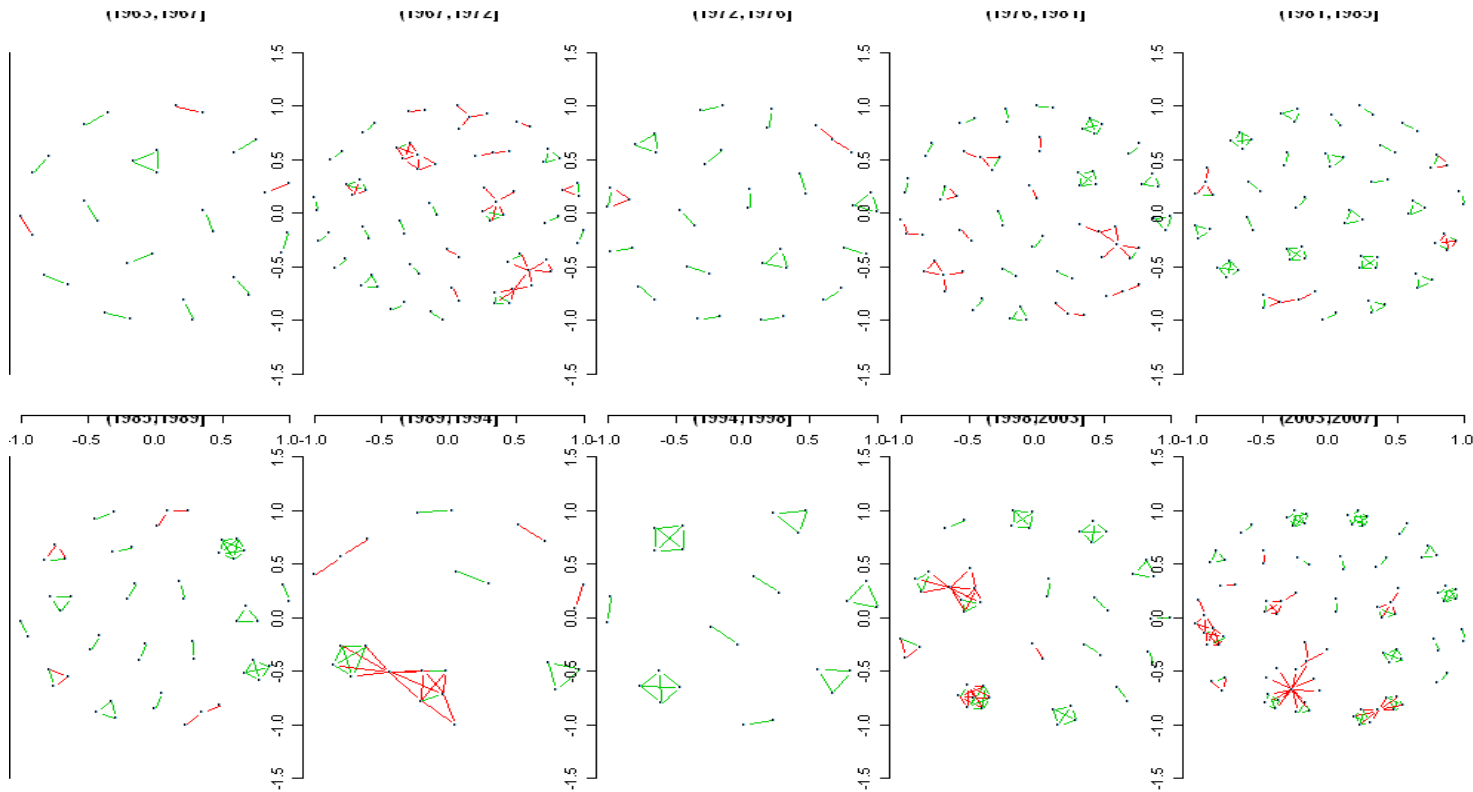
The community behind 2: Dynamics of the community of contributors

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



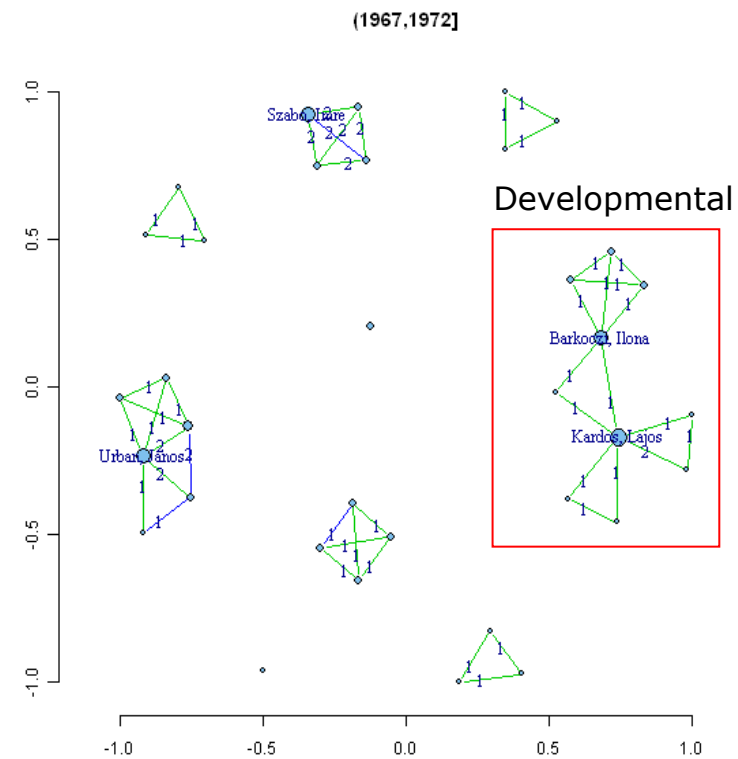
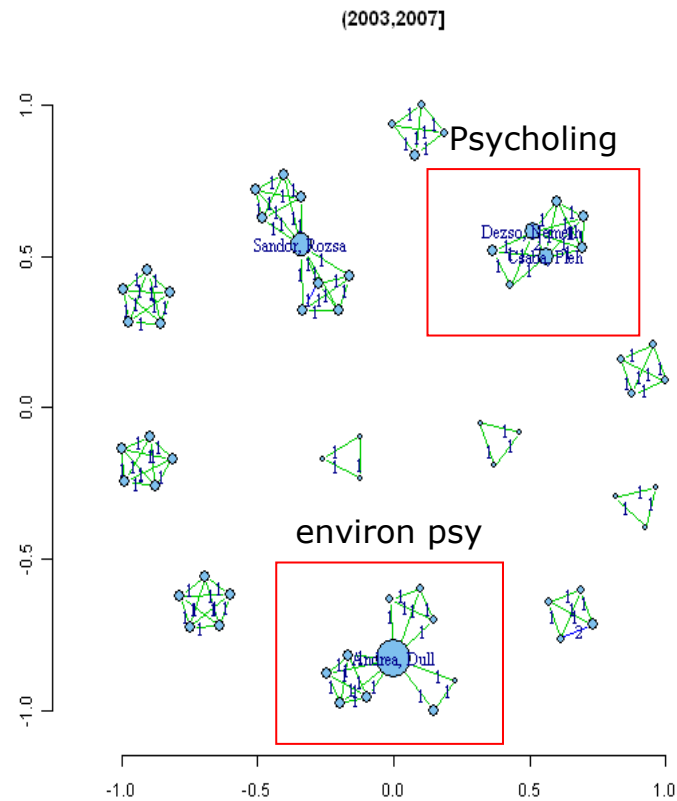
The community behind 2: Dynamics of the community of contributors

