Evaluation of journal ranking for research evaluation purposes in the Social Sciences

Master thesis July 2009
Royal School of Library and Information Science
By Maria Lillkåll
Supervisor: Birger Hjørland
Word count: ~21.800

Abstract

This thesis looks at the problems and issues inherent in the ranking of journals for research evaluation purposes. It aims to investigate the hypothesis that while the methods of ranking of journals are claimed to be objective, they are in reality supporting some interests at the expense of others and as a result, some specialties might be discriminated against for a multitude of reasons.

First, the foundation of research evaluation, with a focus on the Social Sciences, and assembling core journals lists are discussed, following this, different research evaluating models implemented around the world are presented and discussed. Through examining the problems inbuilt in ranking of journals and using the European Reference Index for the Humanities (ERIH) initial list for psychology as the primary dataset, the hypothesis is tested.

The initial list is compared with the Norwegian research evaluation model rankings to see how much they agree. Discrimination of sub-disciplines is looked for in the psychology initial list, discrimination of countries and the ranking is also tested against Institute for Scientific Information's (ISI) Journal Citation Report's (JCR) journal impact factors (JIF). The analysis indicates that there is a correlation with the Norwegian models ranking. Some discrimination of sub-disciplines is also found, from the standpoint of the JCR's subject category. There are also indications that the initial list for psychology correlates with the JCR journal impact factors in the rankings of these journals.

In conclusion ranking journals for research evaluation purposes can be a very complex process. It is important to consider what the goal of the ranking journals should be because it is likely to have serious implications for research evaluation. As a result of this study it can be affirmed that a discipline is not homogeneous and many aspects need to be taken into consideration when creating ranked lists of journals or publishers for research evaluation purposes.

Table of Contents

ABSTRACT 2
INTRODUCTION 4
RESEARCH QUESTION AND METHOD 5
Thesis structure *6*
SCIENTIFIC COMMUNICATION 7
Citation theory *7*
Getting your ideas out there *7*
Disciplines and the growth of interdisciplinarity *9*
Natural Sciences, Social Sciences and Humanities: how does publication differ? *10*
Publication Patterns in Social Sciences *10*
More national research *13*
Internationalization *13*
Journals *14*
Peer review and gatekeepers *15*
Research fronts *16*
Summary *16*
RESEARCH EVALUATION 17
Evaluating the individual researcher, H-index 18
Identifying core journals *18*
Journal Citation Reports (JCR) & Journal Impact Factor (JIF) *20*
Weaknesses and strengths of JCR and the Journal Impact Factor 21
Bradford's law *23*
Table 1 Hypothetical perfect Bradford distribution (Nisonger, 2007) 24
Weaknesses and strengths of the Bradford's law 24
Expert panels *25*
Weaknesses and strengths of expert panels 25
Lists out there 26
Implications of ranking journals for research evaluation *26*
Analyzing research in social science *27*
Open access versus ISI *28*
Summary *28*
RESEARCH EVALUATING MODELS USED IN THE WORLD 29
ERIH *29*
About the ERIH expert panel 30
Norwegian model *31*
How do they choose journals 31
Other countries research evaluating methods *32*
USA and the National Research Council 32
The UK Research Assessment Exercise 32
The Australian methods 33
The Netherlands 33
Summary *34*
EMPIRICAL ANALYSIS 35
A: 35
Table 2 ERIH and Norwegian Models comparison scores 35
B: 36
Table 3 JCR subject categories on ERIH's initial list 36
C: 37
Table 4 Level ABC ranking with countries 37
D: 37
Table 5 10 random journals divided into ABC with Journal Impact Factors 38
Table 6 Low Journal Impact Factor ranked A journals 38
Errors in the dataset 40
DISCUSSION 40
CONCLUSION AND SUGGESTIONS FOR FURTHER RESEARCH 45
REFERENCES: 47
APPENDIX 52

Introduction

Research evaluation is popular

Research institutions worldwide are being pressured, measured and cornered into being more efficient. Research evaluation programs using quantitative measurement tools are being implemented. Besides the demand for efficiency there are also attempts to steer, regulate and control the research being done. (Moed, 2005) (Coryn, Hattie, Scriven, & Hartmann, 2007) During recent years, research evaluation has been a hot topic all over Europe, as well as in the rest of the world. In Scandinavia, Norway has developed their own research evaluating system based on publication points, which are awarded to the institutions where the publications are published. Denmark and Finland are following in the footsteps of the Norwegians. Internationally we have, for example, the formation of the European Reference Index for the Humanities[1] (ERIH) by the European Science Foundation.

Universities are pressuring researchers to publish in international scientific journals. By international scientific journals it is meant journals whose publishing language is English and where published articles are selected through a process involving peer-review, usually with several revision rounds. The demand varies between institutions, but the fact remains that journal publication is of special importance. There are several reasons for this. One reason is that there is an increasing internationalization in the job market for researchers. Employers must be able to compare researchers, and this is easier if the research done by the researchers is published in the same language and competing for publication within the same journals. (Nedergaard & Foss, 2008) Another reason is the strong competition for funding of research. Of a research group can use easy to read numbers to show that they are good, it is easier for the decision makers to grant them funding. Quantitative indicators for evaluating research performances are seemingly easy for decision makers to understand. (Coryn, et al., 2007) But there are dangers if these quantitative indicators are done or misread by someone with no knowledge of their meaning. The research evaluation methodologies will directly influence the results of the evaluation, and they need to be done and presented by experts with the right background knowledge. (Huang & Chang, 2008) (Moed, 2009)

As of March 2009 a Danish list containing over 20.000 ranked journals, published by the Danish Agency for Science Technology and Innovation, for 2008 was withdrawn from the public and is being reassessed. At a meeting on the 31st of March 2009 where about 40 researchers from around the country

[1] The European Science Foundation was established in 1974 to create a common European platform for cross-border cooperation in all aspects of scientific research. Right now ERIH consists of initial lists of top journals in 15 disciplines. The journals are ranked as A, B and C journals. ERIH has planned to cover other formats as well in the future. (European Science Foundation, 2009b)

gathered together with people from the groups appointed by the Danish Agency for Science, Technology and Innovation, there was heavy critique towards the official authority list. They complained that it was full of faults and misguidance. A new meeting was to be held on the 17th of April 2009. (Innovationsstyrelsen, 2009)

Research Question and Method

What is the ranking of journals for research evaluation about? What are the main methods used and why is it done and what are the benefits of it? In this thesis we will use the European Reference Index for Humanities' (ERIH) initial list of Psychology as data to investigate what this can tell us about how the field psychology is viewed, what implications such ranking of journals has on research evaluation, and on research itself. The issue of how one journal can be objectively better than the next one, or perhaps better in some regards or better from a different perspective better is also an interesting part of this ranking process. In what ways and to what degree is the relative evaluation of journals subjective?

This thesis looks at the problems and issues inherent in the ranking of journals for research evaluation purposes. It aims to investigate the hypothesis that while the methods of ranking of journals are claimed to be objective, they are in reality supporting some interests at the expense of others and as a result, some specialties might be discriminated against for a multitude of reasons. The analysis of problems inbuilt in the ranking of journals for research evaluation purposes may support the hypothesis that a discipline is not a homogeneous and uniform but there are different theoretical perspectives and voices at play that may have different interests. For this reason, the selection of journals for indexes is a very complex task in which many issues have to be considered and in which no universal and objective solution exists.

One fundamental problem with the making of ranked lists of journals is that how can we compare one journal to the other in a way that is fair to all? How can we say that a journal with one specific role in a community is better than another journal with a specific role in another community? They might both be the best suited for some specific purpose and not so good for another.

The motivation behind this thesis is an interest in research evaluation as a field and with a special interest in what is going on in the field in the Scandinavian countries. The goal is to contribute to the critical discussions about research evaluation that is being implemented in Scandinavia and Europe today. This because we need to look at what we are using and how it is built up. The methodologies behind the systems influence the results of the evaluations and if something is off then everything will be off. Millions of Euros are being allocated using these rankings of journals and publishers in these research evaluation systems. The competition for these millions is fierce; everyone wants a piece of the cake.

This study is a mix of qualitative analyze with some quantitative aspects of ranking of journals for research evaluation purposes. Analyses are done to try to see if some kind of pattern/weakness can be found, to show qualitative differences in ranking. This method of analysis is chosen because it suits the data available for testing and is good to get a deeper understanding of the problem at hand.

The set chosen to base the analysis upon is the European Reference Index for Humanities' (ERIH) initial list of psychology retrieved from ERIH's webpage. This set of journals and their ranking is compared to the Norwegian model rankings, to see if there are differences. Then, the ISI's[2] Journal Citation Reports 2007 psychology subject categories (Applied, Biological, Clinical, Developmental, Educational, Experimental, Mathematical, Multidisciplinary and Psychoanalysis) are compared to ERIH's ranking, to try to look for possible patterns or correlations. ERIH's initial list of psychology is also examined through looking at journals country of origin. At last the ERIH's initial lists are tested for correlations with the journal impact factor, taken from Journal Citation Reports 2007 via Web of Science. This will be done to try and find particular type of patterns, to show qualitative differences in ranking procedures.

Why ERIH? Since ERIH claims to be a reference index and benchmarking tool for the humanities research in Europe. (European Science Foundation, 2009b) Psychology was chosen because it is an interesting discipline within the social sciences and is covered by an initial list in ERIH. The comparisons with the Norwegian authority lists ranking is done to see how similar the two systems rankings are, since ERIH and the Norwegian model both use the same method; ranked publication channels.

Thesis structure

First there will be a look at research evaluation and its foundation in order to get a complete picture of the field. Some important concepts related the social sciences and publication practices. Second, research evaluation and methods of selecting core journals are discussed. Following this, a few research evaluation methods implemented around the world are presented. Finally, the empirical section consisting of a small test and analysis with four parts is made to test the ranked set of journals. This is then summed up and discussed before the final conclusion.

[2] ISI is an abbreviation used in this paper for ISI Web of Knowledge, an online academic database provided by Thomson Scientific/Thomson Reuters's Institute for Scientific Information.

Scientific communication

First, we will go through some important concepts to research evaluation methods connected to ranking of journals. This section is about how science is communicated. It can be both in written format and oral, we will focus on the written format since this is what this method of research evaluation is based upon.

Citation theory

This paper will not go deeper into the theories behind citations. Many others have done this, among these are; Henk F. Moed. In his book he tries to explain the different takes on a "theory of citation" through significant scholars takes on citations and references and key issues of their works. He points out that references and citations should be looked upon as two distinct issues. For further reading P.193-208 (Moed, 2005)

Why people cite is important, this is what citation analysis is built upon. This is discussed by many as well, one is in Egghe & Rousseau's *Introduction to Informetrics* from 1990; many reasons are given including; giving credit for related work, correcting one's own work, identifying methodology, equipment, etc, authenticating data and classes of fact-physical constants or hat-tipping citations, over-detailed citations, self-serving citations, searching out grant funding (identifying currently popular research) and so on. (Egghe & Rousseau, 1990)

Moed (Moed, 2005) explains that outcomes of citation analysis of basic science[3] research groups tend to statistically correlate in a positive way with peer ratings of the groups' past performance. It is also argued that citation counts can be conceived as manifestations of intellectual influence, but the concept of citation impact and intellectual impact do not coincide. Outcomes of citation analysis must be looked upon in terms of a qualitative, evaluative framework that takes into account the substantive contents of the works under evaluation. (Moed, 2005)

Getting your ideas out there

There is a theory called the reception theory. This theory is about how an audience interprets the meaning of a "text". It states in essence that the viewer/reader interprets the meanings of a text depending on their individual cultural background and experiences. (Wikipedia, 2009b) So if to an editor,

[3] By basic research Moed means research that is primarily carried out to increase scholarly knowledge.

who comes from a different cultural background/paradigm[4] than the author, reads an article this might influence his choice of accepting or not accepting a new idea or thought. This is why new and upcoming theories going against the prevailing paradigm might have problems getting published in important journals and this then leading to that new and upcoming theories get overseen. Another example could be journals who represent these new paradigms, going against the prevailing one, will perhaps not be included in the important journals lists. This is an example of how different paradigms can influence the subjective judgment of journals.

Age could also play a part here. If we assume that many gatekeepers (i.e. journal editors or review panel members) are older scientists, and consider Messeri, 1988 discussions about Kuhn's "rules"[5] about older scientist being more reluctant for taking in newer paradigms/theories. Older scientist with years of experience and job tenure can do speculative research with small expectations for instant professional gain, without fearing that their choice of research will be dangerous to their job or career. Older scientists have had the chance to access many modes of informal channels of scientific communication, i.e. festschriften, solicited contributions to monographs or symposiums. Through these channels older scientists with experience have opportunities, perhaps not available for younger colleagues, to publish controversial theoretical positions or speculative interpretations of results that otherwise might be rejected for publication in peer-reviewed journals (Messeri, 1988) Messeri concluded that older scientists are better positioned to pursue unconventional lines of research and to advocate controversial ideas. Whereas younger scientist might have more difficulties publishing controversial ideas in important journals, they have not secured their name and status as scientists in the field yet. In a more recent study, Brad Wray (2004) also found that "young scientists were not more likely than older scientists to make revolutionary discoveries" p.119 and that it is more likely that the middle-aged scientist is more likely to make a revolutionary discovery. (Wray, 2004)

Merton was the first to coin the term "Matthew effect", this being a phenomenon that means that "the rich get richer and the poor get poorer". In our context this means that well-known scientists will receive more citations, or other credit than unknown scientists, even if their work is similar. The same example can be seen with journals. (Wikipedia, 2009a)

[4] Heine Andersen's (H. Andersen, 1999) uses this definition about what a paradigm is: "A paradigm is a super individual structure of meaning, which is formed and reproduced in disciplinary socialization, teaching, and scientific communication" (p.89).

[5] "Kuhn claims that (i) young scientists are more apt than older scientists to make revolutionary discoveries, and (ii) older scientists are especially resistant to theory change. Young scientists are thus alleged to be an important source of novelty that fuels the engine of scientific change" p.117, (Wray, 2004)

Disciplines and the growth of interdisciplinarity

"Disciplines are the intellectual and social structures through which modern knowledge is organized" p.437 (Bordons, Morillo, & Gomez, 2004). The term 'discipline' is understood as a tool for mapping knowledge and academic administration. Universities are divided along disciplinary lines, and specializations are a part of a larger discipline. The increase of specialization has lead to the creation of subdisciplines. Specialties also creates communication between disciplines, there is more communication between specialties between different disciplines than there is within the same discipline. (Dogan, 2001) The order of knowledge as we knew it is being transformed, lines separating the disciplines are disappearing, disciplines are overlapping, and new hybrid fields emerge. As disciplines are becoming more diffused the number of new fields and specialties is rising and interdisciplinarity becomes standard. (Bordons, et al., 2004) Therefore it is becoming more complex to keep to the old ways of making core lists of a discipline. The fragmentation, the other side to specialization, of the discipline is also one of the reasons for more specialized journals. (Dogan, 2001)

One of the reasons for the growth of interdisciplinary research is that there is more problem driven research. Since many of society's problems, such as environmental issues, demand integrated approaches from different disciplines; interdisciplinarity grows. (Bordons, et al., 2004)

> "As a sign of the increasing role of interdisciplinarity in science, we can mention the outstanding growth of the term 'interdisciplinarity' and 'multi-disciplinarity' in scientific literature. According to a study by Braun and Schubert (2003), the growth of these terms in the titles of papers covered by the database *Science Citation Index* during the years 1980-1999 was exponential, with a doubling time of 7 years, much quicker than for science journals (15-20 years)." P.438. (Bordons, et al., 2004)

One of the problems arising from the growth of interdisciplinarity is with the classification of journals into categories; which belongs to which? When is a journal part of discipline? Since many research evaluation systems are being built upon this it is important to consider the issue. (Bordons, et al., 2004) Another effect of interdisciplinarity/trans-disciplinary is books citing behaviors. Books use references more widely than journal articles, they cite from many different sources, and of course have a larger number of references. (Hicks, 2004)

Ranking these interdisciplinary journals can be a troublesome matter, with different disciplines mixed, which also means mixed or un-known publication patterns. When is a journal more part of discipline A than discipline B? If we are using impact factors or looking at citations in general it varies, which can make it difficult to judge. Of course it can be difficult within the same discipline as well, because there exist differences there as well. More about this issue in the next chapter.

Natural Sciences, Social Sciences and Humanities: how does publication differ?

We cannot do a study on research evaluation without discussing the different publication patterns within the sciences and social sciences in particular. Since some research evaluation is based on publication it is important to be aware of that the publication patterns varies between disciplines, and even within disciplines. In some studies made of publication patterns it has been found that natural scientists publish mostly in journal articles and conference proceedings (85-81%) whereas social scientists and humanities researchers publish a smaller amount in journals (61-54%) and more into books, edited books, chapters and other publication forms. (Hicks, 1999)

Publication Patterns in Social Sciences

Social Sciences; books vs. journals

Hicks states in her article (Hicks, 1999) that social science literature is much more fragmented than other science because social scientists develop less consensus and hold to more competing paradigms than natural scientists do. One sign of this is that authors commonly do not cite relevant work outside their paradigm. Lack of consensus within a field has been connected with a higher amount of books in that field's literature because of journal publishing has been seen at an indication of better consensus and as a uniting drive itself. Bibliometricians have found that social scientists also publish in more types of literature than do other scientists. (Hicks, 1999)

Hjørland argues that paradigms and epistemologies are much more visible in some fields, such as social sciences, but that they are always operating on some level. As he presented in his paper, the relevance criteria of different paradigms such as psychoanalysis and neuroscience are very different even when they work on the same problem, as in the case in the paper; schizophrenia. (Hjørland, 2002)

Another reason for more books in social science as suggested by Huang and Chang (Huang & Chang, 2008) is that some social scientists consider book publishing as a more suitable form for presenting their scholarship and that some disciplines, such as management, are traditionally connected with book publishing because of the greater profits. And in contrast to some of the natural science researchers, who need to publish their research at a faster pace, social science and humanities researchers have less timeline pressure and are more willing to publish in more time consuming book publishing. (Huang & Chang, 2008)

So, the social sciences have more books, but it is said (Hicks, 2004) that the social sciences have four different kinds of literature. The first one is the international journal article. These are usually indexed by the Social Science Citation Index (SSCI) and are used in evaluation throughout the world. One

specific thing for the social science international journal article is that it has been found that the social sciences needs a longer citation window than other sciences; it takes longer for them to receive citations. The second literature is books. One could choose to ignore books, because they are a small percentage of the social science literature, but the reason why it cannot be done is that they have a very high impact. To demonstrate this, books cover 0,9% in high energy physics, 15% in psychology, 25% in economics and 39% in sociology, so it can be seen that in hard sciences books can be ignored but should not be ignored in social sciences. (Hicks, 2004)

The third is a national literature, representing knowledge developed in the context of application. National journals are not often indexed in SSCI, and they usually publish in their native language, and the readers and writers are most often from the country where the journal is published. The increasing internationalization of social sciences will probably have some influence on the national literature. The fourth and last is non-scholarly publications. This literature represents knowledge reaching out to application. These are journals that are intended for teachers, working psychologists etc. and meant to enlighten and share knowledge with the general public and practitioners. This literature is not indexed by SSCI and does not attract citations. (Hicks, 2004) Social science and humanities researchers often emphasize some of their research as enlightening and knowledge-sharing research for the general public, more than natural science researchers do. (Huang & Chang, 2008)

The social science literatures are more trans-disciplinary than other comparable scientific literatures. Social science citation index users must make the best of the low citation rates associated with this trans-disciplinary citation scatter and the citation accumulation times that are too long for policy makers purposes. It is the same authors and topics being written about in all four literatures, but they do not completely overlap, so the results of a bibliometric investigation using SSCI will not be exactly the same as in the ideal evaluation using all four literatures. An interesting point made is that all social science fields are not alike. The characteristics of economics and psychology are quite similar to natural sciences, sociology being a very paradigmatic social science literature and history, for example, being more humanistic like. So normal SSCI based bibliometric evaluation will work best when applied to literatures in economics and psychology. Even though academia is moving into publishing in SSCI indexed journals with high impact making them look better in bibliometric evaluations, the three other literatures still exist. If scholars do this, and abandon the three other literatures in favor for the indexed top journals, the social science field will change into something completely different. (Hicks, 2004)

From books to journals

Lariviere, Archambault et al. (2006) have showed that there is an indication of a general trend toward a greater use of journals, compared to monographs, in social sciences and humanities. Nederhof (Nederhof, 2005) and Kyvik (Kyvik, 2003) are also of this opinion.

