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M Martínez-Nicolás, A Carrasco-Campos (2018): “The transformation of a scientific community. The evolution of authorship patterns in the Spanish communication research published by peer-reviewed journals (1990-2014)”. *Revista Latina de Comunicación Social*, 73, pp. 1368 a 1383.

<http://www.revistalatinacs.org/073paper/1311/70en.html>

DOI: [10.4185/RLCS-2018-1311en](https://doi.org/10.4185/RLCS-2018-1311en)

# The transformation of a scientific community. The evolution of authorship patterns in Spanish communication research published in peer-reviewed journals (1990-2014)

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**Abstract: Introduction.** Over the past 25 years, the number of communication researchers in Spain has doubled, and has probably modified some of its characteristics and research practices. **Objectives and method.** This paper analyses the transformation experienced by this scientific community using as an indicator the evolution of authorship patterns (gender distribution of authors, number of authors, university, etc.) in Spanish communication research. Data were collected from a sample of 1000 articles published between 1990 and 2014 by five peer-reviewed journals edited in Spain. **Results and conclusions.** The results show the growth of the presence of women in the research activity, the increase in the number of universities of the signing authors, the modest contribution of authors affiliated to private universities, and the progressive consolidation of the research developed by the collaboration of multiple authors.

### Keywords

Communication research; Spain; scientific community; authorship; peer-reviewed journals.

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## 1. Introduction

Although fragmented and incomplete, the empirical evidence available until now in the numerous studies focusing on research analysis in Communications in Spain suggests that the institutional changes which have developed in the field over the past 25 years have affected the structure, characteristics and practice within this scientific community. In particular, the evidence highlights two of these institutional factors: on the one hand, the increase in universities offering Communication Studies degrees since the 1990s and, as a result, the number of teaching staff required and, on the other hand, the spread of a culture of evaluation brought about by the Universities Reform Act (Ley de Reforma Universitaria, 1983) and the creation of the National Evaluation Commission on Research Activities (Comisión Nacional de Evaluación de la Actividad Científica, CNEAI, 1989). This was reinforced and became generalised following the introduction of the Universities Law (Ley Orgánica de Universidades, LOU, 2001) and its later modification (LOMLOU, 2007), which rendered research activity an indispensable prerequisite for access to and promotion within an academic career through an accreditation system applied to university teaching bodies.

This new institutional context has provoked, as has been mentioned, a significant transformation within the scientific community of communication researchers in Spain, as much in terms of its structural characteristics (type of university contributing to science and the proportion of men to women) as research practice (the formation of groups and networks of researchers, collaboration between authors etc.). In order to provide evidence of this transformation, we have used as an empirical indicator the evolution of authorship patterns in a sample of 1,000 articles published over a 25-year period (between 1990 and 2014) in five peer-reviewed journals published in Spain.

## 2. The new profile of the scientific community

The increase in university degree programmes in Communication Studies offered in Spain over the past quarter of a century has led to the hiring of large numbers of teaching staff with the prospect of becoming professional academics, rendering it necessary to develop a continued research trajectory (doctoral thesis, access to official qualifications etc.). As a result, the scientific community of communication researchers grew exponentially during this period. In the mid-1980s, the four Spanish universities offering degrees in Communication Studies (the public universities Complutense de Madrid, Autónoma de Barcelona, and País Vasco, and the private university in Navarra) employed around 500 teaching staff (Jones, 1998). A decade later, in the mid-1990s, both parameters had quadrupled, with 20 universities offering Communication Studies degrees employing some 2,000 teaching staff (Jones, 1998). Ten years later, halfway through the first decade of 2000s, there were 44 universities offering these degrees, with around 3,000 teaching staff (ANECA, 2005; Moragas, 2005). The most reliable current figures indicate that, in 2015, there were 54 Spanish universities offering Communication Studies, employing more than 4,000 teaching staff (Saperas, 2016).