- 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



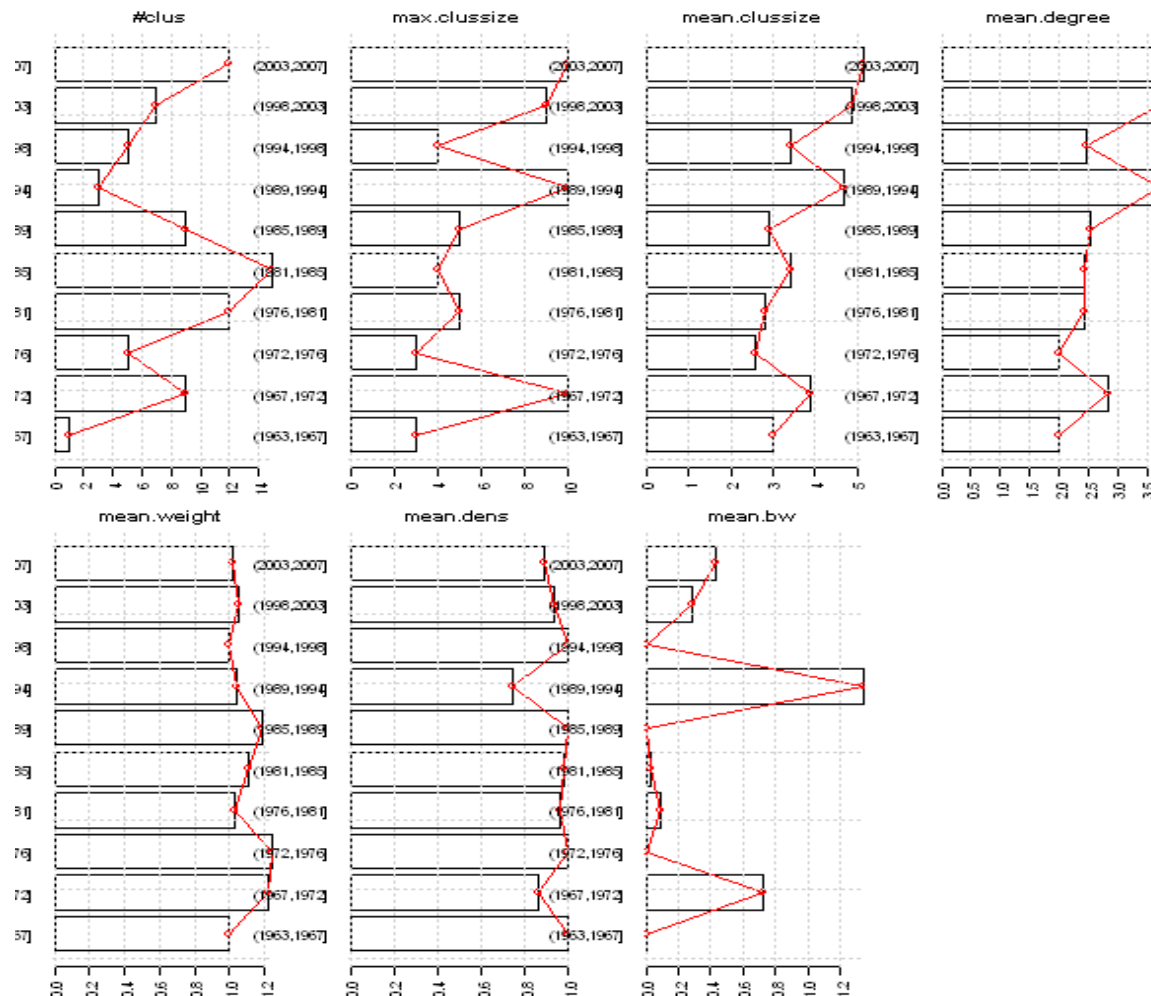
The community behind 2: Dynamics of the community of contributors