Nedergaard and Foss (Nedergaard & Foss, 2008) speculates if the "special issue" editions of journals are taking over the edited book's role as a more explorative research forum. Special issues, where a guest editor gets researchers to go into a certain subject, has the same characteristics as co-authorship, both are becoming more frequent and are looked upon with a certain amount of skepticism. The argument against special issues is that it has the same weakness as anthologies; the review process is to weak, the editor's friends are published too easily and the quality suffers because of it. If this were correct, one would expect that articles in special issues would be less cited than normal journal articles, this is not the case however. Articles in special issues are much more cited then normal articles, this indicates that special issues are able to keep the high quality and a focus on a certain topic without loosing credibility. (Nedergaard & Foss, 2008)

But the fact remains that not all the important social science and humanities journals that are published on the European continent are covered by the SSCI (social science citation index by ISI) and the A&HCI (Arts and humanities citation index by ISI), even though they are (mostly) published in English. This means that researchers within the sciences may appear to have a higher number of articles in the ISI citation indexes than those of the researchers within social sciences and humanities, even if they are just as productive in terms of publishing their research in journals. And because of this social scientists and humanities researchers might miss a lare amount of citations. (Nederhof, 2005) When only a limited output of the publications of a discipline is used as data for an evaluation, it will most likely give misleading results, so perhaps it should be questioned whether it at all is reasonable to use that dataset as basis for the evaluation in these disciplines with limited coverage in the database? The results of such a study will have a form of bias from the database providers' standpoint. Whatever publishers they decide to cover will influence the evaluation.

On the other hand, the publication patterns or cultures of some of the social science disciplines visibly point towards that the analyzing of bibliometric data based on this limited output in SSCI covered journals is at minimum exposed to over-interpretation. But, as long as it is known to the users of the results to what extent the results are based on ISI-covered material, the bibliometric data can be useful in a evaluation situation, because it is better to know at least something of a small portion of the output, than to not have any notion of the impact of these publications at all according to Van Leeuwen. (T. van Leeuwen, 2005)

For more reading about publication practices and citation practices of natural science, social sciences and humanities see Huang and Chang's article on the characteristics of research output in social sciences and humanities. (Huang & Chang, 2008)

More national research

Social scientist study social settings and are therefore inclined to be more national or regional in their research. The research might also be influenced by national trends and/or policy concerns of the national government. What is obtained in a study in one country might not be useful to researchers in other countries. At least in the social sciences, evidence indicates that the limited relevance of national or regional results to researchers in other countries should not be overstated. Social science theoretical concepts are delicate, and without the unifying language of mathematics, are written mostly in national languages and is often best understood only in the original language and context. (Hicks, 1999) (Nederhof, 2005) Even though national or regional orientation tends to be significant, this does not mean that social science and humanities research is naturally or even for the most part nationally or regionally bound, but such an inclination usually is more evident than in most of the sciences. (Nederhof, 2005)

There are often two aspects considered for a researcher when he is contemplating in what language to write, the first is; for whom is the publication intended for, the second aspect is; which language would maximize the use of the publication and get the researcher more feedback from other colleagues. Some researchers publish their research first in their native language before they translate it and republish it in an English-speaking journal. The language used in a publication has nothing to do with the quality of the research, but it considerably affects the visibility of the research. (Huang & Chang, 2008)

Internationalization

One of the reasons for more internationalization within the social sciences is that the economies and cultures are becoming more international. Globalization is drumming everywhere, people are traveling more, and Hollywood's effect on local culture, global companies, and all of this generates more interest and more opportunities for cross-cultural study and academic interchange. Another reason is that the EU is funding some social science research and this should increase the international orientation and makes the European scientists publish their work in English. Another supporting force for the internationalization of social sciences is that some concepts and paradigms are scattering across the social sciences. Concepts like public choice theory, postmodernism, and feminist theory increasingly frame social science across the globe. If researchers were to adopt the same frameworks, previously conflicting national communities would join on fewer paradigms, this might lead to an internationally agreed upon core literature in the social sciences. If this were so, then it would be easier to track social science research, both for individual researchers and for databases. (Hicks, 1999)

Another side to the coin with the internationalization process is international collaboration. The same engine drives collaboration as well as

other internationalization processes. The need for collaboration is complementing competences. Collaborations are seen as a natural response to specialization and increasing competition pressure, and bring better citations. (Zitt & Bassecoulard, 2004)

This paper looks into psychology journals, a part of social science that is most similar with natural science with high percentage of articles in peer-reviewed journals and with relatively few books. (Hicks, 1999)

Journals

The journal publication system is one of the most central institutions in science. Science is summarized and communicated through the scientific publication system. Journals are important for the livelihoods of scientists, for in most cases the performances of the scientists are judged mainly in the terms of their publications. (Lindsey, 1978)

Why are scientists being judged by where they publish? There is a prestige hierarchy among scientific journals; this has led to the selective spreading of information with the better articles going to the more important journals. This needs to be viewed with a certain amount of healthy skepticism according to Lindsey. This selectivity permits easy location of the most significant material, but it also creates the possibility that important material of highly specialized nature could be lost, tucked away in an ambiguous specialized journal. (Lindsey, 1978)

One of the arguments for publishing in journals has been, that first and foremost this is where scientific discovery sees the day of light. Especially in humanities and in a smaller degree in social science this is a truth with modifications. Another argument is that with scientific texts, it is easier to get international reviewers/experts to evaluate the research if it is published as an English article than it is to find someone Danish with the right expertise knowledge to read an entire monograph. (Nedergaard & Foss, 2008)

The journal article is shorter, and usually more focused than the monograph. This gives some competitive advantages compared to the monograph from the stand of the researcher, it is easier to quickly identify the focus of the article. Another advantage is that journals reach further than the monograph. This has to do with that many journals are connected to certain scientific communities. I.e. *Strategic Management Journal* is a journal that all members of Strategic Management society receive. Another reason why journals have a wider reach is that research libraries are better at following which journals are the most relevant than keeping up with all newly published monographs in a certain field. From the universities' standpoint it is more relevant to prioritize the journal article over the monograph. When competing over the same pot of money, the ones who prove that they are publishing results are more likely to get a bigger share. This and the fact that there is a great amount of researchers retiring now; it is a heavy competition of good researchers. If a university has a good track record of good research has

published in high quality journals, this might raise the university's chance of attracting good researchers and furthermore attract international (paying) students. (Nedergaard & Foss, 2008)

An interesting matter to contemplate is if a journal is 'better' if it has more sold copies or subscribers than one that has less sold copies/subscribers? Will this influence how a journal is evaluated? A journal like Strategic Management Journal that is the journal of the Strategic Management Society and all its members receive automatically receives a higher copy count. Is this journal 'better' than the journal that has no 'society' behind it, and therefore fewer copies?

Peer review and gatekeepers

Basic research in the sciences and scientific communication depends almost entirely on journal literature. "That a paper has been accepted for publication in a well known refereed journal is probably the best immediate indication that it reports worthwhile research" p.95-96 (Braun, 2004). The ones screening research, editorial boards, are rightly considered the gatekeepers of science journals. Braun states that a journal can call itself 'international' if their editorial board include scientist from at least 5 countries. Braun concluded in his study of gatekeepers with some interesting results; that "in the case of science journals a correlation has been shown to exist between the number of gatekeepers of a given nationality and the number of papers published in these journals by scientists in the country concerned." P.109 (Braun, 2004) This is interesting to think of in relation to which journals will be included in journal lists and where the decision makers are from. Could there a correlation be found there as well?

> "The scholarly community has developed many institutionalized forms of internal evaluation in which peers assess manifestations of scholarly work. The aim of peer review process is not to settle scholarly debate, but rather to contribute to the fulfillment of conditions under which it meets professional standards. […] Judgments should not depend upon the personal or social attributes of the authors of the work to be reviewed. Therefore peer reviewers should manifest disinterestedness and maintain a professional distance not only with respect to their own activities, but also regarding the work being evaluated" (P.230-231) (Moed, 2005)

There should be a professional distance, but is there? If we take Braun's conclusion into this statement then there seems to be a lack of distance.

The question of peer-reviewing and if it is a rational process or a lottery has been discussed by several researchers (Seglen, 1997), (Ernst, Saradeth, & Resch, 1993), (Foss Hansen & Holst Jørgensen, 1995), there has been discussions about different forms of biases, "old boys networks", the Matthew effect; that is if the well known researchers have an easier time getting published than newer researchers in the field. Standardized and written codes of ethics for review panels have been suggested, blind reviews as well, but no real solutions have been made so far, to my knowledge.

Lindsey (Lindsey, 1978) suggested that it was distinguished contributors to the fields of psychology and sociology who sat on the editorial boards. However, it was also noted that in social work journals there sat people from administrative positions at welfare agencies that had never published. These can have a conservative influence on the articles published according to Lindsey.

The review process can take from six weeks up to several months. It should be remembered that reviewing work is a time consuming process and is usually an unpaid one for reviewers. Most journals use more than one reviewer, usually two while some use even more. If one of these miss their deadline it can delay the process, if the vote needs to be unanimous for the article to accepted or revise & resubmitted. (Nedergaard & Foss, 2008)

Research fronts

Every year over a million scientific articles are published. This is a vast amount to keep track of. By dividing them into research fields we can narrow it down a bit. There are many approaches; selected concepts /keywords and/or classification codes in a database, selected sets of journals, a database of field specific publications, or a combination of two or more of these. Titles and abstracts are collected from these for a set of years, this leading to thousands of publications. Then a series of algorithms helps to cluster the information carriers of the publications. This is then put into a matrix so that there can be multi-dimensional scaling and so on. Clustering or mapping science and co-citation analysis is ways of visualizing research fronts using bibliometric methods. (van Raan, 2004)

Summary

Disciplines are merging and producing new hybrids. Dealing with interdisciplinarity when assembling journal lists or ranking journals is even more problematic, due to the mix of disciplines and their publication and citation patterns. Social sciences have always had a larger number of monographs than natural science, but now there seems to be an increase of journal publications within the social sciences. Internationalization can be one of the reasons for this new behavior, social science study society and society is becoming more global and reflecting the need for globalization, the competition between research institutions is not a local competition it is a global one. The competition field is larger and collaboration to gain knowledge is more and more normal for researchers. Journals are the most used tools of scientific communication and that is why we think we can judge scientific research depending on in what journals it is published. This also lies upon the belief in the peer-review system. There is also the question if special issues of journals are taking the place of books. But we should not forget the journals that are not listed in citation indexes. These smaller professional journals these have a place in society as well.

As the social science is seen to have more competing paradigms than natural science, this influences the evaluation of journals. For example we gave some examples of reception theory and how reviewers or evaluators coming from the prevailing paradigm will most likely reject ideas/journals from the competing paradigm. As was mentioned, having many competing paradigms in a discipline leads to many different forms of publications, which leads to discriminations in the 'popular' databases used for evaluation, due to some of them only cover a certain kind of literature. Other issues reflecting the subjective nature of evaluation of journals can be the subscription issue; if having a large number of subscribers influences the evaluation. Is it a better journal if it has many subscriptions and is published by an organization? Review boards personal interests should not be influencing the judgment of journals according to professional standards, but as Braun (Braun, 2004) declared, a positive correlation between the nationality of the gatekeepers of journals and the number of papers published from that country was shown upon. Other biases can also exist in these circles; old boy networks and the Matthew Effect were among the examples.

Research Evaluation

A large part of scholarly research is government funded and in most parts of the world it is heavily contested. That is why research evaluation is a hot topic and why it is picked to pieces and examined and why researchers are trying to improve and make it better. The methods used around the world needs to be tested and verified by experts to try to limit misuse and biases. Demands for greater accountability and effectiveness, heavy competition for the same funding and the search for improvements in quality have forced many countries to begin and/or look over their research evaluation systems, many of them being large-scale systems for, precisely, evaluating government funded research on a national level. (Coryn, et al., 2007)

> "During the past few decades, research institutions have been subjected to new influences and pressures emerging from the increasing need for accountability in scholarly research and training of students. In most OECD countries, there is an increasing emphasis on the effectiveness and efficiency of government-supported research. Governments need systematic evaluations for optimizing their research allocations, re-orienting their research support, rationalizing research organizations, restructuring research in particular fields, or augmenting research productivity. In view of this, they have stimulated or imposed evaluation activities." (Moed, 2005)

This is very much in progress in Scandinavia now, with national research evaluating systems being implemented in Norway, Finland and Denmark. More about this later in the chapter *'Models used in the world'*.

Research evaluation has changed from the traditional peer-review process to highly refined benchmarking processes with never ending numbers of quality criteria and performance measures, as well as massive systems for counting almost everything. (Coryn, et al., 2007)

Moed (Moed, 2009) has suggested a few guidelines to improve the process; that in evaluating individuals, groups and institutions the use of citation analysis in the process is better the more it is; *formal* (previously know to evaluators/decision makers, scholars or institutions that indicators are used as one source); *open* (the ones subjected to the bibliometric analysis have a chance to examine the data and add information or background information); *scholarly founded* (the bibliometric investigators present their results in a scholarly way with discussions about validity, theoretical assumptions, limitations and potentials); *supplemented with expert and background knowledge*; *carried out in a clear policy context*; stimulating users to *explicitly state basic notions of scholarly quality*; be *enlightening rather than formulaic*. With these guidelines research assessment models would be improved according to Moed, and he also believes that the future of research assessment lies in the combination of metrics and peer review.

> "Methodologies for research evaluation directly affect the results of evaluation; an appropriate methodology should take into account the nature of research output in a particular discipline to better assess the quality of its research in a fair and just fashion" P.1819 (Huang & Chang, 2008)

So, a combination of peer-review and metrics, which takes into account the research output of the discipline, seems to be the best idea according to these researchers. The methodology behind the evaluation plays an important role. For example, if it is providing incentives for more international research, it might discriminate and try to downgrade the national and knowledge sharing publications.

Evaluating the individual researcher, H-index

One way to evaluate the individual researcher that has been proposed is using the H-Index. The H-index, (H being the largest number of publications of an author that have been cited at least H times) is a way of evaluating the individual researcher, an individualized citation metric, a single number depending on productivity and citations; developed by J.E Hirsch (Hirsch, 2005). Hönekopp and Kleber in their study (Hönekopp & Kleber, 2008) found that the impact factor wins over the H index in predicting the future citations of an article. The H-index is also highly biased towards "older" researchers who have had the chance to play the field longer and towards those in fields with high citation frequencies. (Moed, 2009) Hirsch himself feels that there are limits to the H-index, and that it "can never give more than a rough approximation to an individual's multifaceted profile" (p. 16571 Hirsch 2005). He also states that scientists working in non-mainstream areas will not achieve the same high H-values as the ones working in highly popular areas and that there is a large variation even within a given subfield.

Identifying core journals

Some of these research evaluation systems use publication output as data for analysis. This paper focuses on this kind of evaluation methods and will not be discussing the other methods to any greater extent. For this type of

research evaluation method to work, publication channels need to be ranked in one way or another. The methods for determining core lists of journals should be considered in relation to what the use of the core list is. It is also important to be aware of the weaknesses of the methods, what kind of biases might exist and what to be prepared for.

One of the oldest approaches for determining the core journals of a discipline is to have presumed experts make a subjective judgment, making judgments either as individuals or as committees. Another way of choosing is assuming that the most frequently used journals are the most important ones. (Nisonger, 2007) Or to put it in another way, the approaches to ranking journals can be divided into citation-based studies or perception-based analyses. There is more literature on studies using citation-based methods then using so called survey-based methods; like Andersen's (Heine Andersen, 2000) method of asking social scientist for their top journals and researchers, Sandra Rousseau's study (S. Rousseau, 2008) and Dul, Karwoski and Vinkens' study (Dul, Karwowski, & Vinken, 2005). More about these in the section about 'expert panels'. (S. Rousseau, 2008) One of the reasons why survey-based methods are less favorable has to do with the method being more time and cost consuming than looking at citation rates and that there needs to be a sufficient number of experts to try to limit biases.

What are lists of core journals used for, besides research evaluation purposes? They are needed for many reasons. Libraries with a limited budget cannot hold all journals on a certain subject. They want to have the most central ones covering as much as possible and the most important articles. Today there exist an almost an unlimited number of journals; even for a subject specialist it is difficult to keep up with the growing number of journals in a specific domain. Core lists make it easier to get a good overview of a field. Lists of core journals can be used for bibliometric research and are important for database developers and users as well as for the individual researcher and as discussed in this paper, for research evaluation purposes.

So what determines a journals reputation, what makes a good journal? Bräuninger and Haucap (Bräuninger & Haucap, 2003) have identified five groups of variables that affect a journal's reputation. They conducted an investigation on the relevance and reputation of economist journals. The first variable is a quality measure; is the journal peer reviewed? The second is journal type; some studies have suggested that general and theoretical journals have a better reputation than more specialized and applied journals. The third is home bias. This has to do with publishing in your own language if you believe that your research is not good enough for the international market. The fourth is publisher. If a journal is published by a well-known publisher, it might attach its reputation to the journal. The last and fifth variable is age and volume. An old journal is more likely to have had the time to establish a good reputation.

There exists a number of different ways of identifying the core journals of a discipline. Using Journal Impact Factor, Bradford's law or using human

expert knowledge are some of them. These will now be presented and discussed in regard to possible biases and other problems of the methods.

