

# Communication Research. Bibliometric analysis of the most-cited ISI-indexed Journals

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**Abstract:** This article examines some of the most common methodological problems in the evaluation of academic journals in the field of communication, based on the content analysis of the ten journals with the highest impact factors in the Social Sciences Citation Index. The analysis focuses on establishing the academic and research origins and links of the authors of the articles published by these scientific publications, as well as the most predominant subject matters, genres and methodologies among the articles of these publications. This research aims to achieve two objectives: On the one hand, to analyse the role of the evaluation of communication journals in the assessment of research, which will allow us to show the difficulties of applying the bibliometric methods used by Thomson Scientific to determine the impact of journals and, on the other hand, to establish a development framework for those Spanish communication journals that meet some of the requirements of the Social Sciences Citation Index but are not yet indexed in it, either because their impact factor is still low or because of their lack of international dissemination. This research has been financed by the University of Malaga's Research Institute for Public Relations.

**Keywords:** Communication; indexing; scientific databases; evaluation; research.

**Summary:** 1. Introduction. 1.1. Impact factor. 2. Methods. 3. Results. 3.1. Formal aspects. 3.2. Authorship data. 3.3. Methodological aspects. 4. Discussion. 5. References.

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## 1. Introduction

The first scientific journals appeared in the second half of the 17<sup>th</sup> century and were preceded by the letters exchanged by researchers to explain their scientific

experiments. Gradually, these letters started including notes and comments about the scientific texts which configured a genuine epistolary correspondence between researchers. However, they were eminently dialogic texts in which the knowledge was produced between two authors. The expansion of the printing press modified the system of scientific communication and led to the emergence, along with scientific books, of the first journals, which were not yet fully scientific but inaugurated a new system of scientific communication. This system imitated the role of the newspapers which summarised and narrated important events. The first scientific journals were *Le Journal des sçavans* (5 January, 1665, France), *Philosophical Transactions of the Royal Society* in London (1665, England), *Acta Eruditorum* (1682, Germany).

The Journal of Citation Reports (JCR) was devised by Eugene Garfield, who in 1955 proposed the idea of creating an impact factor as a means to evaluate the importance of scientific journals. Five years later he started the project with the promotion of a specific index (the *Genetic Citation Index*), which was concretised with the establishment of the *Science Citation Index* (SCI) in 1961 (Garfield, 2005). The JCR was created by the SCI in 1975 as an annual supplement to the impact factor and the citations received by a journal.

The JCR provides a list of the citations received by the journals included in the SCI. Basically, what the JCR offers is a series of indicators about the citations received by a journal, which allows establishing hierarchies and comparisons within a scientific field of knowledge. It is a mechanism to establish which journals are consulted and cited by researchers, which journals have the greatest impact in a particular scientific community, and which of the current research works are cited the most.

While the impact factor is the best-known index of the JCR, there are other bibliometric studies:

1. **Journal Rankings:** their function is to classify journals according to certain parameters such as name, total number of received citations, impact factor, immediacy index, source items, and, finally, the total number of citations received in the previous two years. A journal's impact factor in a given year, 2008 for example, is obtained by dividing the total number of citations that the articles it published in the previous two years (2007 and 2006) received in that year (2008) between the total number of citable articles published in the two previous years (2007 and 2006). Garfield (1998) himself pointed out that when a researcher cites a research paper it is because it has impacted him or her and the more the researcher cites the paper the more the impact it has had on him or her.

2. Journal Title Abbreviations: lists the names of the journals in an abbreviated manner. It is not an absolutely relevant aspect for the researcher and is a system used for spatial economy in their reports.
3. Journal Half-Life Listing: measures a journal's degree of topicality through the analysis of the permanence in time of the citations made by researchers.
4. Source Data Listing: lists the articles published by a journal and the number of references contained in these articles.
5. Citing Journal Listing: provides information about what journals are being cited by others. In other words, what journals are cited the most by the authors who write in a particular journal. Consequently, this index also allows us to know the number of self-citations in a journal. This is a very important aspect since it allows to contextualise the impact factor as an excessively quantitative criterion and to avoid mechanisms used to increase the impact factor by increasing the percentage of self-citation.
6. Subject Category Listing: classifies journals into fields of knowledge. There may be journals that belong more to one category than another. These listings tend to be circulated among researchers who want to know the variety of journals that exist in their discipline.