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

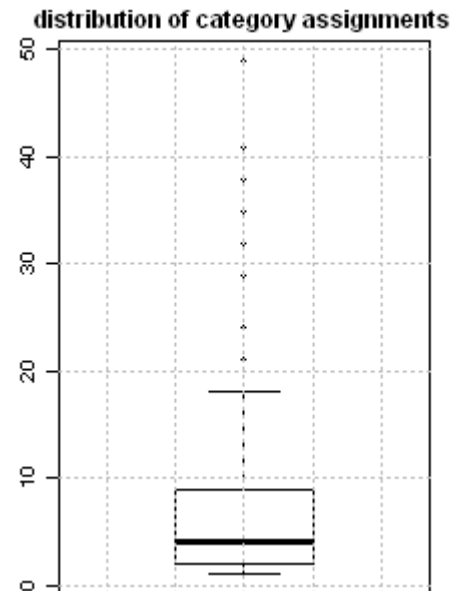
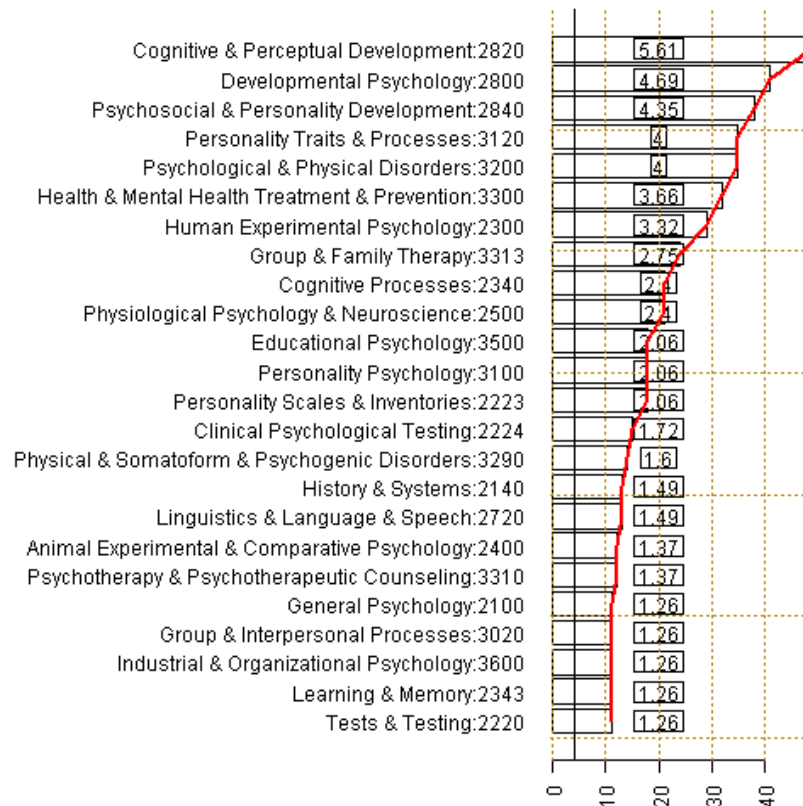
7-8. Density \sim 1/betweenness centrality: the structure rarely indicates a real community (not only 1 article).



The research trends 1:

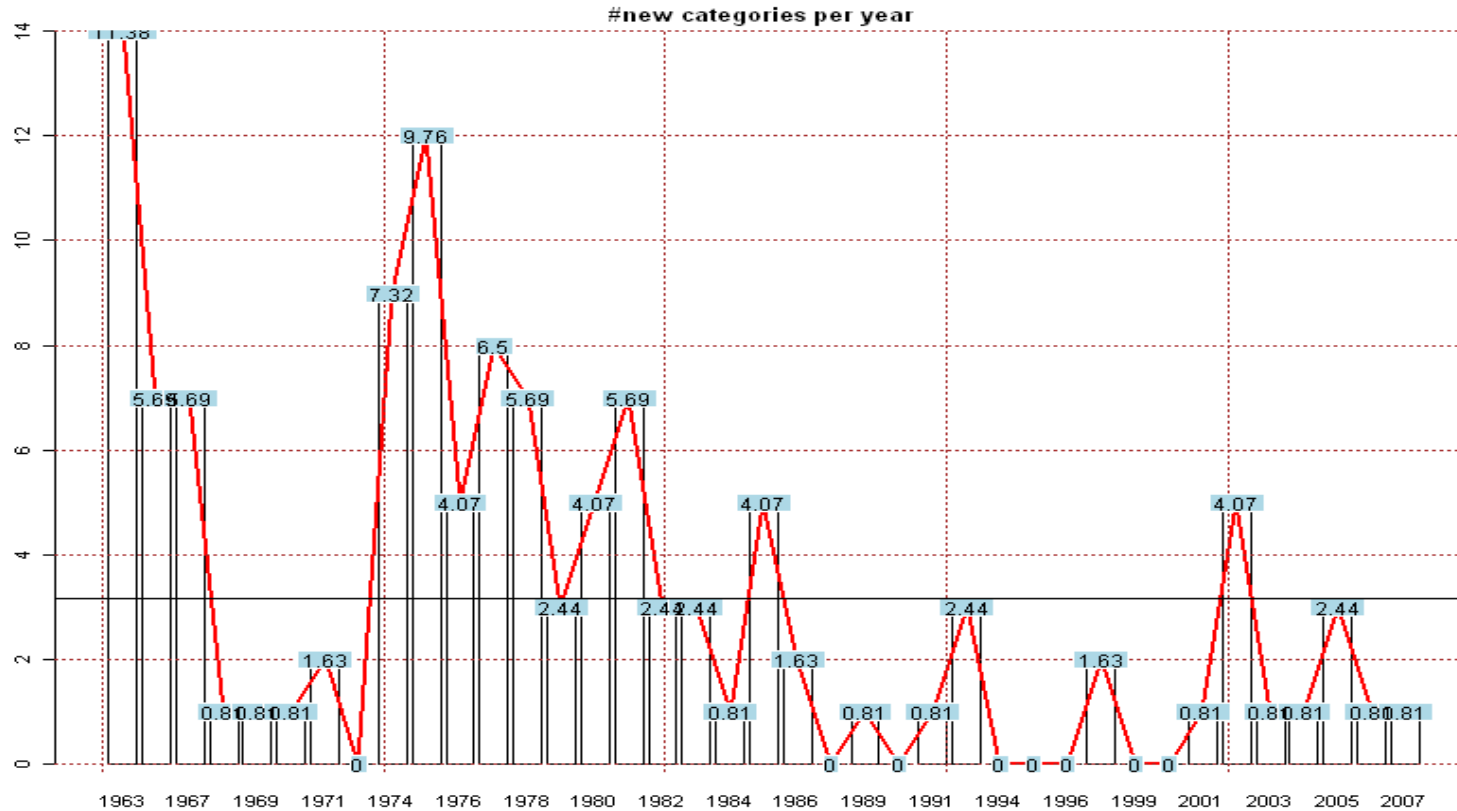
Thematic diversity and prominence

- 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

| year | new categories |
|-----------|---|
| 1963 | Cognitive & Perceptual Development:2820,Cognitive Processes:2340,Consciousness States:2380,Human Experimental Psychology:2300,Learning & Memory:2343,Mental Retardation:3256,Personality Psychology:3100,Personality Scales & Inventories:2223,Personality Traits & Processes:3120,Philosophy:2630, Physiological Psychology & Neuroscience:2500 ,Psychosocial & Personality Development:2840,Social Processes & Social Issues:2900,Tests & Testing:2220 |
| 1965 | Academic Learning & Achievement:3550,Animal Experimental & Comparative Psychology:2400,Health & Mental Health Treatment & Prevention:3300,Literature & Fine Arts:2610,Neurological Disorders & Brain Damage:3297,Physical & Somatoform & Psychogenic Disorders:3290,Sports:3720 |
| 1967 | Communication Systems:2700,Developmental Psychology:2800,Educational Psychology:3500,General Psychology:2100,Industrial & Organizational Psychology:3600,Professional Psychological & Health Personnel Issues:3400,Psychological & Physical Disorders:3200 |
| 1971 | Psychometrics & Statistics & Methodology :2200,Sport Psychology & Leisure:3700 |
| 1974 | Clinical Psychological Testing:2224,Curriculum & Programs & Teaching Methods:3530,Educational Measurement:2227,Group & Family Therapy:3313,Learning & Motivation:2420,Physiological Processes:2540,Psychophysiology:2560,Rehabilitation:3380,Vision & Hearing & Sensory Disorders:3299 |
| 1975 | Attention:2346,Developmental Scales & Schedules:2222,Gerontology:2860,Group & Interpersonal Processes:3020, Linguistics & Language & Speech:2720 ,Mass Media Communications:2750,Occupational & Employment Testing:2228,Personnel Evaluation & Job Performance:3630,Psychopharmacology:2580,Psychotherapy & Psychotherapeutic Counseling:3310,Research Methods & Experimental Design:2260,Visual Perception:2323 |
| 1986 | Cardiovascular Disorders:3295, Psychoanalytic Theory:3143 |
| 1992-1993 | Divorce & Remarriage:2953,Political Processes & Political Issues:2960,Substance Abuse & Addiction:3233 |
| 1997-1998 | Artificial Intelligence & Expert Systems:4120,Personality Theory:3140 |
| 2002 | Genetics:2510,Gifted & Talented:3575, Human Factors Engineering:4010 ,Learning Disorders:3253,Social Structure & Organization:2910 |
| 2005 | Intelligent Systems:4100,Military Psychology:3800,Sex Roles & Women's Issues:2970 |

The research trends 1:

Thematic diversity and prominence

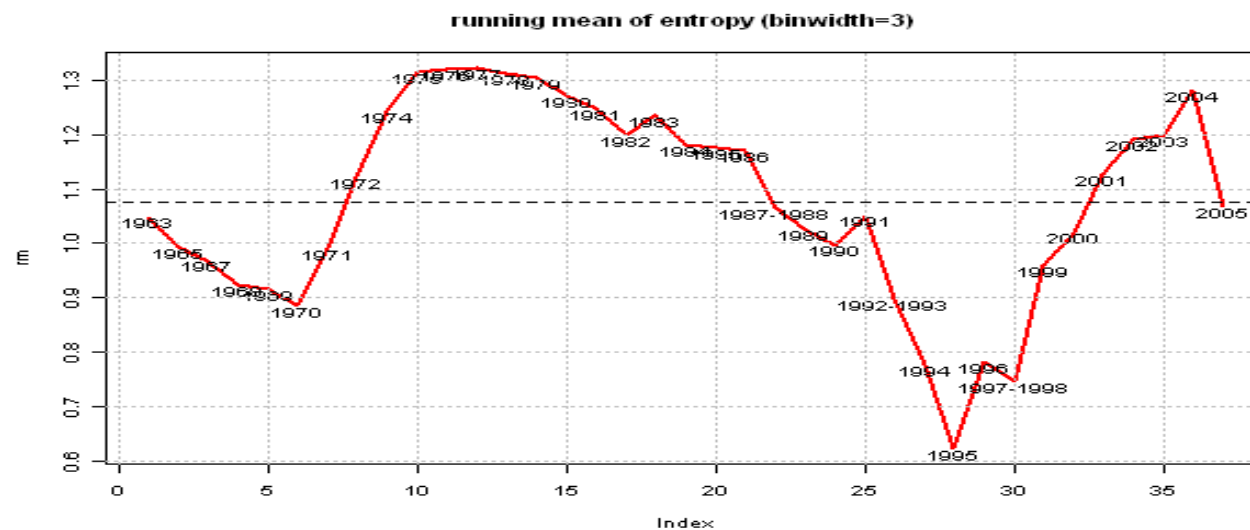
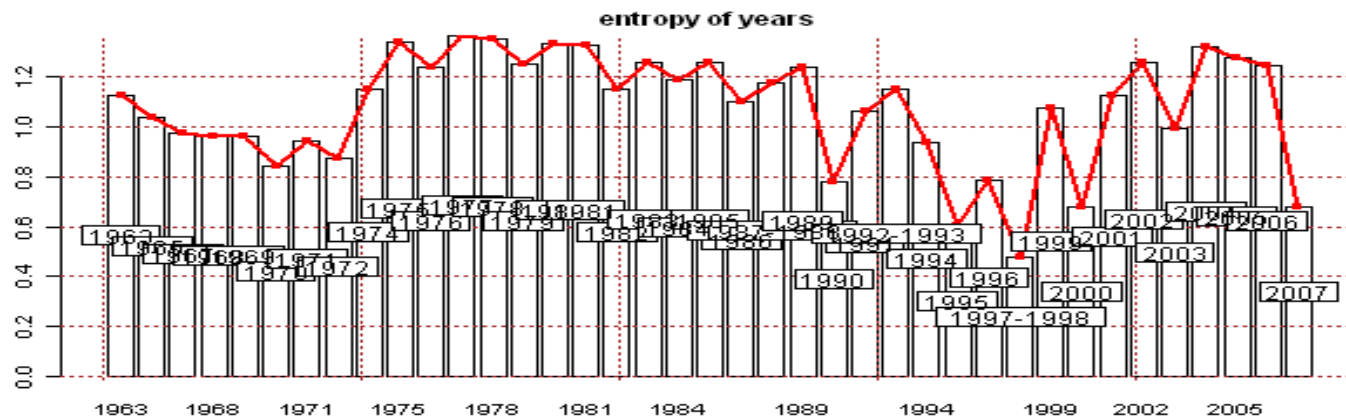
- Aim: to measure the distribution and development of topics over time
- Chosen indicator: Shannon-Wiener formula for entropy/diversity