Journal Citation Reports (JCR) & Journal Impact Factor (JIF)

JCR Science Edition developed and provided by the Institute for Scientific Information (ISI) which is owned by Thomson Reuters. It is published annually in two editions, JCR Science Edition and JCR Social Science Edition. JCR contains data from over 5,900 journals in science and technology and the JCR Social Sciences Edition contains data from over 1,700 journals in the social sciences. JCR is meant for evaluating and comparing journals using citation data from over 7500 scholarly and technical journals, 3300 publishers listed in over 60 countries. It is supposed to cover all areas of science, technology and the social sciences. (Thomson, 2009)

According to Moed (Moed, 2005) coverage tends to be excellent in physics, chemistry, molecular biology, biochemistry, biological sciences related to humans, and clinical medicine; good, yet not excellent, in applied and engineering sciences, biological sciences related to animals and other plants, geosciences, mathematics, psychology, and other social sciences related to medicine and health; and moderate in other social sciences, including sociology, political science, anthropology, educational sciences, and, particularly, the humanities. Explanations for moderate coverage might be the significance of non-international journals, such as books, different languages or national barriers.

In JCR you can look up; total cites (the total number of citations to the journal in the JCR year), Impact factor, the 5 year impact factor, Immediacy Index (the average number of times an article is cited in the year it is published), the total number of articles published in the journal of the JCR year chosen, cited half-life (the median age of articles that were cited in the JCR year) and the citing half-life (the median of citations from the journal in the JCR year). (Thomson, 2009)

The Journal Impact Factor, developed by Eugene Garfield, is one of the best-known citation measures for journals. There have been many discussions about its quality and especially about its applicability for European use. (Maier, 2006) (European Science Foundation, 2009a) (Seglen, 1997) The impact factor is based on citations to articles.

It should be taken into consideration when using ISI that this is a commercial organization and therefore is keen on earning money and being appealing for consumers.[6]

[6] Being appealing for some clients might lead to that some journals indexed might not have been indexed for the right reasons, but this is only speculations.

The journal impact factor is the average number of times articles from the journal published in the past two years have been cited in the report year.

The impact factor is calculated by dividing the number of citations in the JCR year by the total number of articles published in the two previous years. An impact factor of 1.0 means that on average articles published one or two years ago have been cited one time. An impact factor of 2.5 means that, on average, the articles published one or two year ago have been cited two and a half times. Citing articles may be from the same journal; most citing articles are from different journals. (Thomson, 2009)

Weaknesses and strengths of JCR and the Journal Impact Factor

The positive sides to JIF is that it is well known within the scientific community, it is easy to understand, ISI states that it is an objective measure, and it is easy to access through Journal Citation Reports and it is updated annually. But how objective is it really?

The downsides to ISI's JIF are that there are errors in the ISI database and that JCR does not cover humanities journals. Citations from books and other non-ISI journals are not considered. Another possible negative side to the JCR impact factor is that it may vary a great deal from year to year. There is also the question of how much self-citation influences the impact factors (Nisonger, 2004). Small research fields are neglected by the impact factor, because small research fields tend to lack journals with high impact. There is also the problem with publication lags, which vary a great deal between different journals and this also has an influence on the impact factors. (Seglen, 1997) Another problem with JCR is its weaknesses with title changes, as illustrated in Bensman and Leydesdorff (Bensman & Leydesdorff, 2009).

Some say that the impact factor is influenced by a US-bias (Nisonger, 2004). But Van Leeuwens' (T. van Leeuwen, 2005) study of bibliometric analyses in the social sciences could not find indications of there being a US-bias within the social sciences. He explained it as if there is a bias, it is a bias of US scientists in general with them using their own countrymen's research, not only limited to the social sciences, but also existing in the other sciences.

Impact factors vary between different fields and journals in chemistry should not be compared to journals in Scandinavian languages. This is due to the different citation and publication practices. Larger fields might be better covered and therefore have a larger number of citations. This leads to that in evaluations based on impact factors if used incorrectly between fields it gives the larger field a better impact.

It has been noted that the ISI impact factor is biased in favor of journals possessing a rapid maturing phase in citation impact. These are journals that collect many citations soon after they have been published. This is not in favor of social science journals, but rather, favor of, for instance, review journals. When evaluating the quality of a journal, researchers apparently consider

several aspects in their assessment of the journal: for instance, their personal publication lists, previous research experience, current research topics, journals' availability or their familiarity with the different journals. (S. Rousseau, 2008)

> "Citation frequency reflects a journal's value and the use made of it, but there are undoubtedly highly useful journals that are not cited frequently. Scientists read some journals for the same reason people read newspapers - to keep up with what's going on generally – and they may rarely or never cite such journals in their published work, A popular review journal […] may rank relatively low on a times-cited list […] but that does not mean that they are therefore less important or less widely used than journals that are cited more frequently. It merely means that they are written and read primarily for some purpose other than the communication of original research findings." (P.535-536 (Garfield, 1972)

Maier's study (Maier, 2006) on the relationship between Journal Impact Factors and the scientific community's judgment of the quality of journals in regional science concludes that impact factors should not be used as indicators for the reputation of journals in European regional science.

> "So, when one uses impact factors as a measure for the reputation of journals among European regional scientists, the result will not correspond with the perception of the respective scientific community. Of course, these results hold only for the analyzed discipline, regional science, and only for the European context. In other disciplines and continents the results might be different. However, the analysis suggests that impact factors should not be used as an indicator for journal reputation in European regional science." P. 665 (Maier, 2006)

This also strengthens the opinion that a European Reference Index is needed, as some of the humanities research is known to be more or less regional, as discussed earlier in chapter '*More national research'*.

In another study made by Dul et al. (Dul, et al., 2005) they found a strong correlation between mean impact factor and journal quality based on perceptions of the professional European ergonomics on ergonomics journals. This shows that in other fields of study one might perhaps have similar correlations.

Some of the academic disciplines under social sciences have publication patterns similar to that of the humanities. The creator of the Citation Indexes, Eugene Garfield, feels that humanities are different from the other sciences; perhaps that is why JCR does not cover the humanities. Since ISI does not cover books but mostly covers journals, it appears that it is not the most suitable system for use in the field of humanities.

Regarding how Impact Factors are calculated, there are a two ways of counting them. And we need to remember that these impact factors are calculated from a limited number of journals[7]. Synchronous (the way ISI

[7] For instance, if we are using ISI data, then we are only looking at journals covered by ISI. Not all journals in a specific field might be included in the citation index, and for example no books are included in these figures. There is also the question of what kinds of journals are actually indexed by ISI?

calculates JIF) and Diachronous. The differences lie within the citation window and publication periods. The Synchronous impact factor uses a single citation year and two publication years. By synchronous it is meant that the citations were all received in the same year, harvested from reference lists published that year. By diachronous it is meant that it looks forward in time, starting from somewhere in the past and looking forward to citations received. The diachronous is said to be a more stable measure. Another point in favor of the diachronous method is that it can be calculated for books and other formats. But this version of the impact factor is not without faults, it is more resource demanding (this is perhaps why it is not widely used) because it is based on manual collection of data. This also reduces the total amount of articles that can be evaluated. And because of the time lag, a number of years have to pass before an article can be evaluated; so new articles have to wait 2-3 years before they can be used for calculation. To sum it up; synchronous impact factors calculate the expected impact of articles published in the last 2-3 years and diachronous calculates the actual impact. (Ingwersen, Larsen, Rousseau, & Russell, 2001) Many things can happen for a journal during these 2-3 years, which could have implications on research.

Rousseau (R. Rousseau, 2002) states that using trend analyses of impact factors over several years might be of much more value for the evaluation of journals then looking at single impact factors as an indicator of quality. But as with all evaluation studies, one must be careful when considering impact factors as an indicator of quality. Rousseau believes that generalized impact factors, over longer periods than the traditional two-year period, would be better indicators for the long-term value of a journal, and he also feels that the diachronous approaches is favorable. (R. Rousseau, 2002) JCR now offers a 5 year calculated impact factor besides the traditional 2-year JIF. (Thomson, 2009)

The CWTS-group in the Netherlands have taken the impact factor for locating top journals to the next level; according to them a better suited measure than JIF by ISI. They have made the so-called 'Journal to Field Impact Score' this is a field-normalized journal impact indicator, which means that it is compared to the world citation average in the field it covers and it is also based on more flexible and variable citation and publication windows than the traditional JIF. (T. N. van Leeuwen, Visser, Moed, Nederhof, & van Raan, 2003)

Bradford's law

Samuel C. Bradford invented Bradford's law, Bradford's law of scattering or Bradford distribution in 1934. He published it again in his book Documentation in 1948. It was after this book that the law became widely known. Bradford's law of is basically a mathematical model of how a few (journals, scientists, etc) accounts for the many (articles, citations etc.). (Garfield, 1980) There exists both a graphical and a verbal explanation of the law.

> "The law derives its universality from the basic unity of science- that is, that every scientific field is related, however remotely, to every other field. If you want to compile a bibliography on any subject, you will find that there is always a small group of core journals that account for a substantial percentage (1/3) of the articles on that subject or discipline. Then there is a second larger group of journals that account for another third while a much larger group of journals picks up the last third." P.447 (Garfield, 1980)

There are three steps to go through. First, one identifies many or all articles published in a field. Second, one lists the journals that have published these articles in rank order, beginning with the journal that produces the most articles. When this is done, the list is divided into groups consisting of an equal amount of articles. (Nicolaisen & Hjørland, 2007) Below is a hypothetical perfect Bradford distribution.

Zones	Nr. of Articles	Nr. of journals
1	125	5
2	125	25
3	125	125

Table 1 Hypothetical perfect Bradford distribution (Nisonger, 2007)

Weaknesses and strengths of the Bradford's law

The law has been praised for solving practical problems of the library profession, such as building collections, bibliographies and problems in information seeking and retrieval.

One of the negative sides to using Bradford's law when creating core lists according to Nicolaisen and Hjørland (Nicolaisen & Hjørland, 2007) is that it cannot find the up and coming views and that it favorites the big trends within a discipline. The results of Nicolaisen and Hjørland's study revealed that Bradford's law does function discriminatorily against minority views. If we are to visualize a domain and have all specialties represented, then Bradford's law is perhaps not the optimal tool.

They also questioned the term subject: "what is a subject for one person need not be the same subject for another" (p.370). When one is generalizing a view on a subject one should take the different theoretical and epistemologies into consideration. Subject is also a changing set of things in a community. This also proves that Bradford's way is not objective it all depends on who defines the subject and what motives they have. (Nicolaisen & Hjørland, 2007) The fields of social sciences and humanities, which consist of even more competing paradigms than the natural sciences, are perhaps even more sensitive to the "subject" problem than the natural sciences. Another thing worth mentioning is that this method is not a qualitative one; it does not differentiate between subject areas. One subject/concept has one meaning to a lawyer and has another meaning to a psychologist.

Expert panels

Using presumed experts in panels or in committees is one of the oldest ways of compiling core lists of journals (Nisonger, 2007). Peer review is in fact one the oldest ways of judging science. Expert panels are used everywhere in scientific communication and are one of the fundaments for getting published at all. This method for identifying core journals might raise questions regarding biases compared to using some mathematic formulas that are supposedly objective. One of the positive sides to using expert panels could be that, if it is for a specific specialty, using experts who have a great knowledge of the field might lead to good results. For more on peer-review in regards to publication go back to chapter '*Peer-review and gatekeepers'*.

Weaknesses and strengths of expert panels

A strength is that the personal specialties of the experts are well covered. The same problems that exist and have been discussed with peer-review exist with expert panels. Weaknesses might exist in the form of personal biases (Braun, 2004). But with a large enough set of evaluators this can probably be excluded. The problem is that it may be a very expensive and time-consuming method.

A matter the UK AHRC (AHRC, 2009) commented on, regarding ERIH, in several disciplines was the grading of the journals; that it is impossible to achieve 5-20% A-graded journals in various disciplines with many sub-disciplines. This problem is very complex and a very difficult task for the panels.

When developing this kind of a system, a clear policy has to exist, and the methods used and motivations behind the choices need to be transparent. The Philosophy panel's presentation, found on the ERIH website (European Science Foundation, 2008), concludes that there needs to be objective procedures and that subjective evaluations by experts should be relied upon only when no objective is available. This to make sure that ERIH is accepted in the scientific community. Always, unless you are dealing with machines, the possibility of mistakes and biases exist. This is probably the most difficult aspect of dealing with human knowledge.

There are some studies on consensus among researchers with regards to the top journals of their field of study, as mentioned in the beginning of this chapter. In the study made by Heine Andersen (Heine Andersen, 2000), he looked at how much social science researchers in Denmark agree upon the most influential researchers and the most important journals. He only found a moderate consensus among researchers, and this only in Denmark. What could the consequences of a similar study be if we took the whole of Europe in to such a study?

In another study on researchers assessment of journals, in this case environmental and resource economics made by Sandra Rousseau (S. Rousseau, 2008), she found an great consensus regarding the most influential

journal, and a consensus with the lowest ranked journals. And another interesting result from her study was that the ranking based on the survey did not coincide with ranking based on the impact factors from JCR. This study had researchers from all over the world but the largest part where from Europe.

Lists out there

There are some ready made ranking lists out there for the social sciences; The IDEAS list of economy journals, made by the University of Connecticut, with its so-called "Simple Impact Factors". The underlying data for this ranking list is less than 50 articles, which should be taken into consideration. There is the Hix list, for politology or political science made by Simon Hix from London School of Economics. The journals are ranked by an "impact score" very different from the ISI's impact factor. There is Harzings list the most well known Journal Quality list in management and economics made by Anne-Wil Harzing from the University of Melbourne. This is a compiled list of many other rankings of journals and is updated annually and free to download from www.harzing.com. (Nedergaard & Foss, 2008)

Implications of ranking journals for research evaluation

One implication that is very possible from ranking journals and/or using impact factors in evaluation purposes is that it might change researchers publication behaviors; towards publishing in journals with high impact instead of publishing in more fitting perhaps more specialized journals. Johnstone gives an example in an article. (Johnstone, 2007)

> "[T]his in turn may result (and has already resulted in some instances) in readers – particularly busy 'practical clinicians' who are not part of the research community – being denied access to the work and hence information that might otherwise have been used by them to inform and improve their diagnostics and treatment/care of patience" p.37 (Johnstone, 2007)

The Sønderstrup-Andersens (Sønderstrup-Andersen & Sønderstrup-Andersen, 2008) found in their survey that the Impact Factor has influence on which journals researchers would prefer to publish in, and a correlation between how these researchers ranked a set of journals with the JIF. However there was no correlation between where the researchers would like to be published and where they actually publish.

Another implication discussed by Johnstone is the fact that some disadvantaged disciplines (i.e. nursing) relative to other disciplines, might be seen as not performing as well on a strategic level compared to other at the same academic institution. They are at risk of being discriminated against when it comes to the distribution of research funding and as well as receiving appointments and tenure. This is because they do not publish in high JIF journals. This has also to do with the fact that nursing journals are/were not covered in JCR to any great extent. (Johnstone, 2007)

An implication of ranking journals according to the ISI's journal impact factor might be that focusing on impact factors alone can lead to something termed "impacted journals". All articles and everything entertaining are taken away in favor of articles that will be cited. In other words, the journal is made for citing and not reading. If we take the physician example again, the researchers needs are put ahead of the ordinary medical doctors, even though with many general medical journals ordinary medical doctors far outnumber researchers as readers. (Smith, 2006)

Also addressing the question of whether these ranked journal indexes are optimally designed for the original purpose they were intended for is a discussion and comparison of the model with a research funding policy in Australia that also was based on research publications. The Australian system, unlike the ERIH or Norwegian, does not differentiate between publications' levels of quality. This has caused some unforeseen changes in the research publication patterns of Australian universities, namely that it has resulted in an increase in the quantity of research publications rather than an increase in quality, as was the intention of the system. This case highlights the importance of understanding what you are giving incentives for in an incentive system. (Butler, 2004)

> "[I]t should not be overlooked that the use of statistics in evaluation procedures of any kind of human achievement may influence the behavior of the subjects under evaluation, and hence the application of bibliometric measures in research performance assessments may and actually does influence scientists' publication practices." P.160 (Moed, 2008)

Moed (Moed, 2008) goes on to point out that perhaps it is not important to discuss whether the publication pattern or citation patterns change, but to see if the research evaluation tool contributes to improving the overall research performance and scientific progress in general. This can only be seen in the long run and can therefore not yet be observed.

Analyzing research in social science

When focusing on ranking scientific journals and considering publication practices of the different disciplines. Because the social sciences publish a greater number of books than other sciences, as discussed earlier, it should be taken into consideration that it takes longer to produce a book and longer for it to become more substantial and thus raise its impact. To bibliometricians this means that although natural sciences indicators can skip books, because the best research in those fields finds its way into journals, the ones who make social science indicators are forced to admit that the most important social science is often found in books according to Hicks (Hicks, 1999). This is something that also should be reflected in citation rates and in empirical studies and Hicks state that it is. (Hicks, 1999)

Open access versus ISI

Harnad (Harnad, 2009) says in his paper about RAE (research assessment exercise in the UK) and open access that even though scientometric measures have been used for many years, there has not yet emerged any standardized "norms" or benchmarks from scientometrics. He thinks this has to do with the fact that the database containing the most important of the scientometric indicators; the citations, has been in the proprietary hands of a single provider for decades, with parts of it temporarily leased (for a small cost) to those who wished to do some data-mining and analyses. This is about to change according to Harnad with the era of Open Access. The Web is challenging ISI by offering this information for free.

How can open access influence evaluations of journals further? Well, the open access journals are easier (faster and free of charge) for researchers to get hold of. For researchers with a limited access to expensive databases and journal holdings, open access is an interesting option. These journals will probably receive more citations because they are free. If these journals are not included in the data set for evaluation this can have a significant influence the evaluation.

Summary

The demand for greater accountability for government-funded research has grown. A lot of hope and pressure is put upon research evaluation systems, and these have changed over the years from traditional peer-review processes to highly refined benchmarking processes with all sorts of quality criteria and performance measures. Some guidelines have been suggested by Moed (Moed, 2009) when using citation analysis for evaluating, the process should be formal, open, scholarly funded, supplemented with expert and background knowledge, carried out in a clear policy context, explicitly state basic notions of scholarly quality and be enlightening rather than formulaic. Moed argues for a combination of metrics and peer review to be the future of research evaluation. Huang and Chang (Huang & Chang, 2008), highlights that it is important that the methodologies behind a research evaluating system take into consideration the publication patterns of the discipline being evaluated for it to be a fair system. For evaluating the individual researcher an H-index has been presented, but the H-index has many limitations and it is concluded to be a biased tool. (Hirsch, 2005)

When using research output as the data for analysis, the data usually has to be ranked in some fashion. This paper focuses on ranked publication channels, or more precisely ranked journal lists. In this section a few methods of selecting journals for discipline lists were presented; The Journal Citation Reports (JCR) and its Journal Impact Factor (JIF) by ISI, the Bradford's law, and using expert panels. There are concerns over the use JIF, including how it is calculated, its dependency on the coverage of ISI, this being a commercial business and it does not give any reasons or insight into how it chooses journals for indexing. There are also errors in the database and does not cover

humanities journals for example. There are also questions about for example self-citations, publication lags, title changes of journals, favor for review journals and the calculations themselves and what it really means. Bradford's law is a mathematical model, which favors big trends and discriminates minority views. Expert panels have always been used for evaluating. Limits of this tool can be personal biases, as Braun (Braun, 2004) pointed out, and it is a very expensive process.