The ISI selects a large number of journals to be part of their databases, which are:

1. The Arts & Humanities Citation Index (A&HCI), which includes journals that are part of the field of the arts and humanities and are structured in scientific disciplines
2. The Science Citation Index (SCI), which integrates the formal sciences, both basic and applied, such as mathematics, chemistry, medicine, microbiology, physical, among others.
3. The Social Sciences Citation Index (SSCI), which includes the journals from the field of social sciences, which covers about 50 disciplines, including communication.

The ISI also produces two annual complementary publications: the two editions of the *Journal Citation Reports* (Social Sciences and Sciences), which contain the bibliometric indexes.

### 1.1. Impact factor

The main instrument to evaluate journals and their impact among researchers is the impact factor. According to Garfield (2003: 363) the impact factor and other bibliometric indexes are currently used in the majority of countries to assess scientific research: research projects, journals, articles, researchers and institutions.

The first attempts to study the impact of the journals were made in the 1920s motivated by the importance researchers granted to this type of publications. The proposals aimed to measure certain aspects, such as the relevance and influence of scientific texts among researchers and their contribution to the improvement of knowledge in a given discipline. In this regard, Gross and Gross (1927) highlighted the need to measure the influence of the scientific papers based on the citations they received from other authors. This included an initial evaluation of the articles' scientific quality that was conducted by peer researchers, who determined whether the research articles were relevant for the improvement of knowledge in a given discipline.

However, it was the armed conflicts what greatly conditioned the proliferation of studies in this matter. That is why the bibliometric studies were not carried out in a systematic way until the mid-1950s. This discipline is based on researchers' need to acknowledge the work of their peers, and this is why the essential aspect of bibliometrics is citation, understood as the intellectual acknowledgement of a published research work. This is a key element to understand the current research landscape because it is important not only to carry out research but to make it available to the scientific community, i.e. it must be published. This has led to the establishment of dissemination mechanisms for research through books and journals. Research is essentially published in journals and that is what motivates the creation of lists about the most relevant publications in the different fields of knowledge. Therefore, the first aspect that must be taken into account in research is the databases that are available to researchers. There is a large number of databases and therefore it is important to rank them because there are numerous factors that determine their intellectual position among researchers. For example:

- The scientific policy used by different countries to privilege some indexes over others
- The editorial policy followed in the large journal databases
- The dominance of databases from certain geographical areas over others
- The scarce presence of certain languages in some databases
- The scarce activity and initiative of journals to be included in the databases

As the JCR indicates, its role is to provide quantitative tools for ranking, evaluating, categorising and comparing journals. One of these tools is the impact factor, which is a measure of the frequency with which the “average article” in a journal has been cited in a particular year or period. The annual JCR impact factor is a ratio between citations and recent citable published articles. Thus, a journal’s impact factor is calculated by dividing the number of current year citations to the number of articles published by that journal during the previous two years. Journal impact factors are calculated on a yearly basis. For instance, to calculate a journal’s impact factor in 2008, we have to count all the citations received that year by all the texts it published in the previous two years (2007 and 2006). The total number of citations is the numerator. Then we have to count all the “citable articles” published in the journal in those previous years (2007 and 2006) to obtain the denominator. The impact factor is obtained by dividing the numerator by the denominator.

$$\text{Impact factor (2008)} = \frac{\text{Number of citations received in 2008 by articles published in 2007 and 2006}}{\text{Number of citable articles published in 2007 and 2006}}$$

An important aspect is that the numerator quantifies all citations received by the documents published in the journals (articles, letters to the director, reviews, and editorials) and the denominator only includes articles and reviews. Therefore, a journal that is cited by its letters to the editor, editorials or reviews will increase its impact factor in greater a proportion and this favours the major journals. Moreover, the calculation of a journal’s impact factor takes into account not only the citations made by other journals but also the citations appearing in the journal under study (self-citations). The self-citations made by researchers to their own articles are also taken into consideration. In turn the journals’ editors undertake certain actions to increase the impact factor. The most common actions are:

- Publication of reviews
- Publication of controversial articles or scientific debates that attract researchers
- Publication of short notes or short research works that are not counted by the ISI in the denominator
- Reviewers recommend authors the citation of personal publications or journals when reviewing their articles
- Editors recommend authors to cite articles published by their own journals in other international publications

There is a widespread standard format to structure scientific articles in international journals. Most journals request authors to structure their articles based on the IMRAD

research paper format (Introduction, Methods, Results, and Discussion), which was established by the International Committee of Medical Journal Editors (ICMJE). In Spain journals follow their own formats but there is a trend towards the standardisation of the article's structure. In addition to the quality of the articles, one of the requirements that have to be met by researchers trying to get published by JCR-listed journals is the compliance with the IMRAD structure.