$$H = - \sum p_i * \log(p_i)$$

- 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

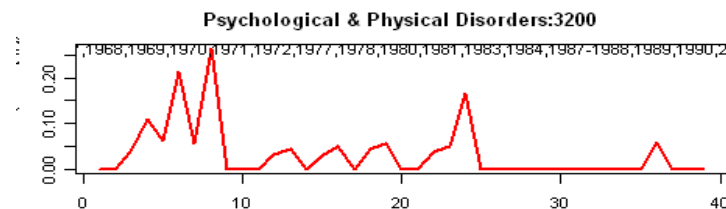
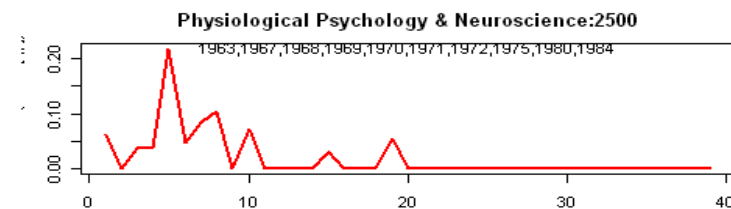
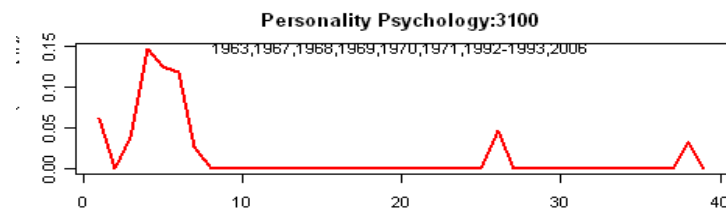
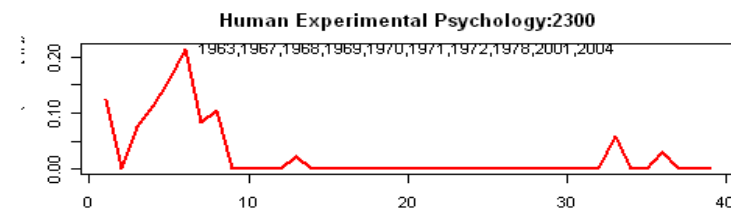
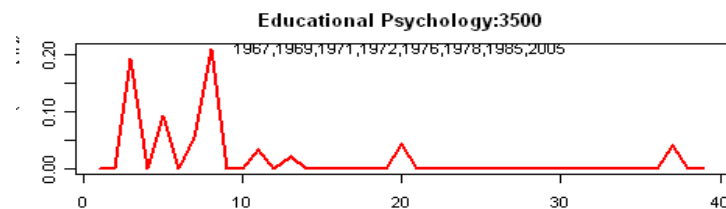
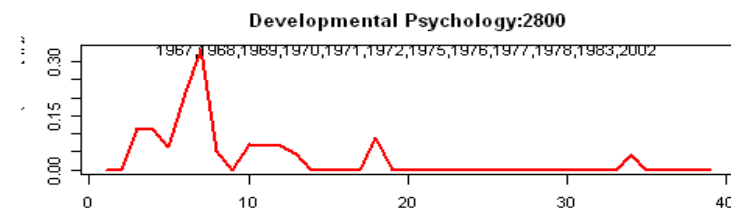
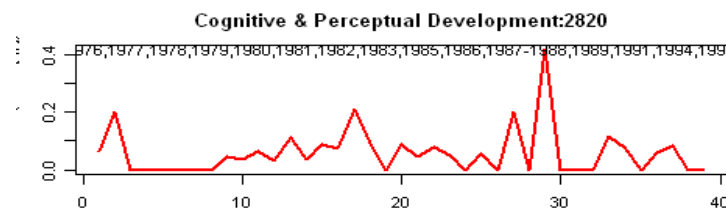
The research trends 1: Thematic diversity and prominence