Therefore, the scientific community of communication researchers, or potential researchers, has doubled in the past quarter century, and has probably, therefore, undergone changes in some of its characteristics. Firstly, the sharp increase of Communication Studies degrees in Spain since the mid-nineties is mostly due to these being offered at new private universities (Moragas, 2005), coinciding with an increased social demand for subjects such as Journalism, Audiovisual Communication and Advertising and Public Relations, spurred by expanding audiovisual and advertising markets in Spain following the introduction of privately owned television channels at the start of the 1990s, and

the advent of digital migration brought about by the emergence of the internet in the second half of the decade. Of the 54 Spanish universities offering Communication Studies registered in 2015, 35 were public and 19 (a third), private (Saperas, 2016: 37). In this same year, there were 34 private universities operating in Spain (Simancas y García López, 2016: 181). Therefore, almost 60% of private Spanish universities currently offer degrees in Communication Studies, demonstrating how attractive the subject has become within private higher education institutions over the past 15 to 20 years. It can be assumed, therefore, that the teaching staff in these institutions have widely contributed to the development of communication research in Spain, demonstrating also, a capacity for innovation and openness in relation to new areas of study in the field (Carrasco-Campos, Saperas & Martínez-Nicolás, 2018).

The spectacular growth in the number of communication researchers in this period has perhaps also led to an increase in the number of women within the discipline, thus rebalancing a scientific community which was, until then, mainly populated by men. Although there is no available data regarding this, certain indicators signal a continuing trend in this respect, and specifically in relation to the number of doctoral theses defended. Data recorded by Jones, Baró, Landa & Ontalba (2000: 23) on the number doctoral theses in Communication presented at Spanish universities between 1926 and 1998 show that those carried out by women represented little more than 10% in the 1970s (9 out of 77) increasing to some 30% in the 1980s (140 out of 460), stagnating at this level (a third) in the 1990s (37%, 368 out of 993). However, during the first decade of the 2000s the situation changed. In the period between 2007 and 2013, the 977 doctoral theses defended were equally divided between men and women (49,6% and 50,4%, respectively), although it remains a notorious imbalance in the leadership of projects funded by the National R&D Plan, as only the 30% were led by women (Martín Algarra, Serrano Puche & Rebolledo, 2018). In any case, the incorporation of women into the scientific community seems to be clear in the last decade.

### **3. Changes in publishing practices**

The factor which has probably had the most significant impact on communication research over the past decade has been that relating to the new conditions established for academic professionalisation in Spain since the introduction of the Universities Law (Ley Orgánica de Universidades, LOU) and the creation of the Spanish National Agency for Quality Assessment and Accreditation (Agencia Nacional de Evaluación de la Calidad y Acreditación, ANECA) in December 2001, the key factor in the establishment of a strong culture of evaluation in Spain (Martínez-Nicolás, 2018). The LOU established an obligatory accreditation procedure for accessing and gaining promotion within university careers, initially (2002-2007) restricted to contracted staff, but later generalised to all teaching staff when the law was modified in 2007 (LOMLOU), and the ACADEMIA programme of accreditation for university teachers was introduced by ANECA in January 2008. In this programme, the weight given to research in order to merit a positive evaluation at the highest levels of qualification (associate and tenured staff) suggests an institutional pressure which may have affected the research practice of the scientific community.

Thus, for example, the professional prestige conceded since then to the publication of papers in peer-reviewed journals, has generated an increase in the diffusion of research in this format above that of books or monographs (Soriano, 2008 and 2017). Although the empirical evidence in this respect is somewhat tenuous, it seems to be clearly established that scientific production in Communication in Spain published in peer-reviewed journals has substantially increased over the last 30 years, and precisely in the period following the introduction of the ACADEMIA programme, this growth has been spectacular (Fernández Quijada & Masip: 2013: 18; Piñeiro, 2016: 36).