Implications of ranking journals for research evaluation purposes were discussed. Among the implications were that it can change researchers publishing behavior towards publishing in high impact journals rather than more suitable specialized journals. (Johnstone, 2007) Another implication is that some disciplines might get discriminated against due to them not being followed by JCR. There is also the 'impacted journal issue' and the issue of the goal behind the system. What is the original purpose for the research evaluating model, what does it give incentives for? To sum the implication discussion up, Moed (Moed, 2008) points out that perhaps it not how the publication patterns change but whether the change is for the better. And the issue of publication patterns in the social science with more books needs to be dealt within research evaluation of social sciences.

Research evaluating models used in the world

First, a more in depth look at the European Reference Index for the Humanities (ERIH) and the Norwegian model, after this a few smaller descriptions of the research assessment models used in the USA, the United Kingdom, Australia, and the Netherlands.

ERIH

ERIH was brought to daylight at the European Science Foundation (ESF) member organizations and researchers debate about how to evaluate the scientific production in the humanities in Budapest 2001. They determined that the Arts and Humanities Citation Index (Thomson Reuter's ISI) is not an appropriate bibliometric tool for the European humanities and that there is an urgent need for a European Reference Index for the Humanities as an additional tool for research assessment. There were also some concerns about the difficulties of identifying and comparing excellence in humanities research with that in the other sciences and about the poor international visibility of research output in national languages. (European Science Foundation, 2009a)

ERIH has listed the top journals in 15 disciplines (Anthropology; Archaeology; Art, Architectural and Design History; Classical Studies; Gender Studies; History; History and Philosophy of Science; Linguistics; Literature; Musicology; Pedagogical and Educational Research; Philosophy; Psychology; Religious Studies and Theology) in the humanities and divided the journals into A, B and C levels. European Science Foundations Member Organizations compiled draft lists of journals to be considered for ERIH.

These drafts list where then sent to the expert panels for further revision. The initial lists were then compiled by expert panels consisting of 4-7 experts from the European countries. (European Science Foundation, 2008)

At present only journals are listed in the initial lists, but there are plans of adding other formats as well, i.e. books, proceedings etc. On their webpage it is declared that ERIH can be used as a national benchmarking system for humanities research in Europe and that is not to be used as an evaluation tool for individual researchers. (European Science Foundation, 2009b)

About the ERIH expert panel

The ERIH Expert panels include 4-7 experts chosen by the ERIH Steering Committee. The experts are mostly university-based academics (not professionals from the publishing world or librarians) so that they will achieve the highest level of peer review quality assurance. The experts are chosen so that they will cover as many sub-fields of their discipline as possible, as well as Europe's geographical and linguistic areas. This hasn't been completely successful, as some compromises have been made in both cases. However, double membership from one country in one panel was avoided. The panels were to meet 1-3 times a year depending on the size of the field and the complexity of the task. The first update of the initial lists was to take place in 2008. After this updates are to take place every 4 years. The first update of the lists were planned to take place late 2008-early 2009, it was emphasized that new members to the ERIH expert panels should be invited to, make the process as fair as possible. Still a maximum of three members from existing Expert panels should remain, and he/she may serve a maximum of two consecutive terms. (European Science Foundation, 2008) It seems quite interesting that updates are only to be made every 4 years, since there might be some drastic changes in the publishing world within these time frames.

The categories A, B and C are defined as follows:

> "Categories:
> 1) Journals category **A**: i.e. high-ranking international publications with a very strong reputation among researchers of the field in different countries regularly cited all over the world.
> 2) Journals category **B**: i.e. standard international publications with a good reputation among researchers of the field in different countries.
> 3) Journals category **C**: research journals with an important local / regional significance in Europe, occasionally cited outside the publishing country though their main target group is the domestic academic community." (European Science Foundation, 2007)

In the guidelines it is further explained as A and B journals are allowed to be journals published in the whole world, but C journals should be only European. International languages in this context are English, French, German, Spanish and Russian. Journals can have one rank in one initial list and another rank in another initial list; this can be very confusing and create problems, especially for interdisciplinary researchers.

Since the first publishing of the initial lists, UK's Arts & Humanities Research Council (AHRC) has given feedback to the European Science

Foundation (ESF) about the initial lists; especially about the lack of transparency and robustness of the peer processes by publishing of the methodologies adopted by the ERIH Expert Panels in compiling the initial lists. ESF responded to the critique from AHRC. The AHRC are still very skeptical towards ERIH's initial lists and strongly advise against the use of ERIH outcomes as the basis for assessment of individual researchers for employment or funding. (AHRC, 2009)

Norwegian model

The Norwegian Model is a bibliometric system, inaugurated in the 2006 research funding budget, which is used to determine the distribution of a small percentage of that nation's research funding, approximately 1.8%, awarded to universities and colleges based on their research publication output. The major elements of the model are an authority register and a centralized documentation system for research publications. Journals and publishers are ranked into two levels, level 2 being the higher one and level 1 being lower. Journals and publishers are also divided into three academic field groups that reflect different publication patterns and levels of: A, B and C. There is also an emphasis made on if the publisher is international, national or local, where local publishers are not listed at all in the authority register. Local in this case means where authorship is more than two-thirds of the authors in the publication are from the same institution. And the third emphasis is on dividing the publication between authors so that all institutions get points for co-authorship. (UHR, 2004)

When publication channels are nominated for level 2, different sets of guidelines are applied depending on which academic field group they belong to. Points are awarded depending on in what format (monograph, article in periodical or series, or article in anthology) and at what level they are placed. The Norwegian Model came into existence in Norway because it was felt that a better overview of the research being done was needed, and to set an incentive for more international research. In 2004 the authority register had 13896 periodicals and series (ISSN titles) and 450 publishers of academic titles with an ISBN listed. JCR's journal impact factor was used to make the first initial drafts for level 2 journals in group A of publication patterns. (UHR, 2004)

How do they choose journals

> "However, leading American journals do appear in Level 2, and those that deserve to be included in Level 2 may be retained and do not need to be excluded because they do not satisfy the requirement for international level (i.e. authors from different countries) that is otherwise used in Groups B and C. This is a prerequisite for the replacement and supplement criterion used in Groups B and C." p. 32 (UHR, 2004)

Level 2 publications must be perceived as the top publications in a wide variety of academic contexts and publish the most outstanding works by researchers from different countries. Level 2 publications should only stand for one-fifth of the publications produced by a research field. (UHR, 2004)

There are three ways for a publisher to get into the authority register, 1) new journal that is ISI registered automatically gets accepted, 2) the publishing committee and the academic committee, or 3) suggestion from user of the authority register. This means that everyone can suggest a publication for acceptance into the register on the webpage before the 29th of October every year. (NSD, 2009b)

The authority register is available for everyone to see. On the website there is information about the journal, discipline, subject area, start year, scientific level, country of origin and previous levels given by the system is visible. There is also the possibility to download the information in Microsoft excel format. The authority list is updated every year. The system, in general, is also very transparent in the way that it is possible to see which institutions have published what kind of publications and how many points they have received. (NSD, 2009a)

So, comparing to ERIH the Norwegian model looks at more forms of publications, not just journals. And they have tried to make the system so that it reacts to what publication pattern and what publication form is used.

Other countries research evaluating methods

USA and the National Research Council

In the USA the National Research Council (NRC) has undertaken an elaborate ranking exercise in 1983, 1995 and in 2007-2008. There are no funding allocations connected to these rankings, but because of the respect for the NRC, prestige to individual departments and the influence of the choices of prospective students as well as desirable places to work were the product of the rankings. With the ranking the NRC hoped to provide possible students and the public with handy information on doctoral programs, and to help the universities to improve the quality of programs through benchmarking and so to improve the countries overall research power. The earlier rankings had been heavily criticized, so the NRC had a committee analyze the criticism of the earlier rankings and the committee recommended that the 2007 ranking be based on quantitative variables. 48 variables, concerning institutional characteristics, were included in the ranking formula (Hicks, 2009)

The UK Research Assessment Exercise

The Research Assessment Exercise (RAE) was a government-mandated evaluation of research quality in all departments in all UK universities. The intention of RAE is to inform the distribution of core research funding to the 160 universities, and it has been done 5 times since 1986. About 25% of all research funding in the UK universities is based on RAE ratings of their departments. The RAE methods have evolved over the years and in 2008 it consisted of a peer review process of departmental research output on a seven-point scale, now with bibliometrics being more prominent with the so-called “Shadow metrics exercise”. In 2008: 68 panels convened to reflect on

departmental submissions and to give grades. There has been a degree of criticism to the RAE. An interesting point was that the assessment panels were disciplinary and found it difficult to assess interdisciplinary research, which suffered as a result. (Hicks, 2009) This is very interesting, that they had problems assessing interdisciplinary research. As discussed earlier this might be one of the problems with expert panels.

The Australian methods

In Australia the government evaluated research in its universities using a Composite Index established in 1995, using the results to allocate part of the research portion of general university funds. Approximately 7% of all research support in Australian universities was handed out based on the Composite Index in 2004. The Composite Index was a method for evaluating at the university level (not like RAE and NRC's ranking at the department level). It calculated every university's share of total research activity (a ranking of universities). By looking at research funding (grants from the government, other public sector and industry) and the universities publications and graduates (MS and PhD's). The publication lists were sent in by the universities themselves and this lead to high error rates. (Hicks, 2009) Another strong case was made by Butler in (Moed, Glänzel, & Schmoch, 2004). She noticed that the system had worked. There was a greater research output. The researchers were publishing more papers, but in journals that were not of high impact. So the quality of Australian research did not rise, which was one of the incentives with the system.

After this comment from Butler, a new version was made in 2006, the Research Quality Framework (RQF), a much more complex system. The RQF is more similar to RAE in that way, with the assessment now being made on research group level where RAE is on department level. But in 2008 it was announced that RQF (being defunct) is to be replaces by a new system called Excellence in Research for Australia (ERA), this new system being workable, streamlined and transparent according to the Minister for Innovation, Industry and Science and Research. (Hicks, 2009)

The Netherlands

In the Netherlands they have NOWT, Nederlands Observatorium van Wetenskap en Technologie. NOWT is a formal cooperation between the Centre for Science and Technology Studies (CWTS), which is a knowledge company dedicated to bibliometric and related information products, connected to the University of Leiden and Maastricht Economic Research Institute on Innovation and Technology of Maastricht University, and is funded by the Dutch Ministry of Education, Culture and Science, Directorate Research and Science Policy. NOWT concentrates on the collection and analysis of figures about the Dutch research system in a broader sense, including interfaces with public information services related to science, the higher education system, and the technological innovation system. The NOWT team looks at performance of the Netherlands within an international

context, based on empirical data and statistical analyses. The show general patterns, macro-level trends and long-term developments. They publish their reports with 2-3 year intervals in Dutch, but with an English summary. The bibliometric data is generated by CWTS for the part of the study that describes output-based key features of the system. This analysis made by NOWT is used and plays a major role for the Science and Technology policymakers in the Netherlands. (NOWT, 2009) The CWTS uses ISI's Citation Indexes on cd-rom form as a basis for their analyses, but they alter the data, by for example taking away self-citations. They also do their analyses on a 10-year publication period, because they feel it is needed. (T. N. van Leeuwen, et al., 2003) An interesting observation made by some of the CWTS researchers:

> "A limitation of a focus on the journals in which a unit is publishing is that low impact publications published in low impact journals may get a similar score as high impact publications published in high impact journals." P.260 (T. N. van Leeuwen, et al., 2003)

However, in the way CWTS uses its indicator and normalizes the factor it is possible and does not have this disadvantage or possibility. Their indicator takes the impact level of certain journal set normalized to fields into account. (T. N. van Leeuwen, et al., 2003)

Summary

By presenting these different research evaluation methods used it can be noted that they vary from very transparent benchmarking models to very complex models with little transparency and more or less peer-review and use of metrics, and also between directly connected to the allocation of government funding or just the allocation of prestige.

In his paper on RAE Moed (Moed, 2008) states that the use of statistics may and will influence scientists publishing behavior, but that the use of sophisticated citation analysis may reduce its effects. This is why they still should be used in research evaluation processes. He goes on to say, that the use of citation analysis should be founded on the idea that citation impact, though however useful and valuable it may be, it does not fully coincide with notions as intellectual influence, contribution to scientific progress or research quality. (Moed, 2008)

Compared to the other research evaluation methods of the different countries, ERIH is not designed as a research evaluation tool for a specific country like the others. It is a simple reference index meant for humanities research benchmarking, but for the whole of Europe. Is it a case of "one size fits nobody" or is it useable?

Empirical analysis

In this section four different sets of tests will be put on the Initial list of Psychology from ERIH. A) A test of correlation with the Norwegian models ranking, B) a test against JCR's lists of psychology subject categories and how ERIH has ranked the different paradigms. C) A look at where the journals come from D) a test to see the correlation between ERIH's ranking and the journal impact factor.

A:

A set of ranked journals from ERIH was chosen, ERIH's initial list of psychology journals. These were then compared to the Norwegian ranking of the same set of journals. 14 journals listed in ERIH where not listed at all in the Norwegian authority list and two journals had not received any level yet. When comparing the two sets' rankings, of ERIH's A levels 121 journals were ranked the same and 80 were different. So that means that about 60% of the journals are ranked equally and almost 40% were ranked lower by the Norwegian authority list. The one journal not ranked in the Norwegian authority list is a Finnish journal called "Epilepsia-lehti". "Not in base" means that the journal was not listed in the Norwegian authority list. The journals ranked B in ERIH were more similar with 84% having the same lower ranking, and only 15% being ranked higher in the Norwegian than in ERIH. In the B rank there were 3 journals out of 306 who were not listed at all in the Norwegian authority list. The journals ranked as C journals in ERIH had the highest number of journals not listed in the Norwegian authority list.

Ranking	Nr. Journals	Percentage
A - 2	121	59,9%
Lower	80	39,6%
Not in base	1	0,5%
Total	202	100,0%
B - 1	257	84%
Higher	46	15%
Not in base	3	1%
Total	306	100%
C - 1	86	78%
Higher	12	11%
Not in base	12	11%
Total	110	100%

Table 2 ERIH and Norwegian Models comparison scores

It is interesting to see that a Finnish journal with only a short summary in Swedish has been ranked A in the initial list. This since the A journal category is defined in the guidelines as "i.e. high-ranking international publications

with a very strong reputation among researchers of the field in different countries regularly cited all over the world." (European Science Foundation, 2007) On Epilepsia-lehti's webpage it states

> "The Epilepsia-lehti offers information and support to those living with the disease. The journals shares new information about epilepsy and its treatment, interviews with people suffering from the disease and their close ones giving the disease a face. The journal also informs about rehab-trips, and vacations. The organization informs about events. The Epilepsia-lehti is a useful info-package also for those who work with epilepsy-patients. It is published six times a year." (Translated by author) (Epilepsialiitto, 2009)

This statement on Epilepsia-lehti's webpage does not sound like description of a scientific journal. And the editorial board consists of only Finnish people. So why has this been ranked A?

B:

After this, ISI's JCR lists of psychology was chosen, and lists of the subject categories; Applied, Biological, Clinical, Developmental, Educational, Experimental, Mathematical, Multidisciplinary and Psychoanalysis journals was compared to ERIH's initial list of psychology. These were then compared to the different rankings of ERIH and the Norwegian model to see if there were any connections. The results indicate, that if we use JCR's subject categories, that Mathematical psychology is the most underrepresented and least valued in ERIH. On the other hand, Biological and Experimental are the most overrepresented in the A ranked journals, when the goal of the ranking should aim for 20% in the A-list.

JCR subject category / Rank in ERIH	A	%	B	%	C	%	TOT
Applied	11	22,00%	31	62,00%	8	16,00%	50
Biological	5	50,00%	4	40,00%	1	10,00%	10
Clinical	26	36,62%	40	56,34%	5	7,04%	71
Developmental	23	46,00%	26	52,00%	1	2,00%	50
Educational	9	26,47%	19	55,88%	6	17,65%	34
Experimental	30	47,62%	29	46,03%	4	6,35%	63
Mathematical	1	11,11%	7	77,78%	1	11,11%	9
Multidisciplinary	25	32,89%	38	50,00%	13	17,11%	76
Psychoanalysis	3	33,33%	5	55,56%	1	11,11%	9
Social	18	46,15%	19	48,72%	2	5,13%	39

Table 3 JCR subject categories on ERIH's initial list

If we look at the actual numbers of journals in the different subject categories: Mathematical and Psychoanalysis only have 9 journals each in ERIH's list, compared to Clinical that has 71 journals. But this is something that might be different if the whole set of journals were analyzed as such, and not based upon JCR's subject categories.

C:

The same set was then used to have a look at the ranking and if there is any geographical discriminations. The information about journals origins was collected from Ulrich's Periodicals Directory (Directory, 2009) after a trial test in the Norwegian authority lists proved to be misguiding. As expected the A and 2 ranked journals were almost all from native English speaking countries, USA and United Kingdom. Further down in the ranking other countries of origins were found. As can be seen from the figure: A and B rankings countries are very similar, with USA and the UK being very prominent. The C ranking on the other hand represents many different countries with the UK publishers being the best represented. The "Other" box is countries that only had one journal in the ranking, so in A and B there were 3 journals each from a single country, and in C there were 7.