- Diversity across the years with a moving average of three-year periods



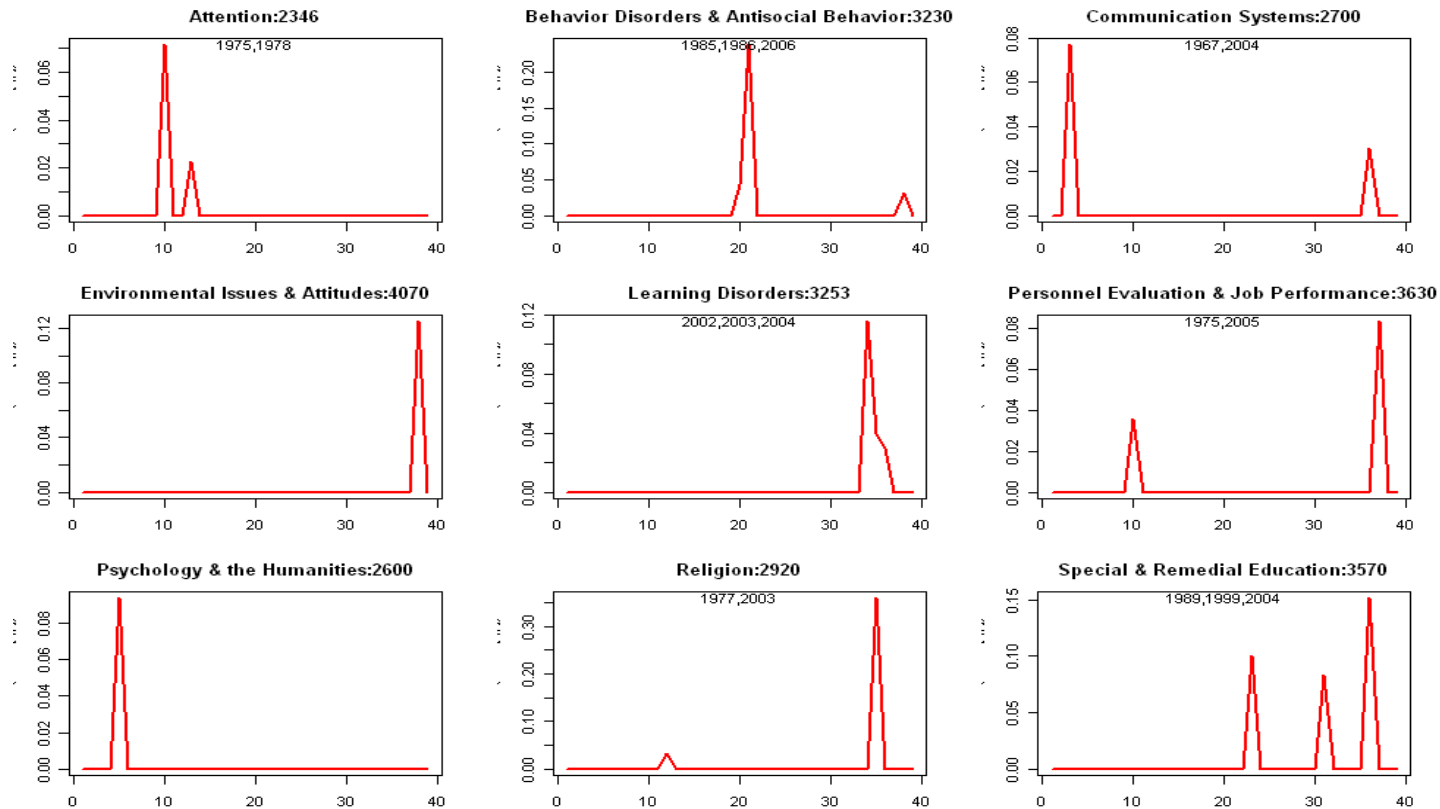
The research trends 1: Thematic diversity and prominence

- Stable topics: most of them are concentrated in the first ten years



The research trends 1: Thematic diversity and prominence

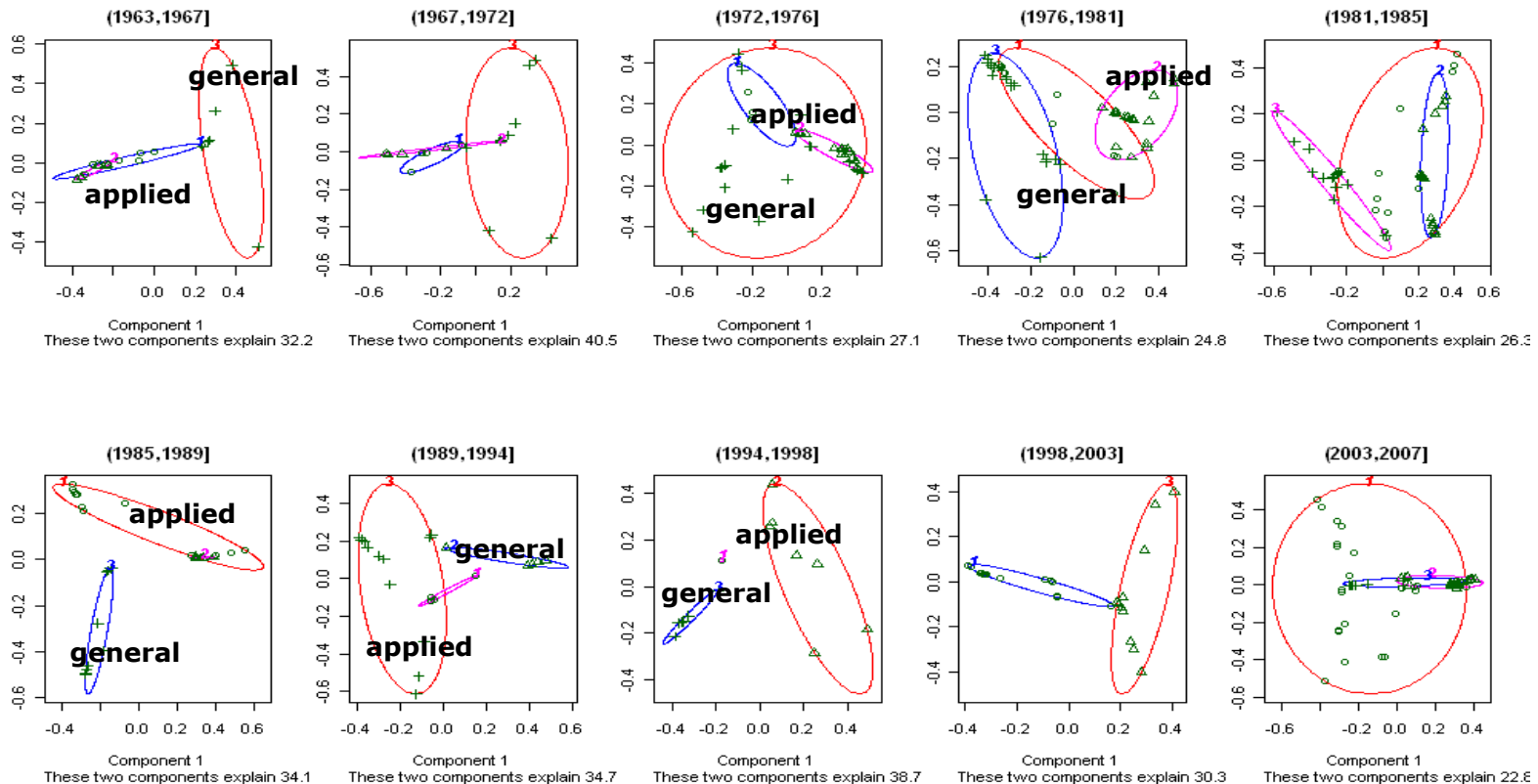
- Bursty topics: usually in the second half (educational psychology)