The most relevant and known aspects to researchers are the journal rankings and the listings by categories. The first source is used to know the impact factor of journals. In this regard, it is important to note that it is erroneous to compare the impact factors of journals listed in different categories. The most appropriate action is to compare impact factors within a same category. That is why the official accreditation and evaluation bodies in Spain, such as ANECA (National Agency for Quality Assessment and Accreditation) and CNEAI (National Commission for the Assessment of the Research Activity), have introduced the quartile system, which consist in dividing journals into four categories. The system is very simple: the total of number of journals is divided and distributed in four parts. For example in a category with 100 journals, the first quartile would include the journals whose impact factor range from the highest to the 24<sup>th</sup> highest, the second quartile would include the journals whose impact factor ranged from the 25<sup>th</sup> to the 49<sup>th</sup>, and so on. The quartile system seems more relevant than the impact factor because it allows establishing the individual position of the journal without having to consult the impact factor of the rest of the disciplines. Bibliometrics studies in Spain influence this aspect (Castillo and Carretón, 2010; Martínez and Saperas, 2011 and López-Ornelas, 2009).

However, the quantitative criterion should not be maximised to assess the influence or impact of scientific articles since the ISI itself advises the users of the JCR that the quantitative data from citations should not replace but complement any other traditional and subjective qualitative information such as “peer review” or specialists' opinions. Unfortunately, the scientific policy and the assessment of researchers' work in Spain focus almost exclusively on quantitative indexes to evaluate scientific quality. The criteria used by ANECA and the regional autonomous evaluation agencies are strictly quantitative due to economic reasons, which reduces the quality of science to mere numbers. This means letting others bodies that evaluate the scientific activity (the JCR is one of them but not the only one) to establish the evaluation criteria. The evaluations of these bodies are based on the high or low number of articles in their publications despite the field of evaluation is very complex and is overlapped by the national policy of the scientific hegemony (e.g. underrepresentation of Spanish journals in the ISI), the editors' policies (article approval criteria, distribution of articles to reviewers, etc.), and the networks of researchers.

In this regard, the criteria considered by the ISI to include a journal are not excessively complex or complicated. The more standardised requirements are the permanent periodicity to prevent sporadic publishing, the compliance with the international norms for journals with ISSN, such as the use of a title reflecting the journal's thematic focus, provision of information about all authors, the inclusion of abstract and keywords in the original language and in English, the use of a peer review system, and relevance in within its scientific field, which is obtained through citations made by researchers from that scientific field. These minimum criteria are easily met by journals. In fact, the entry requirements established by *Latindex* are more (33) and more exhaustive.

For this study, the most common bibliometric indicators have been used as research tools:

a) *Production indicators*. Establish the number of publications. They measure the number of journals and the scientific production (of authors, countries, and institutions). They can measure the production index (number of authors responsible for 50% of the work) and the transience index (number of works that have a single author). For this indicator, a sample of the journals listed in the Communication section of the ISI was selected. The sample consists of 10 journals with the highest impact factor in 2008. As the selection criterion we applied the Bradford's Law.

b) *Circulation indicators*. Their function is to measure the presence of scientific works in bibliographic databases. The main indicators are: the number of circulating works (number of indexed works), the circulation index (ratio between the number of circulating works and the totality of works published by a journal in a period of time), and the circulating productivity index (logarithm of the number of circulating works). For this research we analysed all the articles published by the ten selected journals in 2008.

c) *Visibility and impact indicators*. They establish the number of citations received by a scientific work over a period of time or from a specific journal. This analysis is based on the impact factor calculated by the ISI, which was used as the criterion for the selection of journals.

d) *Collaboration indicators*. They try to analyse the degree of collaboration between researchers and focus on authorship. To this end we examined the number, gender and academic and professional origin of researchers. Fernández Quijada (2008: 3), quoting Masip, points out that 66.89% of the

authors who published between 1994 and 2004 in the 35 journals included in the Communication section of the JCR were American.

e) *Language used in the selected journals.* The use of the Spanish language has been very low in ISI-indexed journals, which has led some researchers, since the 1980s, to question its status as a valid system for the evaluation of the scientific activity. According to a study by Rudolfodegil (1996: 272), in 1994 the SCI identified 963 works in Spanish coming from a total of 12 journals, while the SSCI identified 279 works in 23 journals. Other languages also face difficulties against the hegemony of English. Van Leeuwen et al. (2001: 345) point out that a significant part of journals contain texts in their own language, especially in publications from Germany, France and Switzerland. Garfield has pointed out that the scientific language of our time is English: “Publishing in English is an indicator that the publisher recognizes that the maximum number of readers can be reached with English” (2003: 368), because “At this stage in history English has become the lingua franca of science and commerce. At another time it was German or Latin” (2003: 369).