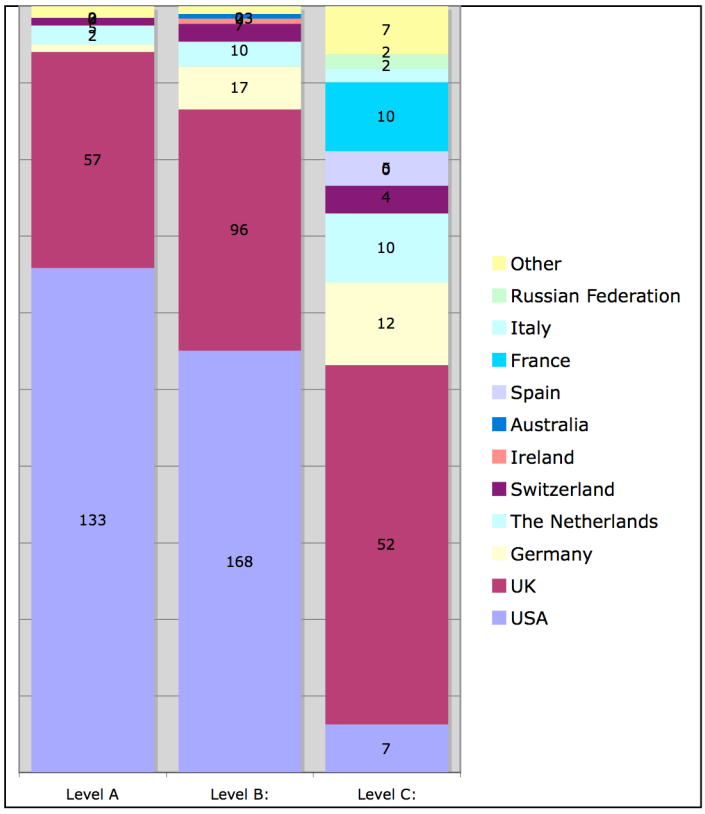

Table 4 Level ABC ranking with countries

D:

To test the correlation of Journal Impact Factors and ERIH's ranking; 10 random journals from each A, B and C was selected. The Impact Factors were taken from JCR and measured against the ranking. A correlation can be seen. The A: sets Impact factors measure from 15,664 to 1,121, B: set 1,921 to 0,457; and the C: set 0,965 to 0,091. This strengthens the hypothesis that the ranking lists to a great extent correlate with ISI's Journal Impact Factors.

A			B:			C:		
Journal Name	**ISSN**	**JIF**	**Journal name:**	**ISSN**	**JIF**	**Journal name:**	**ISSN**	**JIF**
Nature Neuroscience	1097-6256	15,664	Human Performance	0895-9285	1,921	Psicothema	0214-9915	0,965
Trends in Neurosciences	0166-2236	12,479	Visual Cognition	1350-6285	1,727	Journal of Risk Research	1366-9877	0,940
Psychological Bulletin	0033-2909	10,905	Learning & Behavior	1543-4494	1,267	Applied Neuropsychology	0908-4282	0,804
Pediatrics	0031-4005	4,473	Journal of Family Therapy	0163-4445	1,265	Zeitschrift für Klinische Psychologie, Psychiatrie und Psychotherapie	1431-8172	0,727
Journal of Memory and Language	0749-596X	2,474	Substance Use & Misuse	1082-6084	1,229	European Journal of Psychology of Education	0256-2928	0,500
Journal of Organizational Behavior	0894-3796	1,981	Music Perception	0730-7829	0,677	Journal of Gender Studies	0958-9236	0,441
Depression and Anxiety	1091-4269	1,893	Early Childhood Research Quarterly	0885-2006	0,632	Praxis der Kinderpsychologie und Kinderpsychiatrie	0032-7034	0,419
American Journal on Mental Retardation	0895-8017	1,636	Scandinavian Journal of Psychology	0036-5564	0,609	Theory and Decision	0040-5833	0,377
Law and Human Behavior	0147-7307	1,551	Psychological Records	0033-2933	0,540	High Ability Studies	1359-8139	0,226
Social Cognition	0278-016X	1,121	Adolescence	0001-8449	0,475	Nordic Psychology	1901-2276	0,091

Table 5 10 random journals divided into ABC with Journal Impact Factors

So, are there any journals that go against the impact factor in the rankings of ERIH? To have a small look at these journals might say something about what is important to ERIH's panels.

When looking at all journals ranked A in ERIH, and ranking them according to their Journals Impact Factor taken from JCR social science edition and JCR science edition 2007. There are a few in the lower end that cannot have been ranked high in ERIH because of their JIF, being under 1 and all. These are listed here below.

Journal name:	ISSN	Country	JIF
Social Development	0961-205X	UK	0,986
Journal of the American Psychoanalytic Association	0003-0651	USA	0,904
Journal of Applied Behavior Analysis	0021-8855	USA	0,727

Table 6 Low Journal Impact Factor ranked A journals

When looking closer at these journals: first *Social Development* is a quarterly journal from Wiley-Blackwell, a well-known publisher. On the journals website it describes itself as:

> "Social Development is a major international journal dealing with all aspects of children's social development as seen from a psychological stance. Coverage includes a wide range of topics such as social cognition, peer relationships, social interaction, attachment formation, emotional development and children's theories of mind. The main emphasis is placed on development in childhood, but lifespan, cross-species and cross-cultural perspectives enhancing our understanding of human development are also featured." (Wiley-Blackwell, 2009)

It mentions children's social development seen from a psychological stance. Key words are; social cognition, peer relationships, social interaction, attachment formation, emotional development and children's theories of mind. When looking at previous years JCR numbers one can see that the journal was higher cited in 2004 and 2002. The JIF for 2006 was 1,349: 2005 it was 1,00: 2004 it was 1,365.

Having a look at *The Journal of the American Psychoanalytic Association*. It is published by Sage publications, and is the official journal of the American Psychoanalytic Association. Key words are; Child analysis & development, gender and sexuality, masculinity in the 21st century, neuroscience, modern and postmodern trends in psychoanalysis, psychotherapy, trauma theory. (Sage, 2009) On their webpage their aim and scope is:

> "The Journal of the American Psychoanalytic Association (JAPA) is the preeminent North American psychoanalytic scholarly journal in terms of number of subscriptions, frequency of citation in other scholarly works and the preeminence of its authors. Published bimonthly, this peer-reviewed publication is an invaluable resource for psychoanalysts, psychologists, psychiatrists, and other mental health professionals. APsaA member Steven T. Levy, M.D. serves as editor of JAPA. JAPA publishes original articles, research, plenary presentations, panel reports, abstracts, commentaries, editorials and correspondence. In addition, the JAPA Review of Books provides in-depth reviews of recent literature." (Sage, 2009)

It has a circulation over 6500 copies. (Directory, 2009) The journal has a JIF of 0,904 in the 2007 JCR year used in this study. The JIF for JCR year 2006 was 1,440; 2005 was 1,065; 2004 it was 0,714.

The third journal is *Journal of Applied Behavior Analysis,* which is a journal that covers research about applications of the experimental analysis of behavior to problems of social importance, according to its webpage. (Society for the Experimental Analysis of Behaviour, 2009) It has a quarterly journal and has a circulation of 4000 paid copies. (Directory, 2009) Previous JCR year 2006 the JIF was 0,491; 2005 it was 0,846; 2004 a bit higher 1,131.

So, the three journals have had JIF's that have been higher then 1. Especially the first, Social Development, seems to have had a stable impact factor over 1, except for the year used in this study. The last journal is the only one not backed by a large well-known publisher, and also has the lowest impact factors over the years. Perhaps it would have been different journals in this last test if the JIF year, which perhaps was used at the point when the panels were discussing the ranking, were used in this test. But this also points out the fluctuations of the JIF, and perhaps that it can not stand as the sole ranking tool for ranking purposes, not mentioning all of its other drawbacks.

A few journals were not listed in JCR 2007 and ranked as level A journals. The one not in JCR was the same one not listed in the Norwegian authority register, Epilepsia-lehti, a Finnish epilepsy journal. Three journals were simply missing from the 2007 edition but were listed in JCR 2006, with good impact figures. Misses like this can also lead to troubles.

Errors in the dataset

The initial list of psychology has some small errors; one journal was listed twice with its old name and new name, and one journal had wrong ISBN and it was impossible to know which one was meant to be in the list, one journal had even ceased to exist. There is also the question whether there are more errors in the initial list, considering the Finnish journal in ranked A. In the C test, the country of origin test, there might be some errors due to the data collecting method. It was decided that only the first town/country listed as home country of the journal would be used. And the case with many large journals and publishers is that they are listed and have offices in many countries or even continents.

Discussion

Research evaluation is popular subject right now. Governments are pressuring the universities to show them how well their investments are doing. Universities are therefore pressuring their researchers to publish in international journals, the reasons are several, for evaluation purposes, for comparing researchers for job applications, funding and so on.

There are several ways to go about research evaluation; peer-review and metrics are the standard ones. Using only peer-review is a costly matter if we want to examine a whole nations research. Some researchers (Moed, 2009) (Huang & Chang, 2008) argue that a combination of peer-review and metrics, which takes into account the research output of the discipline, is the best way to go about research evaluation. Denmark is in the process of following Norway with their research assessment model. Denmark had published their official list of ranked journals, but it was pulled back due to complaints from university staff and other. So now the ministry is reassessing the list and we are yet to see what will come of this.

The ranked list of journals looked closer at in this paper is the European Reference Index for the Humanities initial list for psychology. ERIH consists of 15 indexes or initial lists of top journals, ranked as A, B and C journals, of these 15 disciplines. Expert panels of 4-7 persons, from the European countries, completed the initial lists. At present only journals are represented in the initial lists but books and other formats will also be added. It is declared on their webpage that ERIH can be used as a national benchmarking tool for humanities research in Europe, but not for individual researchers. The initial lists are supposed to be updated every 4 years, and so are the panels. Complaints from the UK's Arts & Humanities Research Council about lack of

transparency and robustness of the peer processes has lead to some changes, but the AHRC still remain very skeptical. Another issue that might cause problems is that the same journal can have different rankings in different initial lists. This can be very confusing, and for someone working with interdisciplinary research it might be very unfair. Perhaps it would be better to have just one single list? But, there is also the matter about relevance there, for discipline/specialty C journal A might be more relevant than it is for discipline/specialty E.

The Norwegian model, which Denmark is copying, is a national evaluating system started in 2006. 1,8% of the nations research funding is awarded to universities and colleges based on their research publication results. Or to be more precisely, depending on where it is published. The Norwegian model looks at all forms of publications not just journals as ERIH does at this point. In the beginning expert panels chose the journals to be listed and ranked them. From then on it is an open process and anyone can suggest journals and what rank. The ranking and journals are updated every year. The process feels more open and transparent than ERIH's, but of course there are many similar concerns with the Norwegian model as with ERIH. If we consider the previous conclusions that a good research evaluation system should be a combination of peer-review and metrics, which takes into account the research output of the discipline, the Norwegian model comes closer to that goal. But then again, ERIH is not supposed to be a research evaluation system in the same way as the Norwegian model.

The A test of comparing the rankings of ERIH to the Norwegian authority registers ranking showed that 60% of the high ranked journals in ERIH was ranked similar in the Norwegian authority register. 40% ~ 81 journals were ranked lower by the Norwegians. The differences were smaller in the lower ranked journals. Only one A ranked journal was not in the Norwegian model, this was a Finnish-written epilepsy journal. This was a quite odd finding, and perhaps a mistake or an inclination of the professionalism of the ranking procedure? In the B list there were three journals not ranked and in C 12 journals. It would have been interesting to compare all journals ranked differently to see if there are any similarities or interesting findings.

Making ranked lists is a troublesome task. There are several aspects that need to be taken into consideration. A few of them have been mentioned in this paper; issues like different disciplines publication patterns, interdisciplinarity issues, if we are looking at journals impact factor (not discussing the value of JIF's) then in one discipline there might exists several kinds of publication patterns and citation patterns, ranging from high level of citations to low levels, and in what speed the articles in that discipline get cited these can all have influence on a journals evaluation. One of the first questions that should be asked is; what is the purpose of the ranked list? This is very important because, like the Australian example showed us, it is important to know what you are asking for with your incentives. Is it to get an overall quality improvement or just quantity increase? The issue that makes ranking journals even more complex is; how can we judge journals

objectively? For who are we ranking? What influences ranking? And what causes biases?

Constructing ranked journal lists in the social sciences can be problematic because of the publication patterns of the discipline. In the social sciences it is said that journals have a lower count than books and other forms of publication than in the natural sciences. But it has been stated by several researchers (Lariviere, Archambault, Gingras, & Vignola-Gagne, 2006) (Nederhof, 2005) (Kyvik, 2003) that publishing in international journals is growing, even in the social sciences. The social science have more competing paradigms than natural sciences, this has impact on the evaluation of journals. It makes it more difficult to find a so-called 'core literature'. And if we look at the problem through reception theory, it can be said that the high number of competing paradigms influences journal selection. For example in the case of peer-review; how evaluators coming from the prevailing paradigm, most likely will decline journals from the competing paradigm. This was examined through the JCR subject category test. The test of different psychology subject categories from JCR Social Science Edition against the journals in ERIH's initial psychology list, indicate that Mathematical psychology is the most underrepresented and least valued in ERIH. On the other hand, Biological and Experimental are the most overrepresented in the A ranked journals, when the goal of the ranking should aim for 20% in the A-list. This is very interesting and it should perhaps be asked why mathematical psychology is unpopular, and why biological and experimental are popular? Is mathematical psychology a less thought of sub-discipline? Our subject category test indicates that different paradigms have influence on the evaluators and that they think less of some paradigms.

There can of course be more than one reason for this result; it can also have to do with; publication patterns and citation patterns? This would be interesting to go deeper into. Of course there is also the matter of the blank journals, the journals that were not listed in the specific psychology subject categories of JCR. More discussions about this problem in the 'Critique to method for analyzing' section.

Another aspect that is special for the social sciences is that there exists a strong national orientation; this is something that we cannot get completely away from. However, the internationalization of the society is also influencing the research being made. The society is becoming more international in many ways and this is also seen in collaborations between researchers and may one of the reasons why the social sciences publication practices are changing. There will always be national research done in social science, and research publication published in the native language. But the internationalization and effects of it are making social sciences even more interdisciplinary. So how is the national/international status of the discipline affecting the evaluation of journals? A test was made to see how the A, B and C journals that have specific 'Journal-country-of-origin' rules, how this has been realized in the ranking. The country of origins test reveals nothing new, only that A and B ranked journals come from native English speaking countries and that the C ranked journals have a wider spread. This as it should be, but they still have a

few American journals even though in ERIH's guidelines it is stated that they should only be European journals in level C. This might perhaps have something to do with the data collection method used; Ulrich's periodical list might have errors and some journals have more than one city and country listed as their home country. There is also the fact that a Finnish-speaking journal with only Finnish people on the editorial board got an A rank.

The correlation shown upon in test D shows very interesting results. The results indicate a strong correlation between the journal impact factor and ERIH's ranking of psychology journals. This correlation could indicate that the ISI's impact factors are accurate for the European research and go in line with the real prestige of the journals, or that the panels have simple chosen to look at JCR's impact factor for choosing how to rank the journals. This in the light of that ERIH is supposing to be a benchmarking system for European use, and after discussions about how ISI is no good for European use. (European Science Foundation, 2009a) ESF have stated that they intend to extend ERIH to include book-form and non-traditional formats. (European Science Foundation, 2009b) This is good, but let us hope that they put more effort into it. And that the UK's ARCH have completely banned the use of ERIH for evaluation purposes in the UK sends some kind of inclination of its status among European countries, seeing as UK journals, as native English speakers, were popular at least in the psychology lists.

Having a closer look on the JIF's of the journals ranked A, it was noticed that three journals had a JIF of lower than 1. When looking at the journals previous JIF numbers it was noted that they had all had a higher JIF in the three previous JCR years. Perhaps the results of this test would have shown us more if we had the same JCR year as they did when evaluating which journals to include in ERIH. It also says something about the JIF's fluctuations.

As discussed earlier there could be many implications from using ranked journals/journal impact factors for evaluating research. Mentioned was for example that it is possible and very likely that publishing behavior is influenced towards publishing in "high impact" journals rather than more suiting specialized journals, some disciplines can also be looked upon as disadvantaged disciplines when it comes to impact factors and the like, such as nursing which was not covered by JCR, the same might be for many other disciplines, one discipline might be a more humanistic leaning social science field. (Johnstone, 2007) However, as Moed (Moed, 2009) said, perhaps the important question is not if the publishing behaviors change, but if the changes are towards better research. But still, the goal of having better research is complex. How much of the research that does not look good in 'metrics' is it ok to be cancelled out for 'better research'? Is it really at the best interest of a country to have 'better research' at the cost of these less fortunate research areas and publications without good citation counts? (Local history, specific language studies, knowledge sharing publications, upcoming paradigms etc.)

An other implication might be on the journals side, that of the so called "impacted journal" (Smith, 2006), when the journal starts changing form and

taking away everything not citable and becoming something intended for researchers and not as it was meant to be; a journal for practitioners.

Another interesting matter about the initial list of psychology is the errors in the list. Journals that have ceased to exist a few years ago, journals listed twice with new and old title, wrong ISBN numbers and the Finnish journal. That these errors slipped through also sends some signals about the lists accuracy and importance.

Critique to methods for analyzing.

About the subject categories: using ISI's subject categories might not have been the best solution. Doing a real analysis of the domain and finding the different paradigms, and then making this investigation from those results would perhaps give a better and trustworthy result. But on the other hand, if we speculate that the panel members have good knowledge of, or use, access to ISI's data, it perhaps gives a view of its own. But perhaps to compare both methods would have given the accurate results. This because a part of the initial lists journals did not fall under any subject category of JCR. These journals could and probably fall under some of these subject categories in real life, but just are not indexed by JCR. Having these journals in the counting might lead to different conclusions.

The country of origin test could perhaps have been done in a different way. Using Ulrich's directory is perhaps not the best way of collecting the data. Many of the journals have several cities and countries listed as their address. After doing some test runs and trying to collect the data from the Norwegian authority register resulted in many faults, and trying to collect the data from the journals homepages is too time consuming. This issue might have some influence on the end result of the test.

Another matter that might have influenced the results of this test could be if another initial list was chosen, or even better if two lists were compared. Psychology has publication patterns more similar to the harder sciences than to the softer sides of social science, such as history for example. It might have been interesting to compare these results between psychology and sociology.

As mentioned earlier, if it was know which JCR year was available when the journals were ranked by the ERIH panels, it would have been better to use that year. The journal impact factors change from year to year, and if we had the same year then it would be more precise.

Conclusion and suggestions for further research

So, what is the deal with ranking journals for research evaluation purposes? ERIH and the Norwegian model and its followers judge research by in what form and in what channel they publish their results. This can be done by ranking channels; like journals and publishers. This thesis has dug a bit deeper into ranking journals with ERIH's initial list of psychology journals as the dataset for the evaluation. The initial list was compiled by using expert panels, one of the different ways of compiling a list of core journals.

A few tests were made to try and find out more about the rankings. It was found that ERIH and the Norwegians have some differences in what they believe are the best journals. It has also been established that none of the methods used for ranking journals discussed in this thesis is entirely objective. To test the hypothesis if different paradigms in fact influence a journals evaluation it was found that it does. Discriminations of some psychology paradigms were found, if we use JCR's subject categories, mathematical psychology journals are not "good" enough for A levels in ERIH, and overall psychoanalysis journals do not appear in the initial lists to any greater extent compared to journals on biological psychology for example.

It was also revealed that ERIH's ranking to a great extent correlate with JCR's impact factors. What does this really indicate? Does it mean that JCR in fact suits, and has the same values as, European researchers or does it somehow indicate that ERIH has used JCR in their ranking processes despite their "official" dislike of it? Or does it mean something completely different? It would also have been interesting to do a deeper study on what journals were ranked high despite of a low impact factor, and vice versa, but for this to be done it would have been necessary to have be aware of the correct JCR year used when the panels were ranking the journals.