There is more concrete evidence, however, regarding other behaviours within the scientific community concerning these publication practices. Martínez-Nicolás (2014) analysed the evolution of the presence of communication research in international journals included in the *Journal Citation Reports* (JCR) and *SCImago Journal & Country Rank* (SJR-Scopus) between 2003 and 2012, noting that the period can be divided into two stages (2003-2008 and 2009-2012), the end of the first coinciding with the introduction of the ACADEMIA programme. Of the 196 papers analysed, only 28,6% (56 articles) were published by researchers affiliated to academic institutions in Spain between 2003 and 2008 (that is in the period preceding ACADEMIA), while the remaining 71,3% (140 papers) were published in the period following its introduction (2009-2012). Probably owing to institutional pressure, Spanish communication researchers seem more inclined since then to prepare their work for international journals with a high impact factor, and thus greater professional kudos. Fernández Quijada & Masip's findings (2013: 18) suggest this trend.

Another of the consequences derived from the weight given to research in the university accreditation system can be seen in the patterns of authorship (individual or co-authored) of published research, for which there is sufficient empirical evidence (Castillo & Carretón, 2010; Masip, 2011; Castillo, Rubio & Almansa, 2012; Fernández Quijada, 2010 and 2011; Roca & Pueyo, 2012; Fernández Quijada & Masip, 2013; Fernández Quijada, Masip & Bergillos, 2013; Escribà & Cortiñas, 2013; Baladrón, Correyero & Manchado, 2014; Baladrón, Manchado & Correyero, 2017). The most comprehensive work remains that of Fernández Quijada & Masip (2013), which looks at these patterns of authorship in practically all Spanish scientific journals specialising in Communication over a period of 30 years (1980-2010). The findings show a marked change in trend from 2008 onwards, precisely when the new requirements of the ACADEMIA programme were introduced. Taking the first decade of the 2000s as a reference, (2001-2010), in the period between 2001-2007 papers published by two or more authors were on average around 14% annually, although in 2006 and 2007, significantly greater percentages were observed, of 18,1% and 17,4%, respectively. In any case, this trend clearly grows in the remaining three years of the decade, in which co-authorship reaches almost 22% in 2008, a progression which continues, reaching almost 30% in 2009 and 2010 (28,5% and 29,5%, respectively).

#### **4. The consolidation of collaborative research**

The available data would thus seem to indicate a relationship between the tightening of conditions for academic professionalisation (accreditations, value given to publication in high impact journals etc.) and publishing practices which are more and more inclined towards collaborative research. If this relationship does indeed exist, the causal link between both factors needs to be established, for which two hypotheses can be put forward. One, which we will call “cynical”, maintains that the decisive weight given to publication in scientific journals is encouraging the proliferation of a kind of exchange of academic “favours”; that is to say, a crude “exchange of authorship” (“if you include my name, I'll include yours”). The increase in co-authorship would not, therefore, be the result of a genuine scientific collaboration, but rather a spurious strategic calculation driven by the desire to maximise professional potential through the coveted publication of a paper in a peer-reviewed journal. Although popular within the scientific community, it is a hypothesis with little possibility of proving empirically (almost an oxymoron, therefore), other than with anecdotal evidence.

More plausible, and at least testable, is the “institutional” hypothesis we propose here, which appeals to a second factor with an undoubtable impact on Spanish communication research over the past decade. Since the introduction of the National R&D Plan (Plan Estatal de I+D+i) in 2010, Communication has been considered a specific sub-area within the field of Social Sciences (along with Sociology, Political Science and Geography), seeing since then a spectacular increase in

funding for group projects carried out by researchers at different universities. Between 2004 and 2009, the average number of research projects in Communication funded by the National Plan was 14 per call for funding bids, and since 2010 until the most recent, in 2017, this figure has practically doubled to 25 (Martínez-Nicolás, 2018). It is plausible, therefore, to attribute the increase in collaborative research not to spurious practices of the exchange of authorship, but to the progressive strengthening of networks of researchers grouped together to carry out competitive projects. This hypothesis is at least testable, taking into account the nature of multiple authorships (between authors at the same or different Spanish universities) and whether or not published work is the product of funded research projects (be it by the National Plan or other publicly funded programmes, or by private entities through commissions or partnerships).