A very controversial aspect in this regard is the scarcity of Spanish journals in the JCR and the hegemony of USA journals in the field of communication. The factors contemplated in the evaluation are both qualitative and quantitative and are related to the following facts:

- Whether the publication’s is evaluated and meets the standardised criteria for scientific journals, such as the editorial committee, the abstract in two languages (one of them English), and peer review, among others.
- The journal’s type of content, i.e. whether its articles use scientific criteria.
- The international diversity of the different researchers who publish their articles
- Whether the system of citations is consistent with the internationally standardised criteria

Essentially the conditions that must be met are:

- *Punctuality and regularity of the publication* is a basic criterion in the evaluation process. To measure this capability three consecutive issues of the journal are evaluated as soon as they are published. This also applies to electronic journals that have established a periodicity. However, in the case

of electronic journals that have no periodicity but accumulate articles independently, a steady flow of articles should occur for several months.

- *Ease to access the sources.* The selection committee of ISI-Thomson considers whether journals follow the international editorial conventions which optimise the retrieval of the articles' sources. These conventions include the informative title of the journal, the articles' description, title and abstract, full bibliographic information for all cited references, and the full information and address of all contributing authors.
- *Language:* Thomson Scientific focuses on journals that publish their full texts, or at least their bibliographic information, in English. However the text in English is not a requirement in the *Arts & Humanities* when the subject matter of the study is opposed to that requirement, for example, research in the regional literatures.
- *Peer review:* The application of the peer review system is another indicator of the general quality of the journal's published research and the integrity of the cited references.
- *Sources of funding and support:* It is also recommended that, whenever possible, research articles disclose their source of funding and support.
- *International diversity in international journals:* Diversity among authors and members of the editorial board of journals is highly valued. This is particularly important in journals aimed at an international audience. Today the scientific research is conducted in a global context and a journal with international diversity is more likely to gain relevance in the international community of researchers.

For Thomson Scientific format is extremely important in the evaluation of electronic journals. There are guidelines that help to ensure the correct citation of articles and to reduce ambiguity in them. It is necessary to easily identify the following elements:

- Title of the journal
- Year of publication
- Volume and/or number of the publication (when applicable)
- Title of the article
- Page number or number of the article (at least one is mandatory). If the journal has page numbers and article numbers they have to be specified separately. The number of each article should be clearly differentiated to avoid ambiguity (similar numbering must not be repeated in different volumes).
- Authors, names and addresses
- All identifiers of the article, such as DOI, PII, and numbers.

- Moreover, the journal must have a complete table of contents for each of the numbers and it must include: the page and the article number for each of the articles (unless the journal is published as independent articles each time).

## 2. Methods

After having explained the context and function of the impact factor and the objective of this article, it is important to mention that the impact factor of journals in the field of social sciences and more specifically in the field of communication has been the object of study and controversial debates over the past years. The fact that the Thomson ISI impact Factor is only based on the number of citations received by articles during the last two years has been criticised as insufficient by the scientific community that, as in the Spanish case, has already promoted some interesting alternatives, such as the *Latindex* and *In-Recs* (Impact Factor of Spanish Journals of Social Sciences), which was developed by the EC<sup>3</sup> group of the University of Granada's Department of Library Science and Documentation.

This article aims to analyse some of the most common methodological problems to evaluate the academic journals of communication, based on the content analysis of the ten most-cited journals in the Social Sciences Citation Index. The analysis focuses on establishing the academic and research origins and links of the authors published by these journals, as well as the articles' subject matters, genres and methodologies.

For this purpose, and in order to facilitate the understanding of the study of the sample of journals, we will divide the analysis into three categories:

- 1) Formal aspects: this section establishes the average number of articles in each journal and the number of pages per article.
- 2) Authorship data: this section will discuss aspects related to the articles' authors, from their number and gender composition to their (academic or commercial) origins.
- 3) Methodological aspects: this section tries to determine the methodology used for the production of the articles, as well as their general themes and their subsequent use at the theoretical and practical levels.