Ranking journals in indexes can be a very complex matter. There are many aspects that need to be considered before getting started. Some of these important aspects have been discussed in this paper. The underlying research evaluation methodology has influence on the end results, and there are implications on the evaluation, and it should be well considered what the goal of the ranking of journals for research evaluation purposes is before going ahead. Publication patterns will change, but as Moed (Moed, 2009) stated, perhaps the important question is not if the publishing behaviors change, but if the changes are towards better research? But at what cost is also an important question, what are we willing to sacrifice for better research?

As a result of this study it can be affirmed that a discipline is not homogeneous and many aspects need to be taken into consideration when creating ranked lists of journals or publishers for research evaluation purposes.

This thesis can be used to get a view of a research evaluation method used in some of the Scandinavian countries and the world now. It might also give a small insight into ranking of journals for research evaluation purposes, and what implications there might be of doing this and what to think of before doing so. Studies on peer-evaluation and expert panels are something that can be recommended to further shed some light on this topic. Another interesting result that needs to be looked into is what happens to knowledge sharing publications when under evaluations such as these mentioned in this paper. Also a more in-depth study of the relation between ISI's impact factor and the rankings of ERIH would be an interesting topic for further research. This could be done to find out why they really correlate is it that ISI's evaluation of journals really is suitable for European evaluations or is there other reasons.

References:

AHRC, A. H. R. C. (2009). European Reference Index for the Humanities Retrieved 27.5., 2009, from http://www.ahrc.ac.uk/About/Policy/Pages/ERIH.aspx

Andersen, H. (1999). Political attitudes and cognitive convictions among Danish social science researchers. *Scientometrics, 46*(1), 87-108.

Andersen, H. (2000). Influence and reputation in the social sciences : how much do researchers agree? *Journal of Documentation, 56*(6), 674-692.

Bensman, S. J., & Leydesdorff, L. (2009). Definition and identification of journals as bibliographic and subject entities: librarianship versus ISI Journal Citation Reports methods and their effect on citation measures. [Research article]. *Journal of the American Society for Information Science and Technology, Early view, ahead of print*.

Bordons, M., Morillo, F., & Gomez, I. (2004). Analysis of cross-disciplinary research through bibliometric tools. In H. F. Moed, W. Glänzel & U. Schmoch (Eds.), *Handbook of quantitative science and technology research the use of publication and patent statistics in studies of S&T systems* (pp. 437-456). Dordrecht: Kluwer Academic Publishers.

Braun, T. (2004). Keeping the gates of science journals. In H. F. Moed, W. Glänzel & U. Schmoch (Eds.), *Handbook of quantitative science and technology research the use of publication and patent statistics in studies of S&T systems* (pp. 95-114). Dordrecht: Kluwer Academic Publishers.

Bräuninger, M., & Haucap, J. (2003). Reputation and relevance of economics journals. *Kyklos, 56*(2), 175-197.

Butler, L. (2004). What hapens when funding is linked to publication counts? In H. F. Moed, W. Glänzel & U. Schmoch (Eds.), *Handbook of quantitative science and technology research the use of publication and patent statistics in studies of S&T systems* (pp. 389-405). Dordrecht: Kluwer Academic Publishers.

Coryn, C. L. S., Hattie, J. A., Scriven, M., & Hartmann, D. J. (2007). Models and mechanisms for evaluating government-funded research - An international comparison. *American journal of evaluation, 28*(4), 437-457.

Directory, U. s. P. (2009). ulrichsweb.com(TM) - The Global Source for Periodicals Retrieved 4.6., 2009, from http://www.ulrichsweb.com/ulrichsweb/default.asp?navPage=4&

Dogan, M. (2001). Specialization and Recombination of Specialties. In N. J. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of Social and Behavioural Sciences* (Vol. 22, pp. 14851-14855). London: Pergamon-Elsevier Science.

Dul, J., Karwowski, W., & Vinken, J. (2005). Objective and subjective rankings of scientific journals in the field of ergonomics: 2004-2005. *Human Factors and Ergonomics in Manufacturing, 15*(3), 327-332.

Egghe, L., & Rousseau, R. (1990). *Introduction to informetrics quantitative methods in library, documentation and information science*. Amsterdam: Elsevier Science Publishers.

Epilepsialiitto (2009). Epilepsialiitto - Epilepsialehti Retrieved 20.6., 2009, from http://www.epilepsia.fi/index.phtml?menu_id=39

Ernst, E., Saradeth, T., & Resch, K. L. (1993). Drawbacks of Peer-Review. *Nature, 363*(6427), 296-296.

European Science Foundation (2007). Guidelines ERIH Retrieved 15.5., 2009, from http://www.esf.org/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/be_user/research_areas/HUM/Documents/ERIH/ERIH%20summary_guidelines_Sept_07.pdf&t=1243331547&hash=fbab1cd91ccba892f9e013ad2c7cf9dc

European Science Foundation (2008). Expert Panels: process and methodology of selection Retrieved 9.5, 2009, from http://www.esf.org/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/be_user/research_areas/HUM/Documents/ERIH/Methodology_Statements/PANELCOMPOSITION1.pdf&t=1242207523&hash=1c97624c9613ce088f642b8f2a077164

European Science Foundation (2009a). Context and Background of ERIH: European Science Foundation Retrieved 28.5., 2009, from http://www.esf.org/research-areas/humanities/research-infrastructures-including-erih/context-and-background-of-erih.html

European Science Foundation (2009b). Research Infrastructures including ERIH Retrieved 11.05, 2009, from http://www.esf.org/research-areas/humanities/research-infrastructures-including-erih.html

Foss Hansen, H., & Holst Jørgensen, B. (1995). *Styring af forskning kan forskningsindikatorer anvendes?* [København]: Samfundslitteratur.

Garfield, E. (1972). Citation Analysis as a Tool in Journal Evaluation - Journals Can Be Ranked by Frequency and Impact of Citations for Science Policy Studies. *Science, 178*(4060), 471-+.

Garfield, E. (1980). Bradford Law and Related Statistical Patterns. *Current Contents*(19), 5-12.

Harnad, S. (2009). Open access scientometrics and the UK Research Assessment Exercise. *Scientometrics, 79*(1), 147-156.

Hicks, D. (1999). The difficulty of achieving full coverage of international social science literature and the bibliometric consequences. *Scientometrics, 44*(2), 193-215.

Hicks, D. (2004). The four literatures of social science. In H. F. Moed, W. Glänzel & U. Schmoch (Eds.), *Handbook of quantitative science and technology research the use of publication and patent statistics in studies of S&T systems* (pp. 473-496). Dordrecht: Kluwer Academic Publishers.

Hicks, D. (2009). Evolving regimes of multi-university research evaluation. *Higher Education, 57*(4), 393-404.

Hirsch, J. E. (2005). An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences of the United States of America, 102*(46), 16569-16572.

Hjørland, B. (2002). Epistemology and the socio-cognitive perspective in information science. *Journal of the American Society for Information Science and Technology, 53*(4), 257-270.

Hönekopp, J., & Kleber, J. (2008). Sometimes the impact factor outshines the H index. *Retrovirology, 5*, -.

Huang, M. H., & Chang, Y. W. (2008). Characteristics of research output in social sciences and humanities: From a research evaluation perspective. *Journal of the American Society for Information Science and Technology, 59*(11), 1819-1828.

Ingwersen, P., Larsen, B., Rousseau, R., & Russell, J. (2001). The publication-citation matrix and its derived quantities. *Chinese Science Bulletin, 46*(6), 524-528.

Innovationsstyrelsen, F.-o. (2009, 26.03.2009). Autoritetslisterne for 2008 Retrieved 13.5, 2009, from http://www.fi.dk/forskning/den-bibliometriske-forskningsindikator/autoritetslister-for-tidsskrifter-og-forlag

Johnstone, M. J. (2007). Journal impact factors: implications for the nursing profession. *International Nursing Review, 54*(1), 35-40.

Kyvik, S. (2003). Changing trends in publishing behaviour among university faculty, 1980-2000. *Scientometrics, 58*(1), 35-48.

Lariviere, V., Archambault, E., Gingras, Y., & Vignola-Gagne, E. (2006). The place of serials in referencing practices: Comparing natural sciences and engineering with social sciences and humanities. *Journal of the American Society for Information Science and Technology, 57*(8), 997-1004.

Lindsey, D. (1978). *The scientific publication system in social science*. San Francisco: Jossey-Bass.

Maier, G. (2006). Impact factors and peer judgment: The case of regional science journals. *Scientometrics, 69*(3), 651-667.

Messeri, P. (1988). Age-Differences in the Reception of New Scientific Theories - the Case of Plate-Tectonics Theory. *Social Studies of Science, 18*(1), 91-112.

Moed, H. F. (2005). *Citation analysis in research evaluation*. Dordrecht: Springer.

Moed, H. F. (2008). UK research assessment exercises: Informed judgments on research quality or quantity? *Scientometrics, 74*(1), 153-161.

Moed, H. F. (2009). New developments in the use of citation analysis in research evaluation. *Archivum Immunologiae Et Therapiae Experimentalis, 57*(1), 13-18.

Moed, H. F., Glänzel, W., & Schmoch, U. (2004). *Handbook of quantitative science and technology research the use of publication and patent statistics in studies of S&T systems*. Dordrecht: Kluwer Academic Publishers.

Nedergaard, P., & Foss, N. (2008). *Publicér i de internationale tidsskrifter om hvordan man får publiceret sin samfundsvidenskabelige forskning*. Frederiksberg: Samfundslitteratur.

Nederhof, A. J. (2005). Bibliometric monitoring of research performance in the social sciences and the humanities: A review. *Scientometrics, 66*(1), 81-100.

Nicolaisen, J., & Hjørland, B. (2007). Practical potentials of Bradford's law: a critical examination of the received view. *Journal of Documentation, 63*(3), 359-377.

Nisonger, T. E. (2004). The Benefits and Drawbacks of Impact Factor for Journal Collection Management in Libraries. *The Serials Librarian, 47*(1/2).

Nisonger, T. E. (2007). Journals in the Core Collection: Definition, Identification, and Applications. *The Serials Librarian, 51*(3/4).

NOWT (2009). NOWT : Introduction Retrieved 9.6., 2009, from http://www.nowt.nl/index.php

NSD (2009a). Norwegian register of scientific journals and publishers Retrieved 10.6., 2009, from http://dbh.nsd.uib.no/kanaler/

NSD (2009b). Prosedyrer for innspill til autoritetsregister over publiseringskanaler
Retrieved 12.5, 2009, from http://dbh.nsd.uib.no/vitpub/prosedyre.jsp

Rousseau, R. (2002). Journal evaluation : technical and practical issues. *The Free Library*. Retrieved from http://www.thefreelibrary.com/Journal evaluation: technical and practical issues-a088582623

Rousseau, S. (2008). Journal evaluation by environmental and resource economists: A survey. *Scientometrics, 77*(2), 223-233.

Sage (2009). SAGE journal: Psychiatry, Clinical Psychology, Psychoanalysis, Journal of the American Psychoanalytic Association Retrieved 3.5., 2009, from http://www.sagepub.com/journalsProdDesc.nav?prodId=Journal201890

Seglen, P. O. (1997). Why the impact factor of journals should not be used for evaluating research. *British Medical Journal, 314*(7079), 498-502.

Smith, R. (2006). Commentary: The power of the unrelenting impact factor - Is it a force for good or harm? *International Journal of Epidemiology, 35*(5), 1129-1130.

Society for the Experimental Analysis of Behaviour, I. (2009). Journal of Applied Behaviour Analysis Retrieved 4.6., 2009, from http://seab.envmed.rochester.edu/jaba/

Sønderstrup-Andersen, E. M., & Sønderstrup-Andersen, H. H. K. (2008). An investigation into diabetes researcher's perceptions of the Journal Impact Factor - reconsidering evaluating research. *Scientometrics, 76*(2), 391-406.

Thomson (2009). ISI Web of Knowledge Retrieved 10.6., 2009, from www.isiknowledge.com

UHR, A. a. t. T. c. (2004). A Bibliometric Model for Performance-based Budgeting of Research Institutions. 51. Retrieved from http://www.uhr.no/documents/Rapport_fra_UHR_prosjektet_4_11_engCJS_endelig_versjon_av_hele_oversettelsen.pdf

van Leeuwen, T. (2005). The application of bibliometric analyses in the evaluation of social science research. Who benefits from it, and why it is still feasible. *Scientometrics, 66*(1), 133-154.

van Leeuwen, T. N., Visser, M. S., Moed, H. F., Nederhof, T. J., & van Raan, A. F. J. (2003). Holy Grail of science policy: Exploring and combining

bibliometric tools in search of scientific excellence. *Scientometrics, 57*(2), 257-280.

van Raan, A. F. J. (2004). Measuring science : capita selecta of current main issues. In H. F. Moed, W. Glänzel & U. Schmoch (Eds.), *Handbook of quantitative science and technology research the use of publication and patent statistics in studies of S&T systems* (pp. 19-50). Dordrecht: Kluwer Academic Publishers.

Wikipedia (2009a). Matthew effect Retrieved 8.6., 2009, from http://en.wikipedia.org/wiki/Matthew_effect

Wikipedia (2009b). Reception theory Retrieved 8.6., 2009, from http://en.wikipedia.org/wiki/Reception_theory

Wiley-Blackwell (2009). Social development - Journal information Retrieved 3.6., 2009, from http://www.wiley.com/bw/journal.asp?ref=0961-205X

Wray, K. B. (2004). An examination of the contributions of young scientists in new fields. *Scientometrics, 61*(1), 117-128.

Zitt, M., & Bassecoulard, E. (2004). Internationalisation in science in the prism of bibliometric indicators. In H. F. Moed, W. Glänzel & U. Schmoch (Eds.), *Handbook of quantitative science and technology research the use of publication and patent statistics in studies of S&T systems* (pp. 407-436). Dordrecht: Kluwer Academic Publishers.

APPENDIX

This is the dataset used for analysis: European Reference Index for Humanities initial list for Psychology.

First column has the journal name, as copied from the ERIH's webpage. Second column is what ranking it has received by ERIH; third column is what ranking it has received in the Norwegian authority list, for the year 2008. Forth is the journals ISSN number; last is Country according to Ulrich's periodical list.

The color-coding stands for the different JCR subject categories retrieved from the JCR year 2007. The same journal can be listed in several categories. The blank ones, missing a color, are not listed in any of the subject categories for JCR 2007.

APPLIED
Biological
Clinical
Developmental
Educational
Experimental
Mathematical
Multidisciplinary
Psychoanalys
Social

Journal title	ERIH	NO	ISSN	Country
Academy of Management Journal	A	2	0001-4273	USA
Academy of Management Review	A	2	0363-7425	USA
Addiction	A	2	0965-2140	United Kingdom
Administrative Science Quarterly	A	2	0001-8392	USA
Advances in Experimental Social Psychology	A	2	0065-2601	USA
Ageing & Society	A	1	0144-686X	United Kingdom
Aggression and Violent Behavior	A	1	1359-1789	United Kingdom
Aggressive Behavior	A	2	0096-140X	USA
Aging & Mental Health	A	1	1360-7863	United Kingdom
Aids Care	A	1	0954-0121	United Kingdom

Alcoholism: Clinical and Experimental Research	A	1	0145-6008	USA
American Journal of Community Psychology	A	2	0091-0562	USA
American Journal of Psychiatry	A	2	0002-953X	USA
American Journal on Mental Retardation	A	2	0895-8017	USA
American Psychologist	A	2	0003-066X	USA
Animal Behaviour	A	1	0003-3472	United Kingdom
Annals of Behavioral Medicine	A	2	0883-6612	USA
Annals of Dyslexia	A	2	0736-9387	USA
Annual Review of Neuroscience	A	2	0147-006X	USA
Annual Review of Psychology	A	2	0066-4308	USA
Annual Review of Public Health	A	2	0163-7525	USA
Applied Psychology: An International Review	A	1	0269-994X	United Kingdom, Israel
Archives of Clinical Neuropsychology	A	1	0887-6177	United Kingdom, USA
Archives of General Psychiatry	A	2	0003-990X	USA
Archives of Sexual Behavior	A	1	0004-0002	USA
Attachment & Human Development	A	1	1461-6734	United Kingdom
Behavior Genetics	A	1	0001-8244	USA
Behavior Therapy	A	2	0005-7894	USA
Behavioral and Brain Sciences (The)	A	2	0140-525X	United Kingdom
Behavioral Neuroscience	A	1	0735-7044	USA
Behaviour Research and Therapy	A	2	0005-7967	United Kingdom
Behavioural Brain Research	A	2	0166-4328	The Netherlands
Behavioural Pharmacology	A	1	0955-8810	USA
Biological Psychiatry	A	2	0006-3223	USA
Biological Psychology	A	1	0301-0511	The Netherlands
Brain and Cognition	A	2	0278-2626	USA
Brain: A Journal of Neurology	A	2	0006-8950	United Kingdom

British Journal of Clinical Psychology	A	2	0144-6657	United Kingdom
Cerebral Cortex	A	2	1566-6816 / 1047-3211	USA, United Kingdom
Child Abuse & Neglect	A	1	0145-2134	United Kingdom
Child Development	A	2	0009-3920	USA
Clinical Neurophysiology	A	1	1388-2457	Ireland
Clinical Psychology Review	A	2	0272-7358	United Kingdom
Clinical Psychology: Science and Practice	A	2	0969-5893	USA
Cognition	A	2	0010-0277	The Netherlands
Cognition & Emotion	A	1	0269-9931	United Kingdom
Cognitive Development	A	1	0885-2014	United Kingdom
Cognitive Neuropsychology	A	2	0264-3294	United Kingdom
Cognitive Psychology	A	2	0010-0285	USA
Cognitive Science	A	1	0364-0213	USA
Consciousness and Cognition: An International Journal	A	2	1053-8100	USA
Contemporary Educational Psychology	A	1	0361-476X	USA
Cortex	A	1	0010-9452	Italy
Counseling Psychologist	A	2	0011-0000	USA
Criminology: An Interdisciplinary Journal	A	2	1486-9195 / 0011-1384	USA
Current Directions in Psychological Science	A	2	0963-7214	USA
Dementia and Geriatric Cognitive Disorders	A	1	1420-8008	Switzerland
Depression and Anxiety	A	2	1091-4269	USA
Development and Psychopathology	A	2	0954-5794	United Kingdom
Developmental Psychobiology	A	1	0012-1630	USA
Developmental Psychology	A	2	0012-1649	USA
Developmental Review	A	2	0273-2297	USA