## **5. Objectives and method**

Although fragmented and incomplete, the available evidence indicates that the institutional change within the context in which communication research is carried out in Spain in the last quarter century has affected the characteristics and practices of research within the scientific community. Therefore, it is probable that, during this period, there has been an increase in participation in scientific development from researchers affiliated to private universities; that contributions to communication research by men and women has become balanced; or, finally, that there has been a strengthening of research networks, thus creating a more diverse and engaged scientific community through practices of collaborative research.

This paper analyses the transformation of the scientific community previously described using as a general indicator the model of authorship of a sample of 1,000 articles published by Spanish researchers over the last 25 years (1990-2014) in five peer-reviewed journals published in Spain. Given the composition of the sample, particularly the number of journals included, the research is exploratory in nature, bearing its value in the handling of the analytical categories put forward as indicators of the historic changes in structure and practice of the academic community in the field of Communication.

### **5.1. Objectives**

In order to observe the evolution of these authorship models the following factors were considered:

1. The distribution of authorship by gender, in order to determine the contribution of men and women to scientific research in Communication.
2. The type of university to which the authors are affiliated (public or private).
3. The type of authorship of papers published, according to the following categories: “solo authorship”, “collaboration between Spanish researchers” and “collaboration between Spanish and international researchers” (that is, those who work in institutions which are not based in Spain).
4. The type of collaboration on papers written by more than one Spanish researcher, distinguished as “intra institutional” when the researchers work at the same academic institution or “interinstitutional”, when the writers are affiliated to different institutions.
5. The presence of funded research within published articles, either those which are linked to publicly funded projects (generally obtained through a competitive grant process) or privately funded research (commissions, partnerships etc.).

## 5.2. Sample and unit of analysis

An exploratory study was designed of a sample of articles published between 1990 and 2014 in five specialist journals published in Spain which held distinguished positions during the period in the subject-specific index generated by In-RECS<sup>1</sup> (the Index of Spanish Social Sciences Journals) and in RESH (index elaborated from the valuations of a sample of experts in the field)<sup>2</sup>. According to this criteria, the following journals were chosen: *Anàlisi* (Universidad Autónoma de Barcelona), *Comunicación y Sociedad* (Universidad de Navarra), *Estudios sobre el Mensaje Periodístico* (Universidad Complutense de Madrid), *Zer* (Universidad del País Vasco) and *Revista Latina de Comunicación Social* (Universidad de La Laguna).

To obtain the corpus of papers, the 25-year period under analysis was divided into 5 five-year periods, and three years from each period were selected following systematic chronological criteria so that the first year in each period was included (1990, 1995, 2000, 2005 and 2010) and two consecutive years following the year after the first (1992, 1993, 1997, 1998, 2002, 2003, 2007, 2008, 2012 and 2014), except in the last period in order to obtain the most up-to-date results possible. Only two of the journals selected were in publication continually during the period analysed (*Anàlisi* and *Comunicación y Sociedad*), and therefore new journals were added in the transition between decades. Therefore, in the first five-year period (1990-1994) only papers published in *Anàlisi* and in *Comunicación y Sociedad* were included, with *Estudios sobre el Mensaje Periodístico* and *Zer* being added at the end of the second five-year period (from 1998), and *Revista Latina de Comunicación Social* at the end of the fourth (from 2008).

The sample design, therefore, includes 15 of the 25 years of the period analysed (60%), resulting in a corpus of 1,167 articles, 1,000 of which were written by researchers affiliated to universities or other centres in Spain, this being the empirical correlation which is considered here to be “Spanish communication research”. In these one thousand papers 1,506 authors were identified (an average of 1.5 authors per article), this “authorship” being the unit of analysis to which the coding sheet was applied, designed to obtain data on the variable relating to gender (Figure 1) and the type of university to which the researchers are affiliated (public, private or without affiliation, Figure 3). However, the unit of analysis for collecting data on the type of authorship of published papers (solo or collaborative, Figure 4), the nature of collaboration between Spanish researchers (intra-institutional or inter-institutional, Figure 5) and the funding source or lack thereof of the research (Figure 6) was the “paper” (that is, each one of the 1,000 articles included in the sample).