The selection of journals is based on their impact factor in the communication section of the SSCI, which is included in the JCR. The list of communication journals includes 45 publications from different countries. All the research data refer to the 2008 Impact Factor.

Table 1 shows the total absence of Spanish journals from the list of the SSCI.

**TABLE 1. NATIONALITY**

<b>NATIONALITY</b>	<b>%</b>
USA	55.55
ENGLAND	35.55
HOLLAND	4.44
GERMANY	2.22
SLOVENIA	2.22

**TABLE 2. LANGUAGE**

<b>LANGUAGE</b>	<b>%</b>
ENGLISH	97.77
OTHER LANGUAGES	2.22

In all journals the language to disseminate knowledge is English, although one of them (*Javnost*) offers the possibility of publishing in other languages. Even if it is not the subject of this research, it is important to mentioning that by 2009 new journals (including three Spanish publications) had been indexed in the SSCI, which constitutes a slight modification in the data.

**TABLE 3. PUBLISHER**

<b>PUBLISHER</b>	<b>%</b>
SAGE	24.44
ROUTLEDGE-TAYLOR AND FRANCIS GROUP	20.00
WILEY-BACKWELL	8.88
ELSEVIER	6.66
LAURENCE ERLBAUM	4.44
JOHN BENJAMINS PUBLISHING	4.44
ADVERTISING RESEARCH FOUNDATION	4.44
OXFORD UNIVERSITY PRESS	4.44

The analysis shows that all journals included in the field of communication are managed by large business groups, which provides strong communicative structures, powerful software for the digital management of journals, and significant financial support. In other words, these journals are managed by professionals and are a competitive business.

The selected publications are the top ten journals in terms of impact factor in 2008. The highest impact factor is hold by the *Journal of Communication* (2.266), the second highest is hold by the *Journal of Health Communication* (2.057), while the third highest is hold by a historical journal in the field of communication: *Public Opinion Quarterly* (1.972). The selection was made by following Bradford’s Law.

**TABLE 4. MAIN JOURNALS**

JOURNAL	Impact Factor
JOURNAL OF COMMUNICATION	2.266
JOURNAL OF HEALTH COMMUNICATION	2.057
PUBLIC OPINION QUARTERLY	1.972
JOURNAL OF COMPUTER-MEDIATED COMMUNICATION	1.901
HUMAN COMMUNICATION RESEARCH	1.689
COMMUNICATION RESEARCH	1.473
COMMUNICATION THEORY	1.422
INTERACTION STUDIES	1.359
CYBERPSYCHOLOGY & BEHAVIOR	1.295
PUBLIC UNDERSTANDING OF SCIENCE	1.286

The selection of journals was followed by the analysis of all the articles published by the sample of journals in 2008. The analysis focused on the genre, length, subject matter, methodology, and authors’ university affiliation, and academic or commercial profession. A total of 758 articles were analysed.

**TABLE 5. ANALYSIS OF ARTICLES**

Concept	Analysis of the Article
<b>Title of the Article</b>	
<b>Sex</b>	Male
	Female
<b>Number of Researchers</b>	
<b>University affiliation</b>	Same University
	Different University
<b>Methodology</b>	Comparative
	Study / Survey
<b>Number of Pages</b>	
<b>Subject of the Research</b>	
<b>Professional origin</b>	Academic
	Commercial
<b>Research</b>	Applied
	Theoretical

### 3. Results

The analysis of the articles of the sample of journals provided the following comparative results.

#### 3.1. Formal aspects

Regarding the number of articles per journal and the average number of pages per article, we can conclude that it is only in this section where there is a strong similarity between the analysed journals, with the exception of *Cyberpsychology & Behavior*.