Developmental Science	A	1	1363-755X	United Kingdom
Educational Psychologist	A	2	0046-1520	USA
Educational Psychology Review	A	2	1040-726X	USA
Emotion	A	1	1528-3542	USA
Epilepsia	A	Not in base	0356-598X	Finland
European Child & Adolescent Psychiatry	A	1	1018-8827	Germany
European Journal of Neuroscience	A	1	0953-816X	United Kingdom
European Journal of Personality	A	1	0890-2070	United Kingdom
European Journal of Social Psychology	A	1	0046-2772	United Kingdom
Evolution and Human Behavior	A	2	1090-5138	USA
Exceptional Children	A	2	0014-4029	USA
Experimental Psychology	A	1	1618-3169	USA
Future of Children (The)	A	1	1054-8289	USA
Health Psychology	A	2	0278-6133	USA
Hormones and Behavior	A	1	0018-506X	USA
Human Brain Mapping	A	2	1065-9471	USA
Infancy	A	1	1525-0008	USA
Intelligence	A	2	0160-2896	United Kingdom
International Journal of Behavioral Medicine	A	1	1070-5503	USA
International Journal of Clinical and Experimental Hypnosis	A	1	0020-7144	United Kingdom, USA
International Journal of Eating Disorders	A	2	0276-3478	USA
International Journal of Human-Computer Studies	A	1	1071-5819	United Kingdom
International Journal of Psychoanalysis	A	1	0020-7578	United Kingdom
Journal of Abnormal Child Psychology	A	2	0091-0627	USA
Journal of Abnormal Psychology	A	2	0021-843X	USA
Journal of Adolescence	A	2	0140-1971	United Kingdom
Journal of Adolescent Health	A	1	1054-139X	USA

Journal of Affective Disorders	A	1	0165-0327	The Netherlands
Journal of Applied Behavior Analysis	A	1	0021-8855	USA
Journal of Applied Psychology	A	2	0021-9010	USA
Journal of Autism and Developmental Disorders	A	2	0162-3257	USA
Journal of Behavioral Medicine	A	1	0160-7715	USA
Journal of Career Assessment	A	1	1069-0727	USA
Journal of Child Psychology and Psychiatry and Allied Disciplines	A	2	0021-9630	United Kingdom
Journal of Clinical Child and Adolescent Psychology	A	2	1537-4416	USA
Journal of Clinical Psychiatry	A	2	0160-6689	USA
Journal of Cognitive Neuroscience	A	2	0898-929X	USA
Journal of Comparative Psychology	A	1	0735-7036	USA
Journal of Consulting and Clinical Psychology	A	2	0022-006X	USA
Journal of Counseling Psychology	A	2	0022-0167	USA
Journal of Cross-Cultural Psychology	A	1	0022-0221	USA
Journal of Developmental and Behavioral Pediatrics	A	2	0196-206X	USA
Journal of Educational Psychology	A	2	0022-0663	USA
Journal of Epidemiology and Community Health	A	2	0143-005X	United Kingdom, Spain
Journal of Experimental Child Psychology	A	2	0022-0965	USA
Journal of Experimental Psychology: Animal Behavior Processes	A	2	0097-7403	USA
Journal of Experimental Psychology: General	A	2	0096-3445	USA
Journal of Experimental Psychology: Human Perception and Performance	A	2	0096-1523	USA
Journal of Experimental Psychology: Learning, Memory and Cognition	A	2	0278-7393	USA
Journal of Experimental Social Psychology	A	2	0022-1031	USA
Journal of Family Psychology	A	2	0893-3200	USA

Journal of Health and Social Behavior	A	2	0022-1465	USA
Journal of Management	A	2	0149-2063	USA, United Kingdom
Journal of Management Studies	A	2	0022-2380	United Kingdom
Journal of Marriage and Family	A	1	0022-2445	USA
Journal of Memory and Language	A	2	0749-596X	USA
Journal of Neurophysiology	A	1	0022-3077	USA
Journal of Neuroscience	A	2	0270-6474	USA
Journal of Occupational and Organizational Psychology	A	2	0963-1798	United Kingdom
Journal of Organizational Behavior	A	2	0894-3796	United Kingdom
Journal of Pediatric Psychology	A	2	0146-8693	United Kingdom, USA
Journal of Personality	A	2	0022-3506	USA
Journal of Personality and Social Psychology	A	2	0022-3514	USA
Journal of Personality Assessment	A	2	0022-3891	USA
Journal of Psychiatric Research	A	1	0022-3956	United Kingdom
Journal of Psychopharmacology	A	1	0269-8811	United Kingdom
Journal of Psychosomatic Research	A	1	0022-3999	USA
Journal of Research in Personality	A	1	0092-6566	USA
Journal of Research on Adolescence	A	2	1050-8392	USA
Journal of Sex Research	A	1	0022-4499	USA
Journal of Sleep Research	A	1	0962-1105	United Kingdom
Journal of Sport & Exercise Psychology	A	2	0895-2779	USA
Journal of Studies on Alcohol and Drugs	A	1	1937-1888	USA
Journal of Substance Abuse Treatment	A	1	0740-5472	USA
Journal of the American Academy of Child and Adolescent Psychiatry	A	2	0890-8567	USA
Journal of the American Psychoanalytic Association	A	1	0003-0651	USA
Journal of the Learning Sciences	A	1	1050-8406	USA
Journal of Traumatic Stress	A	1	0894-	USA

			9867	
Journal of Vocational Behavior	A	2	0001-8791	USA
Journals of Gerontology Series B Psychological Sciences and Social Sciences	A	1	1079-5014	USA
Lancet	A	2	0140-6736	United Kingdom
Language and Cognitive Processes	A	1	0169-0965	United Kingdom
Law and Human Behavior	A	2	0147-7307	USA
Leadership Quarterly	A	2	1048-9843	United Kingdom
Learning & Memory	A	2	0143-7534 / **1072-0502**	USA
Learning and Individual Differences	A	1	1041-6080	United Kingdom
Learning and Instruction	A	2	0959-4752	United Kingdom
Learning and Memory	A	2	0143-7534 / **1072-0502**	United Kingdom
Learning and Motivation	A	1	0023-9690	USA
Memory	A	1	0965-8211	United Kingdom
Memory & Cognition	A	1	0090-502X	USA
Mental Retardation and Developmental Disabilities Research Reviews	A	1	1080-4013	USA
Monographs of the Society for Research in Child Development	A	1	0037-976X	USA
Multivariate Behavioral Research	A	1	0027-3171	USA
Nature Neuroscience	A	2	1097-6256	USA
Nature Reviews Neuroscience	A	2	1471-003X / 1471-0048	United Kingdom
Neurobiology of Learning and Memory	A	1	1074-7427	USA
Neuron	A	2	0896-6273	USA
Neuropsychologia	A	2	0028-3932	United Kingdom
Neuropsychology	A	1	0894-4105	USA

Neuroscience and Biobehavioral Reviews	A	2	0149-7634	United Kingdom
New England Journal of Medicine	A	2	0028-4793	USA
Organizational Behavior and Human Decision Processes	A	2	0749-5978	USA
Pain	A	2	0304-3959	The Netherlands, USA
Pediatrics	A	2	0031-4005	USA
Perception & Psychophysics	A	1	0031-5117	USA
Personality and Individual Differences	A	2	0191-8869	United Kingdom
Personality and Social Psychology Bulletin	A	2	0146-1672	USA
Personality and Social Psychology Review	A	2	1088-8683	USA
Personnel Psychology	A	2	0031-5826	USA
Prevention Science	A	1	1389-4986	USA
Psychological Assessment	A	2	1040-3590	USA
Psychological Bulletin	A	2	0033-2909	USA
Psychological Inquiry	A	2	1047-840X	USA
Psychological Medicine	A	2	0033-2917	United Kingdom
Psychological Methods	A	2	1082-989X	USA
Psychological Review	A	2	0033-295X	USA
Psychological Science	A	2	0956-7976	United Kingdom, USA
Psychology & Health	A	2	0887-0446	United Kingdom, Portugal
Psychology and Aging	A	2	0882-7974	USA
Psychology of Addictive Behaviors	A	2	0893-164X	USA
Psychology of Learning and Motivation (The)	A	1	0079-7421	USA
Psychology, Public Policy, and Law	A	1	1076-8971	USA
Psychonomic Bulletin & Review	A	1	1069-9384	USA
Psycho-Oncology	A	2	1057-9249	United Kingdom
Psychopharmacology	A	1	0033-3158	Germany

Psychophysiology	A	2	0048-5772	USA, United Kingdom
Psychosomatic Medicine	A	2	0033-3174	USA
Psychotherapy and Psychosomatics	A	1	0033-3190	Switzerland
Review of General Psychology	A	1	1089-2680	USA
Science	A	2	0036-8075	USA
Sleep	A	1	0161-8105	USA
Social Cognition	A	2	0278-016X	USA
Social Development	A	1	0961-205X	United Kingdom
Social Psychology Quarterly	A	1	0190-2725	USA
Social Science & Medicine	A	2	0277-9536	United Kingdom
Suicide and Life-Threatening Behavior	A	1	0363-0234	USA
Trends in Cognitive Sciences	A	2	1364-6613	United Kingdom
Trends in Neurosciences	A	2	0166-2236	United Kingdom
Work & Stress	A	2	0267-8373	United Kingdom
Acta Psychologica	B	1	0001-6918	The Netherlands
Adaptive Behavior	B	1	1059-7123	United Kingdom, USA
Addiction Research & Theory	B	1	1476-7392	United Kingdom
Addictive Behaviors	B	1	0306-4603	United Kingdom
Adolescence	B	1	0001-8449	USA
Advances in Child Development and Behavior	B	1	0065-2407	USA
Aging, Neuropsychology and Cognition	B	1	1382-5585	United Kingdom
Alcohol and Alcoholism	B	1	0735-0414	United Kingdom
American Educational Research Journal	B	2	0002-8312	USA
American Journal of Drug and Alcohol Abuse	B	1	0095-2990	USA
American Journal of Evaluation	B	1	1098-2140	USA
American Journal of Orthopsychiatry	B	1	0002-9432	USA
American Journal of Psychology	B	1	0002-9556	USA
Animal Cognition	B	1	1435-	Germany

			9448	
Animal Learning and Behavior	B	1	0090-4996	USA
Anxiety, Stress & Coping: An International Journal	B	1	1061-5806	United Kingdom
Aphasiology	B	1	0268-7038	United Kingdom
Applied Cognitive Psychology	B	2	0888-4080	United Kingdom
Applied Ergonomics	B	2	0003-6870	United Kingdom
Applied Psycholinguistics	B	1	0142-7164	United Kingdom
Applied Psychological Measurement	B	1	0146-6216	USA
Applied Psychophysiology and Biofeedback	B	1	1090-0586	USA
Archives of Neurology	B	2	0003-9942	USA
Asian Journal of Social Psychology	B	1	1367-2223	Australia, Philippines, Japan
Assessment	B	1	1073-1911	USA
Australian Psychologist	B	1	0005-0067	United Kingdom, Australia
Autism	B	1	1362-3613	United Kingdom
Basic and Applied Social Psychology	B	1	0197-3533	USA
Behavior Analyst (The)	B	1	0738-6729	USA
Behavior Modification	B	1	0145-4455	USA
Behavior Research Methods	B	1	1554-351X	USA
Behavior Research Methods, Instruments, & Computers	B	1	0743-3808	Old title
Behavioral Disorders	B	1	0198-7429	USA
Behavioral Ecology	B	2	1045-2249	USA
Behavioral Ecology and Sociobiology	B	2	0340-5443	Germany
Behavioral Medicine	B	1	0896-4289	USA
Behavioral Sciences & the Law	B	1	0735-3936	United Kingdom
Behavioral Sleep Medicine	B	1	1540-2002	USA
Brain & Development	B	1	0387-7604	The Netherlands, Japan
Brain and Language	B	2	0093-	USA

			934X	
Brain Behavior and Evolution	B	1	0006-8977	Switzerland
Brain Research	B	1	0006-8993	The Netherlands
Brain, Behavior and Evolution	B	1	0006-8977	Duplicate
British Educational Research Journal	B	2	0141-1926	United Kingdom
British Journal of Criminology	B	2	0007-0955	United Kingdom
British Journal of Developmental Psychology	B	1	0261-510X	United Kingdom
British Journal of Educational Psychology	B	1	0007-0998	United Kingdom
British Journal of Health Psychology	B	1	1359-107X	United Kingdom
British Journal of Management	B	1	1045-3172	United Kingdom
British Journal of Psychology	B	2	0007-1269	United Kingdom
British Journal of Social Psychology (The)	B	2	0144-6665	United Kingdom
Career Development Quarterly (The)	B	1	0889-4019	USA
Chemical Senses	B	1	0379-864X	United Kingdom
Child: Care, Health and Development	B	1	0305-1862	USA
Child Maltreatment: Journal of the American Professional Society on the Abuse of Children	B	1	1077-5595	USA
Child Psychiatry & Human Development	B	1	0009-398X	United Kingdom, Switzerland
Chronobiology International	B	1	0742-0528	United Kingdom, USA
Clinical Child and Family Psychology Review	B	1	1096-4037	USA
Clinical Neuropsychologist	B	1	0920-1637	United Kingdom
Clinical Psychology and Psychotherapy	B	1	1063-3995	United Kingdom
Cognition and Instruction	B	1	0737-0008	USA
Cognitive and Behavioral Neurology	B	Not in base	1543-3633	USA
Cognitive Therapy and Research	B	2	0147-5916	USA
Computers in Human Behavior	B	1	0747-5632	United Kingdom
Creativity Research Journal	B	1	1040-0419	USA

Criminal Justice and Behavior	B	1	0093-8548	USA
Culture & Psychology	B	1	1354-067X	United Kingdom
Current Opinion in Neurobiology	B	2	0959-4388	United Kingdom
Cyberpsychology & Behavior	B	1	1094-9313	USA
Death Studies	B	1	0748-1187	USA
Decision Sciences	B	2	0011-7315	USA
Decision Support Systems	B	2	0167-9236	The Netherlands
Developmental Medicine and Child Neurology	B	1	0067-7183	United Kingdom
Developmental Neuropsychology	B	1	8756-5641	USA
Developmental Neuroscience	B	1	0378-5866	Switzerland
Deviant Behavior	B	1	0163-9625	USA
Diagnostica	B	1	0012-1924	Germany
Discourse & Society	B	2	0957-9265	United Kingdom
Discourse Processes	B	1	0163-853X	USA
Dyslexia: An International Journal of Research and Practice	B	2	1076-9242	United Kingdom
Early Childhood Research Quarterly	B	1	0885-2006	United Kingdom
Early Human Development	B	1	0378-3782	Ireland
Education & Training in Mental Retardation & Developmental Disabilities	B	Not in base	1547-0350	USA
Educational and Psychological Measurement	B	1	0013-1644	USA
Environment and Behavior	B	1	0013-9165	USA
Epilepsy & Behavior	B	1	1525-5050	USA
Ergonomics	B	1	0014-0139	United Kingdom
Ethology	B	1	0179-1613	Germany, Switzerland
Ethos: Journal of the Society for Psychological Anthropology	B	2	0091-2131	USA
European Addiction Research	B	1	1022-6877	Switzerland
European Journal of Cognitive Psychology	B	1	0954-1446	United Kingdom

European Journal of Neurology	B	2	1351-5101	United Kingdom, Austria
European Journal of Psychological Assessment	B	1	1015-5759	USA
European Journal of Public Health	B	1	1210-7778	(Czech) / United Kingdom
European Psychologist	B	1	1016-9040	USA
Evaluation and Program Planning	B	1	0149-7189	United Kingdom
Evaluation and the Health Professions	B	1	0163-2787	USA
Evaluation Review	B	1	0193-841X	USA
Experimental Aging Research	B	1	0361-073X	USA
Experimental and Clinical Psychopharmacology	B	1	1064-1297	USA
Experimental Brain Research	B	1	0014-4819	Germany
Family & Community Health	B	1	0160-6379	USA
Family Practice	B	1	0263-2136	United Kingdom
Family Process	B	1	0014-7370	USA
Family Relations	B	1	0197-6664	USA
Feminism and Psychology	B	1	0959-3535	United Kingdom
Forum der Psychoanalyse	B	1	0178-7667	Germany
Gerontology	B	1	0304-324X	Switzerland
Gifted Child Quarterly	B	1	0016-9862	USA
Group & Organization Management	B	1	1059-6011	USA
Group Dynamics: Theory, Research, and Practice	B	1	1089-2699	USA
Group Processes & Intergroup Relations	B	1	1368-4302	United Kingdom
Gruppenpsychotherapie und Gruppendynamik	B	1	0017-4947	Germany
Health Education & Behavior	B	1	1090-1981	USA
Hispanic Journal of Behavioral Sciences	B	1	0739-9863	USA
Human Development	B	1	0018-716X	Switzerland
Human Factors	B	1	0018-7208	USA
Human Movement Science	B	1	0167-9457	The Netherlands
Human Performance	B	1	0895-	USA

			9285	
Human Psychopharmacology: Clinical and Experimental	B	1	0885-6222	United Kingdom
Human Relations	B	2	0018-7267	United Kingdom
Humor: An International Journal of Humor Research	B	1	0933-1719	Germany
Infant and Child Development	B	1	1522-7227	United Kingdom
Infant Behavior and Development	B	1	0163-6383	United Kingdom
Infant Mental Health Journal	B	1	0163-9641	USA
Infants and Young Children	B	1	0896-3746	USA
Instructional Science	B	1	0020-4277	The Netherlands
International Archive of Occupational & Environmental Health	B	1	1077-3525	USA
International Journal of Aging & Human Development	B	1	0091-4150	USA
International Journal of Aviation Psychology	B	1	1050-8414	USA
International Journal of Behavioral Development	B	1	0165-0254	United Kingdom, USA
International Journal of Developmental Neuroscience	B	1	0736-5748	United Kingdom
International Journal of Group Psychotherapy	B	1	0020-7284	USA
International Journal of Health Planning and Management	B	1	0749-6753	United Kingdom
International Journal of Human Resource Management	B	1	0958-5192	United Kingdom
International Journal of Management Reviews	B	1	1468-2370	United Kingdom
International Journal of Neuropsychopharmacology	B	1	1461-1457	United Kingdom
International Journal of Occupational and Environmental Health	B	1	1077-3525	USA
International Journal of Psychology	B	1	0020-7594	United Kingdom
International Journal of Psychophysiology	B	1	0167-8760	The Netherlands
International Journal of Selection and Assessment	B	1	0965-075X	United Kingdom
International Journal of Sport Psychology	B	1	0047-0767	Italy