## 5.3. Coding and reliability

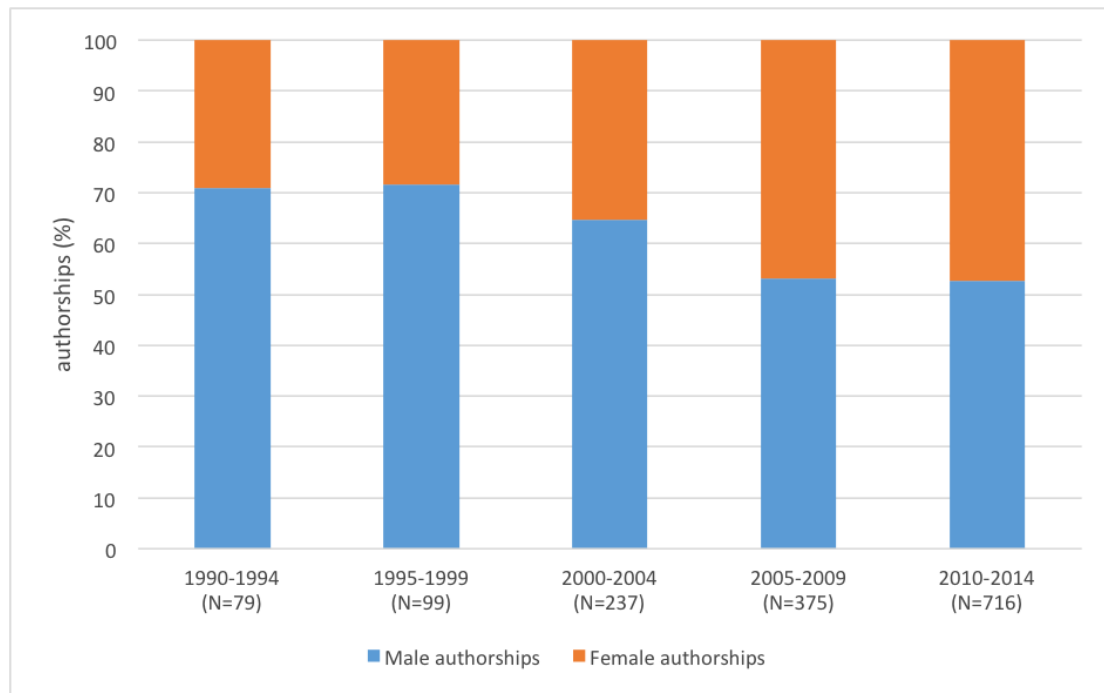
Two coders were used in this study. Scott’s *pi coefficient* gave an average intercoder reliability of 0.99, almost total agreement, given that the variables considered were not too open to interpretation by the coders.

## 6. Results

### 6.1. Gender distribution of authors

In the 1,000 texts analysed 1,506 authorships by Spanish researchers were recorded, of which 856 were men (56,8%) and 650 women (43,2%). However, the evolution of this parameter shows that the imbalance in favour of men has begun to even out over the last 25 years (Figure 1).