**TABLE 6. NUMBER OF ARTICLES AND PAGES**

JOURNAL	Average number of Articles	Average number of Pages
<i>JOURNAL OF COMMUNICATION</i>	7.25	20.00
<i>JOURNAL OF HEALTH COMMUNICATION</i>	5.75	15.64
<i>PUBLIC OPINION QUARTERLY</i>	6.75	17.36
<i>JOURNAL OF COMPUTER-MEDIATED COMMUNICATION</i>	9.25	24.60
<i>HUMAN COMMUNICATION RESEARCH</i>	6.50	26.30
<i>COMMUNICATION RESEARCH</i>	6.00	24.00
<i>COMMUNICATION THEORY</i>	6.00	23.50
<i>INTERACTION STUDIES</i>	8.60	20.60
<i>CYBERPSYCHOLOGY &amp; BEHAVIOR</i>	26.00	5.00
<i>PUBLIC UNDERSTANDING OF SCIENCE</i>	6.75	15.51

Regarding the number of articles per issue, the average ranges from 6 (as in *Communication Research* and *Communication Theory*) to 6.75 (as in *Public Opinion Quarterly*). These averages are slightly exceeded by *Interaction Studies* (8.6), and the *Journal of Computer-Mediated Communication* (9.25). The case of *Cyberpsychology & Behavior* is especially striking because it is characterised by the inclusion of a relatively large number of articles (between 20 and 30 articles per issue/number) with a small number of pages (between 4 and 5 per article), which makes it markedly different from the other publications.

In terms of pages per article, there is also a remarkable similarity between the publications, given that the average ranges from 15.51 pages (as in *Public Understanding of Science*) to 26.3 (as in *Human Communication Research*). As mentioned, the case of *Cyberpsychology & Behavior* is particularly different as it offers an average of 5 pages per article in all of its six analysed numbers from 2008.

### 3.2. Authorship data

The analysis in this section is based on the following variables:

1. Number of authors.
2. Authors' sex.
3. Authors' professional origin (academic or commercial)
4. Authors' university affiliation (same or different university)

**TABLE 7. AUTHORSHIP DATA**

Journal	Number of Researchers	Sex (%)	Professional origin (%)	University affiliation
	Total / Average	Male / Female	Academic/ Commercial	Same / different University
<i>Journal of Communication</i>	17.5/2.41	60/40	94.29/5.71	44.43/55.54
<i>Journal of Health Communication</i>	19.25/3.94	48.05/51.94	71.42/28.57	29.41/70.58
<i>Public Opinion Quarterly</i>	23.5/2.84	67.02/32.97	80.85/19.14	37.92/62.03
<i>Journal of Computer Mediated Communication</i>	21.25/2.36	67.05/32.94	91.76/8.23	38.45/61.49
<i>Human Communication Research</i>	17.5/2.7	50.8/49.2	100/0	56.2/43.8
<i>Communication Research</i>	13/2.1	61/39	100/0	54/46
<i>Communication Theory</i>	35/1.5	53.5/46.5	100/0	67.2/32.8
<i>Interaction Studies</i>	18.3/2.1	62.4/37.6	94/6	73.6/26.4
<i>Cyberpsychology &amp; Behaviour</i>	78/3	66/34	76/24	74/26
<i>Public Understanding of Science</i>	13/2.08	67.3/32.69	67.30/32.69	53.33/46.66

The quantitative data on the number of authors who usually participate in the production of articles are extremely heterogeneous because while it is common to find, in the ten analysed journals, articles signed by a single person, it is also common to find collaborations of up to 8 and 9 researchers. Despite these differences, the averages do not differ too much from one journal to another. Thus, the average ranges from 1.5 authors per article in *Communication Theory* to 3.94 in *Journal of Health Communication*.

Despite the relative similarity offered by this variable, if we examine the number of authors that appear in each issue of the analysed journals the homogeneity vanishes as the average number of authors per number ranges from 13, as in *Communication Research* and *Public Understanding of Science*, to 78, as in *Cyberpsychology & Behavior*, and including 17.5 and 18.3, as in *Human Communication Research* and *Interaction Studies*, respectively, and 35 as in *Communication Theory*.

Perhaps one of the most significant findings of the present study is offered by the “authors’ gender” variable, as it shows that the participation of men and women in the field of communication journals is increasingly becoming more equal. Very pro-gender-equality authorship data is offered by *Human Communication Research* (50.8% of authors are men and 49.2% are women) and *Communication Theory* (53.5% men and 46.5% women). In terms of authors, other journals show a significant degree of gender inequality and in all cases this is in favour of men. Of the authors in *Communication Research* 61% are males and 39% females; in *Interaction Studies* 62.4% are males and only 37.6% females; in *Cyberpsychology & Behavior* 66% are male and only 34% females. The main difference in the gender distribution of authors was found in the *Public Opinion Quarterly*, which had 67.02% males and only 32.97% females.