International Psychogeriatrics	B	1	1041-6102	United Kingdom, USA
Journal of Adolescent Research	B	1	0743-5584	USA
Journal of Adult Development	B	1	1068-0667	USA
Journal of Aging and Health	B	1	0898-2643	USA
Journal of Aging Studies	B	1	0890-4065	United Kingdom
Journal of Analytical Psychology	B	1	0021-8774	United Kingdom
Journal of Applied Developmental Psychology	B	1	0193-3973	United Kingdom
Journal of Applied Gerontology	B	1	0733-4648	USA
Journal of Applied Research in Intellectual Disabilities	B	2	1360-2322	United Kingdom
Journal of Applied Social Psychology	B	1	0021-9029	USA
Journal of Applied Sport Psychology	B	1	1041-3200	USA, Canada
Journal of Behavior Therapy and Experimental Psychiatry	B	1	0005-7916	United Kingdom
Journal of Behavioral Decision Making	B	2	0894-3257	United Kingdom
Journal of Career Development	B	1	0894-8453	USA
Journal of Child Language	B	2	0305-0009	United Kingdom
Journal of Classification	B	1	0176-4268	USA, Canada
Journal of Clinical and Experimental Neuropsychology	B	1	1380-3395	United Kingdom
Journal of Clinical Psychology	B	1	0021-9762	USA
Journal of Clinical Psychology in Medical Settings	B	1	1068-9583	USA
Journal of College Student Development	B	1	0897-5264	USA
Journal of Community and Applied Social Psychology	B	1	1052-9284	United Kingdom
Journal of Community Psychology	B	1	0090-4392	USA
Journal of Consciousness Studies	B	1	1355-8250	United Kingdom
Journal of Consumer Psychology	B	1	1057-7408	USA
Journal of Consumer Research	B	2	0093-5301	USA

Journal of Counseling and Development	B	1	0748-9633	USA
Journal of Creative Behavior	B	1	0022-0175	USA
Journal of Early Adolescence	B	1	0272-4316	USA
Journal of Early Intervention	B	1	1053-8151	USA
Journal of Economic Psychology	B	1	0167-4870	The Netherlands
Journal of ECT (The)	B	1	1095-0680	USA
Journal of Educational and Behavioral Statistics	B	1	1076-9986	USA
Journal of Educational Measurement	B	1	0022-0655	USA
Journal of Emotional and Behavioral Disorders	B	1	1063-4266	USA
Journal of Employment Counseling	B	1	0022-0787	USA
Journal of Environmental Psychology	B	1	0272-4944	United Kingdom
Journal of Experimental Psychology: Applied	B	1	1076-898X	USA
Journal of Family Issues	B	1	0192-513X	USA
Journal of Family Therapy	B	1	0163-4445	United Kingdom
Journal of Family Violence	B	1	0885-7482	USA
Journal of General Psychology	B	1	0022-1309	USA
Journal of Genetic Psychology	B	1	0022-1325	USA
Journal of Health Psychology	B	1	1359-1053	United Kingdom
Journal of Intellectual Disability Research	B	1	0964-2633	United Kingdom
Journal of Interpersonal Violence	B	1	0886-2605	USA
Journal of Language and Social Psychology	B	1	0261-927X	USA, United Kingdom
Journal of Learning Disabilities	B	2	0022-2194	USA
Journal of Literacy Research	B	1	1086-296X	USA
Journal of Marital and Family Therapy	B	1	0194-472X	USA
Journal of Mathematical Psychology	B	1	0022-2496	USA
Journal of Mind and Behavior	B	1	0271-0137	USA
Journal of Motor Behavior	B	1	0022-2895	USA

Journal of Multicultural Counseling and Development	B	1	0883-8534	USA
Journal of Neurolinguistics	B	2	0911-6044	United Kingdom
Journal of Neurology, Neurosurgery & Psychiatry	B	2	0022-3050	United Kingdom
Journal of Nonverbal Behavior	B	1	0191-5886	USA
Journal of Occupational Health Psychology	B	2	1076-8998	USA
Journal of Organizational Behavior Management	B	2	0160-8061	USA
Journal of Positive Behavior Interventions	B	1	1098-3007	USA
Journal of Psychoactive Drugs	B	1	0279-1072	USA
Journal of Psychoeducational Assessment	B	1	0734-2829	USA
Journal of Psychology: Interdisciplinary and Applied	B	1	0022-3980	USA
Journal of Psychopathology and Behavioral Assessment	B	1	0882-2689	USA
Journal of Psychophysiology	B	1	0269-8803	USA
Journal of Psychosomatic Obstetrics and Gynaecology	B	1	0167-482X	United Kingdom
Journal of Reproductive and Infant Psychology	B	1	0264-6838	United Kingdom
Journal of School Psychology	B	1	0022-4405	United Kingdom
Journal of Sex & Marital Therapy	B	1	0092-623X	USA
Journal of Social and Clinical Psychology	B	1	0736-7236	USA
Journal of Social and Personal Relationships	B	1	0265-4075	United Kingdom
Journal of Social Issues	B	1	0022-4537	USA
Journal of Social Psychology	B	1	0022-4545	USA
Journal of Sociolinguistics	B	1	1360-6441	United Kingdom
Journal of Speech, Language, and Hearing Research	B	1	1092-4388	USA
Journal of the Experimental Analysis Of Behavior	B	1	0022-5002	USA
Journal of the International Neuropsychological Society	B	1	1355-6177	United Kingdom, USA

Journal of Women's Health (GEN B)	B	1	1540-9996	USA
Journal of Youth and Adolescence	B	1	0047-2891	USA
Kindheit und Entwicklung	B	1	0942-5403	Germany
Laterality: Asymmetries of Body, Brain and Cognition	B	1	1357-650X	United Kingdom
Learning & Behavior	B	1	1543-4494	USA
Learning Disability Quarterly	B	2	0731-9487	USA
Measurement and Evaluation in Counseling and Development	B	1	0748-1756	USA
Media Psychology	B	2	1521-3269	USA
Merrill-Palmer Quarterly	B	1	0272-930X	USA
Military Psychology	B	1	0899-5605	USA
Mind and Language	B	1	0268-1064	United Kingdom
Motivation and Emotion	B	1	0146-7239	USA
Motor Control	B	1	1087-1640	USA
Music Perception	B	1	0730-7829	USA
Neural Computation	B	2	0899-7667	USA
Neural Networks	B	2	0893-6080	United Kingdom, USA
Neurocase	B	1	1355-4794	United Kingdom
Neurology	B	2	0028-3878	USA
Neuropsychobiology	B	1	0302-282X	Switzerland
Neuropsychological Rehabilitation	B	1	0960-2011	United Kingdom
Neuropsychology Review	B	2	1040-7308	USA
Neuroreport: For Rapid Communication of Neuroscience Research	B	1	0959-4965	USA
Neuroscience Research	B	1	0168-0102	Ireland, Japan
Nicotine & Tobacco Research	B	1	1462-2203	United Kingdom
Organizational Research Methods	B	1	1094-4281	USA
Perception	B	1	0301-0066	United Kingdom

Personal Relationships	B	1	1350-4126	USA, United Kingdom
Pharmacology Biochemistry and Behavior	B	1	0091-3057	USA
Physiology and Behavior	B	2	0031-9384	USA
Political Psychology	B	1	0162-895X	USA
Psychoanalytic Dialogues	B	1	1048-1885	USA
Psychoanalytic Inquiry	B	1	0735-1690	USA
Psychoanalytic Psychology	B	1	0736-9735	USA
Psychoanalytic Quarterly	B	2	0033-2828	USA
Psychological Records	B	1	0033-2933	USA
Psychological Research / Psychologische Forschung	B	1	0340-0727	Germany
Psychologische Rundschau	B	1	0033-3042	Germany
Psychology & Marketing	B	1	0742-6046	USA
Psychology and Psychotherapy: Theory, Research and Practice	B	1	1476-0835	United Kingdom
Psychology in the Schools	B	1	0033-3085	USA
Psychology of Sport and Exercise	B	1	1469-0292	The Netherlands
Psychology of Women Quarterly	B	1	0361-6843	USA
Psychology, Crime & Law	B	1	1068-316X	United Kingdom
Psychometrika	B	1	0033-3123	USA, Canada
Psychosomatics: Journal of Consultation Liaison Psychiatry	B	1	0033-3182	USA
Psychotherapeut	B	1	0935-6185	Germany
Psychotherapie, Psychosomatik Medizinische Psychologie	B	1	0937-2032	Germany
Psychotherapy Research	B	2	1050-3307	United Kingdom, USA
Psychotherapy: Theory, Research, Practice, Training	B	1	0033-3204	USA
Public Opinion Quarterly	B	2	0033-362X	United Kingdom, USA

Quarterly Journal of Experimental Psychology (The)	B	1	1747-0218	United Kingdom
Reading Research Quarterly	B	1	0034-0553	USA
Rehabilitation Psychology	B	1	0090-5550	USA
Research & Practice for Persons with Severe Disabilities	B	not in base	1540-7969	USA
Research on Aging	B	1	0164-0275	USA
Research on Language and Social Interaction	B	1	0835-1813	USA
Research Quarterly for Exercise and Sport	B	1	0270-1367	USA
Review of Educational Research	B	1	0034-6543	USA
Scandinavian Journal of Psychology	B	1	0036-5564	United Kingdom
Scandinavian Journal of Work, Environment & Health	B	1	0355-3140	Finland, Denmark, Norway
School Psychology Quarterly	B	1	1045-3830	USA
School Psychology Review	B	1	0279-6015	USA
Science Education	B	2	0036-8326	USA
Scientific Studies of Reading	B	1	1088-8438	USA
Sex Roles	B	1	0360-0025	USA
Sexual Abuse: Journal of Research & Treatment	B	1	1079-0632	USA
Small Group Research	B	1	1046-4964	USA
Social Behavior and Personality	B	1	0301-2212	New Zealand
Social Forces	B	2	0037-7732	USA
Sociology of Education	B	2	0038-0407	USA
Spatial Vision	B	1	0169-1015	The Netherlands
Sport Psychologist (The)	B	1	0888-4781	USA
Stress: The International Journal on the Biology of Stress	B	2	1025-3890	United Kingdom
Structural Equation Modeling: A Multidisciplinary Journal	B	1	1070-5511	USA
Substance Use & Misuse	B	1	1082-6084	USA
Teaching of Psychology	B	1	0098-	USA

			6283	
Theory & Psychology	B	1	0959-3543	United Kingdom
Thinking & Reasoning	B	1	1354-6783	United Kingdom
Transportation Research Part F: Traffic Psychology and Behaviour	B	2	1369-8478	United Kingdom
Twin Research and Human Genetics	B	1	1832-4274	Australia
Vision Research	B	1	0042-6989	United Kingdom, USA
Visual Cognition	B	1	1350-6285	United Kingdom
Visual Neuroscience	B	1	0952-5238	United Kingdom
Work and Occupations	B	2	0730-8884	USA
Work, Employment and Society	B	2	0950-0170	United Kingdom
Zeitschrift für Arbeits- und Organisationpsychologie	B	1	0932-4089	Germany
Zeitschrift für Klinische Psychologie und Psychotherapie	B	1	1616-3443	Germany
Zeitschrift für Pädagogische Psychologie / German Journal of Educational Psychology	B	1	1010-0652	Switzerland
Zeitschrift für Psychologie / Journal of Psychology	B	1	0044-3409	Germany
Zeitschrift für Psychosomatische Medizin und Psychotherapie	B	1	1438-3608	Germany
Annales Medico-Psychologiques	C	1	0003-4487	France
Annee Psychologique	C	1	0003-5033	France
Ansiedad y estrés	C	not in base	1134-7937	Spain
Applied & Preventive Psychology	C	2	0962-1849	United Kingdom
Applied Neuropsychology	C	1	0908-4282	USA
Assessment & Evaluation in Higher Education	C	1	0260-2938	United Kingdom
Behavioral Interventions	C	1	1072-0847	United Kingdom
Behaviour	C	1	0005-7959	The Netherlands
Behaviour & Information Technology	C	1	0144-929X	United Kingdom
Behavioural and Cognitive Psychotherapy	C	1	1352-4658	United Kingdom

Behavioural Processes	C	1	0376-6357	The Netherlands
Brain Injury	C	1	0269-9052	United Kingdom
British Journal of Guidance and Counseling	C	1	0306-9885	United Kingdom
British Journal of Learning Disabilities	C	1	1354-4187	United Kingdom
British Journal of Mathematical & Statistical Psychology	C	1	0007-1102	United Kingdom
Cahiers de Psychologie Cognitive / Current Psychology of Cognition	C	1	0249-9185	France
Career Development International	C	no level	1362-0436	United Kingdom
Ceskoslovenska Psychologie	C	1	0009-062X	Czech Republic
Child Care in Practice	C	1	1357-5279	United Kingdom, Ireland
Child Neuropsychology	C	1	1744-4136	United Kingdom
Clinical Child Psychology & Psychiatry	C	1	1359-1045	United Kingdom
Criminal Behaviour & Mental Health	C	1	0957-9664	United Kingdom
Culture, Health & Sexuality	C	1	1369-1058	United Kingdom
Dementia: The International Journal of Social Research and Practice	C	1	1471-3012	United Kingdom
Early Child Development and Care	C	1	0300-4430	United Kingdom
Eating & Weight Disorders	C	1	1124-4909	Italy
Educational Technology and Society	C	1	1436-4522	New Zealand
Employee Relations	C	1	0142-5455	United Kingdom
Enfance	C	1	0013-7545	France
Epidemiologia e Psichiatria Sociale	C	1	1121-189X	Italy
European Eating Disorders Review	C	1	1072-4133	United Kingdom
European Journal of Developmental Psychology	C	1	1740-5629	United Kingdom
European Journal of Psychology of Education	C	1	0256-2928	Portugal, France
European Journal of Work and Organizational Psychology	C	1	1359-432X	United Kingdom
Gedrag en Organisatie	C	1	0921-5077	Netherlands

Gender and Education	C	2	0954-0253	United Kingdom
Gender, Work & Organization	C	2	0968-6673	United Kingdom
Group Decision and Negotiation	C	1	0926-2644	The Netherlands, USA
Gruppendynamik und Organisationsberatung	C	1	0046-6514	Germany
High Ability Studies	C	1	1359-8139	United Kingdom
Human Resource Development International	C	1	1367-8868	United Kingdom
Human Resource Development Quarterly	C	1	1044-8004	USA
Human Resource Management Journal	C	1	0954-5395	United Kingdom
Infancia y aprendizaje	C	1	0210-3702	Spain
International Forum of Psychoanalysis	C	1	0803-706X	United Kingdom, Norway
International Journal of Neuroscience	C	1	0020-7454	United Kingdom
International Journal of Offender Therapy and Comparative Criminology	C	1	0306-624X	USA
International Review of Victimology	C	1	0269-7580	United Kingdom
Irish Journal of Psychological Medicine	C	1	0790-9667	Ireland
Journal for the Theory of Social Behaviour	C	1	0021-8308	United Kingdom
Journal of Behavioral Education	C	1	1053-0819	USA
Journal of Computer Assisted Learning	C	2	0266-4909	United Kingdom
Journal of Consumer Behaviour	C	1	1472-0817	United Kingdom
Journal of Economic Behavior & Organization	C	2	0167-2681	The Netherlands
Journal of Forensic Psychiatry & Psychology	C	1	1478-9957	United Kingdom, USA, The Netherlands
Journal of Gender Studies	C	1	0958-9236	United Kingdom
Journal of Happiness Studies	C	1	1389-4978	The Netherlands
Journal of Research in Reading	C	2	0141-0423	United Kingdom
Journal of Risk Research	C	1	1366-9877	United Kingdom

Kölner Zeitschrift für Soziologie und Sozialpsychologie	C	1	0023-2653	Germany
Language & Communication	C	2	0271-5309	United Kingdom
Language and Education	C	1	0950-0782	United Kingdom
Language and Speech	C	2	0023-8309	United Kingdom
Le Travail Humain	C	1	0041-1868	France
Leadership & Organization Development Journal	C	1	0143-7739	United Kingdom
Legal & Criminological Psychology	C	1	1355-3259	United Kingdom
L'Encéphale	C	1	0013-7006	France
Methodology European Journal of Research Methods for the Behavioral and Social Sciences	C	not in base	1614-1881	USA
New Ideas in Psychology	C	1	0732-118X	United Kingdom
Nordic Psychology	C	1	1901-2276	Denmark, Iceland, Finland, Norway, Sweden
Personnel Review	C	1	0048-3486	United Kingdom
Philosophical Psychology	C	2	0951-5089	United Kingdom
Pratiques Psychologiques	C	not in base	1269-1763	France
Praxis der Kinderpsychologie und Kinderpsychiatrie	C	1	0032-7034	Germany
Psicológica	C	no level	0211-2159	USA
Professional Psychology: Research and Practice	C	1	0735-7028	Spain
Psicothema	C	1	0214-9915	Spain
Psikhologicheskii Zhurnal	C	1	0205-9592	Russian Federation
Psyche-Zeitschrift für Psychoanalyse und ihre Anwendungen	C	1	0033-2623	Germany
Psychologica Belgica	C	1	0033-2879	Belgium
Psychologie & Gezondheid	C	not in base	1873-1791	Netherlands
Psychologie in Erziehung und Unterricht	C	1	0342-183X	Germany
Psychologist (The)	C	1	0952-8229	United Kingdom

Qualitative Research in Psychology	C	1	1478-0887	United Kingdom
Quality & Quantity: International Journal of Methodology	C	1	0033-5177	Netherlands
Reading and Writing	C	2	0922-4777	Netherlands
Reflective Practice	C	1	1462-3943	United Kingdom
Revue de Neuropsychologie	C	1	1155-4452	France
Revue Neurologique	C	1	0035-3787	France
School Psychology International	C	1	0143-0343	United Kingdom
Social Indicators Research	C	1	0303-8300	Netherlands
Spanish Journal of Psychology (The)	C	not in base	1138-7416	Spain
Stress and Health: Journal of the International Society for the Investigation of Stress	C	1	1532-3005	United Kingdom
Swiss Journal of Psychology - Zeitschrift für Psychologie - Revue Suisse de Psychologie	C	1	1421-0185	Switzerland
Teaching and Teacher Education	C	2	0742-051X	United Kingdom
Teaching in Higher Education	C	2	1356-2517	United Kingdom
Theory and Decision	C	1	0040-5833	USA
Travail Humain	C	1	0041-1868	France
Türk Psikoloji Dergisi / Turkish Journal of Psychology	C	1	1300-4433	Turkey
Verhaltenstherapie	C	1	1016-6262	Switzerland
Verhaltenstherapie & Verhaltensmedizin	C	not in base	1013-1973	Germany
Voprosy Psikhologii	C	1	0042-8841	Russian Federation
Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie	C	1	0049-8637	Germany
Zeitschrift für Evaluation	C	not in base	1619-5515	Germany
Zeitschrift für Gesundheitspsychologie	C	not in base	0943-8149	Germany
Zeitschrift für Kinder- und Jugendpsychiatrie und Psychotherapie	C	not in base	0301-6811	Switzerland

Zeitschrift für Klinische Psychologie, Psychiatrie und Psychotherapie	C	1	1431-8172	Switzerland, Germany
Zeitschrift für Medizinische Psychologie	C	1	0940-5569	Germany
Zeitschrift für Personalpsychologie	C	not in base	1617-6391	Germany
Zeitschrift für Sozialpsychologie	C	1	0044-3514	Germany