The research trends 2:

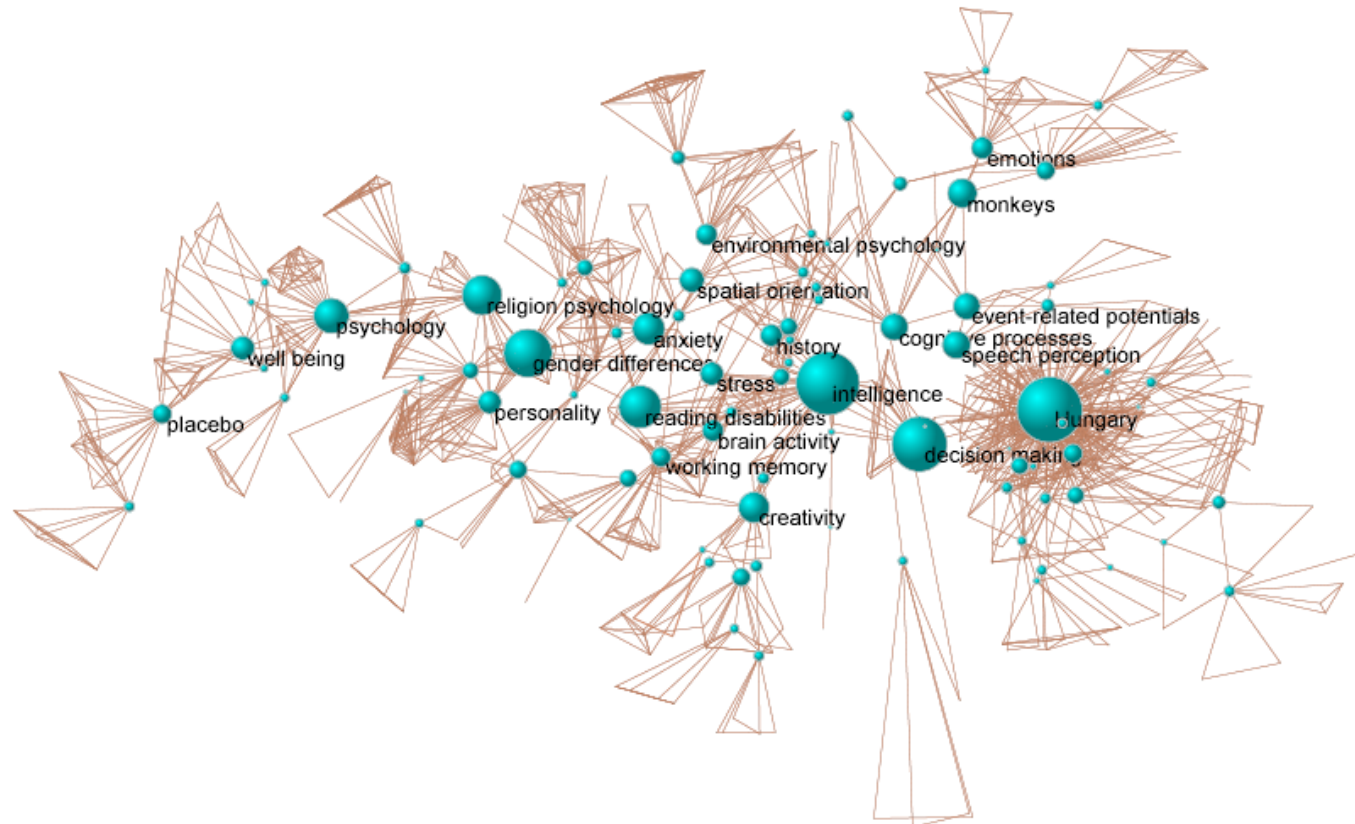
Thematic coverage: dynamics of thematic clusters