With regards to the professional origin of the authors included in the analysed journals, the overwhelming majority of them worked at universities: this is the case in 3 of the 5 analysed journals. In *Human Communication Research*, *Communication Research*, and *Communication Theory* all the authors worked at universities. However, the other two publications included a considerable percentage of authors who worked in the commercial and industrial areas, although this percentage is way lower than the percentage of university researchers. However it is important to highlight that researchers connected to the commercial industries have published 24% of the articles in *Cyberpsychology & Behavior* and 6% of the articles in *Interaction Studies*. In this sense, there is a high participation of non-university researchers in *Public Understanding of Science* and *Journal of Health Communication*, with 32.69% and 28.57%, respectively.

Finally, the results on the “authors’ university origin” (same or different institution) are very striking since in all cases there was an intense collaboration

between researchers from different institutions (usually linked by the academic field). However, the percentage of authors that collaborated in the development of an article and came from the same institution is much higher. Nevertheless, the results extracted from the analysis of *Human Communication Research* and *Communication Research* clearly demonstrate that there is collaboration between researchers from diverse institutions (43.6% of authors in *Human Communication Research* and 46% in *Communication Research* come from various institutions or universities). The other analysed publications provide results that are closer to the reality of the scientific journals in the field of communication because while they also reflected an important collaboration between authors from different institutions, they have a majority of collaborations by researchers from the same institution (co-authors from the same university constitute 67.2% in *Communication Theory*; 73.6% in *Interaction Studies*; and 74% in *Cyberpsychology & Behavior*).

### 3.3. Methodological aspects

Undoubtedly, this last section demanded the highest degree of synthesis and generalisation in order to successfully establish general lines that allow a comparative study of the sample of journals. This is partly due to the difficulty to find common themes in the sample journals that, in spite of belonging to the same field (communication), are focused on very specific aspects of it, such as the psychology of communication, virtual reality, new technologies, or public relations.

However, we tried to concretise the arguments of the analysed articles and to organise them thematically according to the general lines or points which they addressed, in order to offer an overview of the contents covered by each publication.

Regarding the methodologies used to develop the research articles, there is a significant difference across the different journals under analysis. Journals such as *Human Communication Research*, *Communication Research* and *Cyberpsychology & Behavior* show a clear preference for the analytic-descriptive method over the documentary method. Thus, in these three cases, the prevailing methodology is based on the use of surveys, in particular through the use of scale-based questionnaires, and observation and experimentation cases (in 72% of the articles in *Human Communication Research*, and 83.5% of the articles in *Communication Research* and 85% of the articles in *Cyberpsychology & Behavior*). In contrast, state of the art reviews and theoretical developments predominate in *Communication Theory* (in 67.8% of articles) and *Interaction Studies* (in 63.2% of articles).

**TABLE 8. RESEARCH TOPICS**

JOURNALS	METHODOLOGY (%)		RESEARCH TYPE (%)		Research Topic
	Comparative	Descriptive	Applied	Theoretical	
<i>Journal of Communication</i>	48.27	51.72	68.96	31.03	Television (8) Public Relations (7) Newspapers (4) Cinema (6) Internet (6) Magazines (1) Advertising (1)
<i>Journal of Health Communication</i>	64.10	35.89	79.48	20.51	Press (6) Public Relations (11) Advertising (5) Audiovisual Communication (7) Internet (10)
<i>Public Opinion Quarterly</i>	69.69	30.3	78.78	21.21	Internet (1) Telephony (1) Surveys (7) Genre (7) Reception (8) Public Relations (6) Press (1) Race (2)
<i>Journal of Computer Mediated Communication</i>	55.55	44.44	75	25	Social Networks (4) Forums (1) Digital media (3) Newsgroups (1) Websites (17) Email (1) Blogs (4) Mobile telephony (3) Virtual Press Rooms (1) Viral Communication (1)
<i>Human Communication Research</i>	28	72	48.2	51.8	Social Communication (8) Personal Relations (8) Psychology (2) Media (2) Advertising (2) Internet (2) Audiovisual Communication (1) Video games (1)
<i>Communication Research</i>	16.5	83.5	66	34	Audiovisual Communication (5) Political Communication (5) Public Relations (9) Internet (8) Advertising (4) Journalism (4) Social Communication (1)
<i>Communication Theory</i>	67.8	32.2	35.7	64.3	Social Communication (21) Public Relations (2) Globalization (1)
<i>Interaction Studies</i>	63.2	36.8	0	100	Social communication (interactions) (26)
<i>Cyberpsychology &amp; Behavior</i>	15	85	89	11	Psychology (72) Virtual reality (29) Social Communication (17) Therapies (15) Internet (13) Emotions (10)
<i>Public Understanding of Science</i>	64	36	88	12	Public Relations (6) Press (2) Reception (10) Audiovisual Communication (3) Cinema (1) Advertising (1)

The analysis of the research topics is undoubtedly the most complex in this study as the diversity of the topics addressed in the sample of 434 articles really complicated the creation of a categorisation useful enough to conduct a comparative study of these publications. Despite such complexity we managed to establish some common patterns that, despite the monographic nature exhibited by some journals in some numbers, allowed us to offer results that highlight the psychological theme as the main point of interest mainly due to the fact that this is the field of study of the journal that offered the largest number of articles per number (*Cyberpsychology & Behavior*). Leaving aside this publication and its preferred subject matter, we established the following classification by thematic areas:

1. Psychology, Therapies and Emotions	99 articles
2. Social Communication	73 articles
3. Video games and Virtual Reality	30 articles
4. Public Relations and Advertising	62 articles
5. Internet and Globalization	80 articles
6. Media and Journalism	20 articles
7. Audiovisual Communication	26 articles
8. Political Communication	5 articles
9. Reception	34 articles

Undoubtedly, *Human Communication Research* and *Communication Research* show a greater variety of topics than the other three publications, which have many monographic numbers/editions and those that are not monographic usually follow just one line of research: psychology in *Cyberpsychology & Behavior*; social communication in *Interaction Studies*; and communication theory in *Communication Theory*.

Finally, the type of research presented in the analysed articles differs considerably depending on the publication. Thus, in *Interaction Studies* almost all of the articles have a clear theoretical component, and although in many cases they are based on practical experiments or studies, their subsequent application is limited to hypothetical arguments. In contrast, *Cyberpsychology & Behavior* stands out for its eminently practical character: 89% of its articles have a clear practical application or at least that is their original intention. The three other publications vary considerably: applied research is predominant in *Communication Research* (in 66% of the articles), while discursive objectives are dominant in *Human Communication Research* (in 51.8% of research articles) and *Communication Theory* (in 64.3% of research articles).

#### 4. Discussion

With regards to the formal aspect of the analysed journals, almost all publications follow the same model that limits the number of articles per number/issue to an average of 7.5. However, as mentioned, this is not the case of *Cyberpsychology & Behavior*, which has an average of 26 articles per issue, which significantly alters the average in the whole sample of journals.

Regarding the length of articles, we can draw a similar conclusion since, with the exception of the *Cyberpsychology & Behavior*, all journals follow a similar model: articles of 20 pages in average.

With regards to authorship there is a growing level of collaboration in the production of articles since very few works are signed by only one person, and most of them have more than two authors.

In terms of the gender composition of authors, there is a predominance of men, but the percentage difference between male and female authors is not too big and is decreasing, at least in journals of communication.

We have also observed a strong imbalance with respect to the professional origin and university affiliation of the authors who published in the analysed articles. In this sense the prevalence of authors with academic professional origin is overwhelming in comparison to authors linked to non-university sectors or institutions.

In relation to this last point, the inter-institutional collaboration is also notorious since in the articles signed by more than two authors, most of these authors work for different universities or institutions.

From the methodological point of view, there is greater heterogeneity than initially expected as there is not a predominant methodological model. While the analytic-descriptive method is predominant in some publications, the state of the art reviews are preferred in others.

Regarding the research topics, there is a clear predominance of psychology because this is the study area of the publication that offers the largest number of articles per number (*Cyberpsychology & Behaviour*). However, if we ignore this publication, the other predominant thematic areas are Internet and Globalization, Social Communication, and Public Relations and Advertising. We also found references to such themes as Entertainment and Virtual Reality Technology, Media and Journalism, Audiovisual Communication, Political Communication, and Reception.

If we would compare these results with the formal, methodological and thematic features of the Spanish academic communication journals we would certainly find

many similarities in all of these aspects. This might lead us to think that the reason for the virtual absence of the Spanish scientific journals from the international impact indexes is not due to poor research quality but instead due to the aforementioned evaluation problems of these international indexing systems and, above all, the language variable.

This study of focused on the year 2008 when the Spanish journals in the field of communication had not yet appeared in the international indexes. But in the subsequent years, some Spanish journals such as *Comunicar*, *Estudios del Mensaje Periodístico* and *Comunicación y Sociedad* were listed in international indexes, and for this reason we should extend the study to these journals.

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