- 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



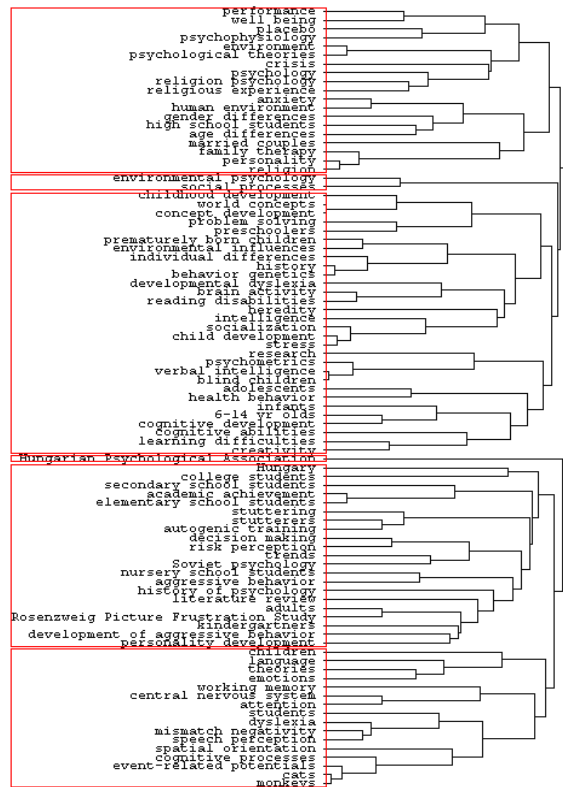
The research trends 3: Conceptual map

- 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

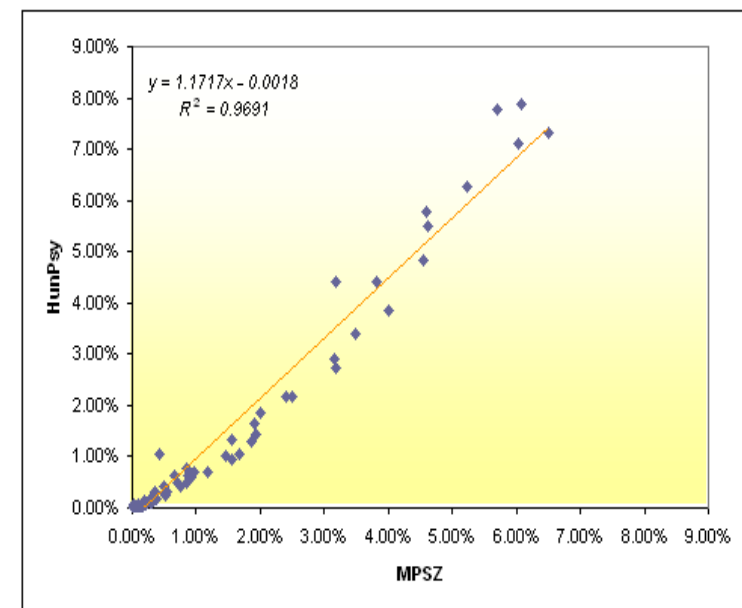
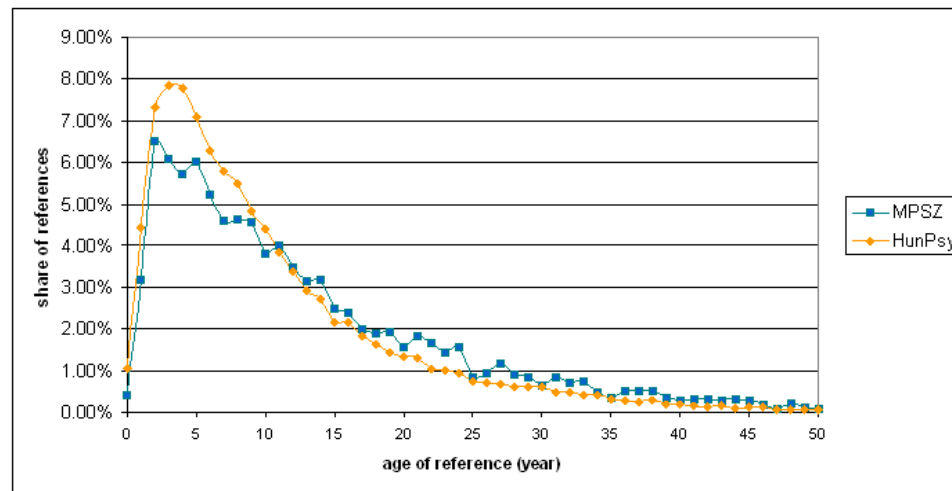
- Hierarchical clustering of co-word map
 - Conducted on a more relaxed set of central concepts
 - Clustering is based on # of shared neighbours (topological criterion)



| cluster | keywords |
|---------|--|
| 1 | placebo; anxiety; high school students; gender differences; age differences; psychophysiology ; psychology; crisis; personality; performance; well being; environment; psychological theories; human environment; religion; family therapy; religion psychology ; religious experience; married couples |
| 2 | 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 |
| 3 | 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 |
| 4 | environmental psychology ; social processes |
| 5 | 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 |
| 6 | Hungarian Psychological Association |

The „intellectual background”: age of citations

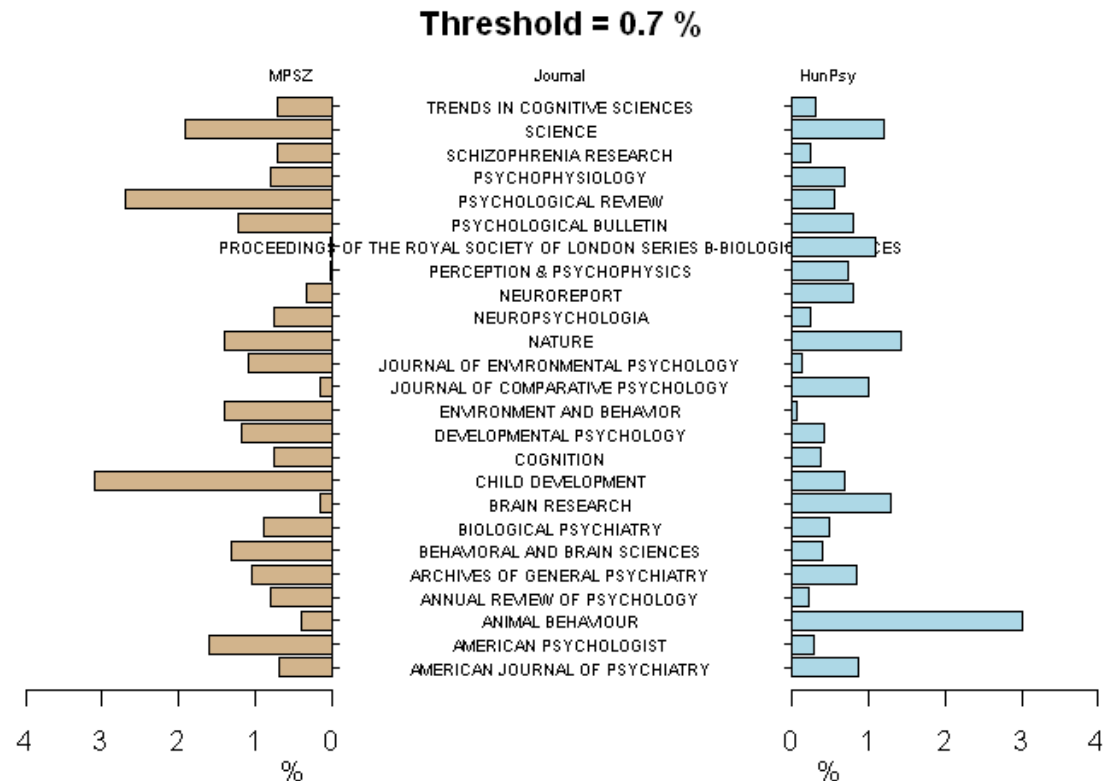
- Citation (reference) analysis: age distribution
 - Distributional approach to the dimension of references
 - Comparing MPSZ and HunPsy
- High Price index and correlation with the HunPsy data



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 psychophysiology** 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?