**Figure 1. Authorship according to gender**



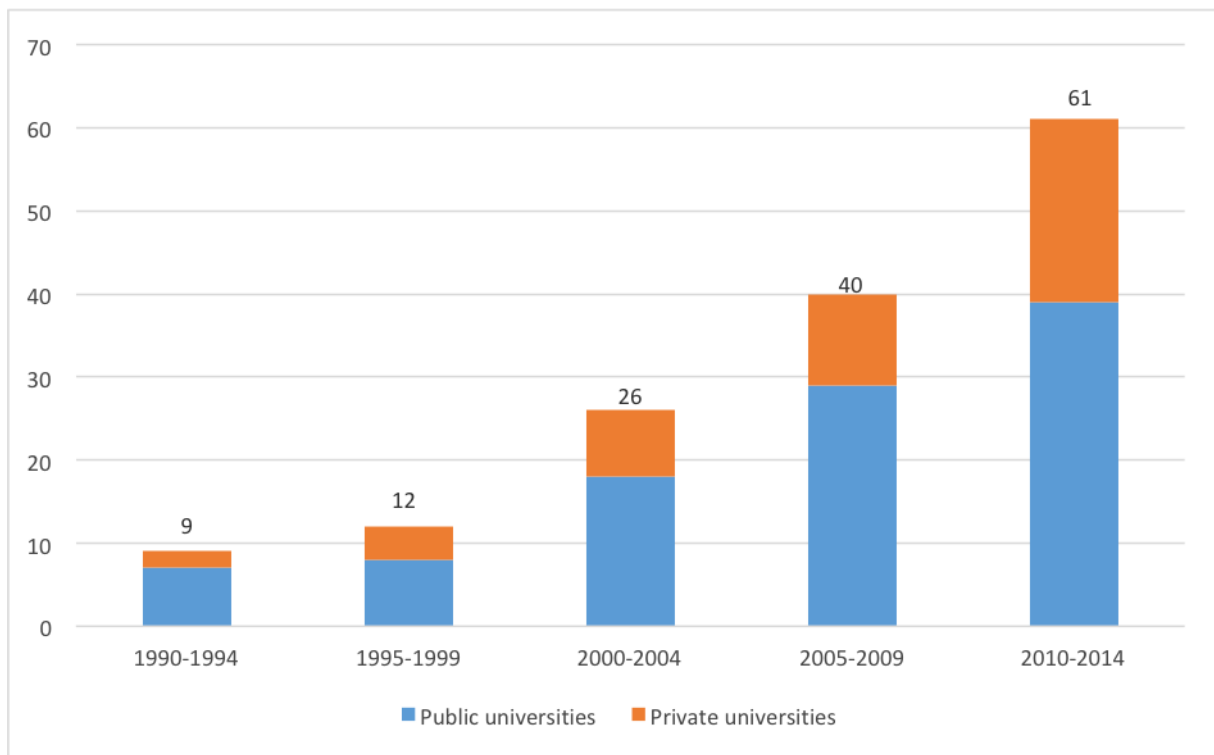
During the 1990s, the gender distribution of authorship remained unchanged, overwhelmingly favouring men, 7 in every 10 authors in the journals analysed were men with only three being authored by women. This predominance of male authors began to slightly change in the first five years of the 2000s, in which the percentage of female authors rose to 35.4 (a third of those recorded), however male authors were still outnumbering females by almost double. The data relating to the last decade (2005-2014) suggests a marked correction to this situation, and, since the mid-2000s, the gender distribution of authorship has been practically balanced, although there is still a slight predominance of males (53,1% in 2005-2009 and 52,7% in 2010-2014). The fact that this increase in female authorship in published articles, reaching almost 50%, has been maintained throughout a decade shows that this trend has become consolidated as, although the incorporation of women in communication research has continually risen over the past 25 years, it has become far more pronounced in the last decade.

## 6.2. The contribution of public and private universities

The increase in Communication Studies degrees in Spain over the last quarter of a century, and the corresponding increase in volume of the scientific community, are well reflected in the authorship of papers published in the journals analysed. The data collected in Figure 2 shows the progressive increase in the number of universities to which the researchers are affiliated, which increases almost six-fold between the first five-year period (1990-1994) and the last (2010-2014). The growth in the number of contributing universities is modest during the 1990s, but skyrockets at the beginning of the 2000s with increases of over 50% between one five-year period and the next (a difference of 54% between 2000-2004 and 2005-2009, and of 52.5% between the latter and 2010-2014). This data also suggests that the most recent communication research (2010-2014) is being carried out by researchers at at least 61 Spanish universities, considerably more (almost ten) than those offering

degrees in Communication Studies, distributed between public and private in accordance with their relative weight within the group of universities offering this subject, a third of which are private.

**Figure 2. Number of universities to which authors are affiliated**



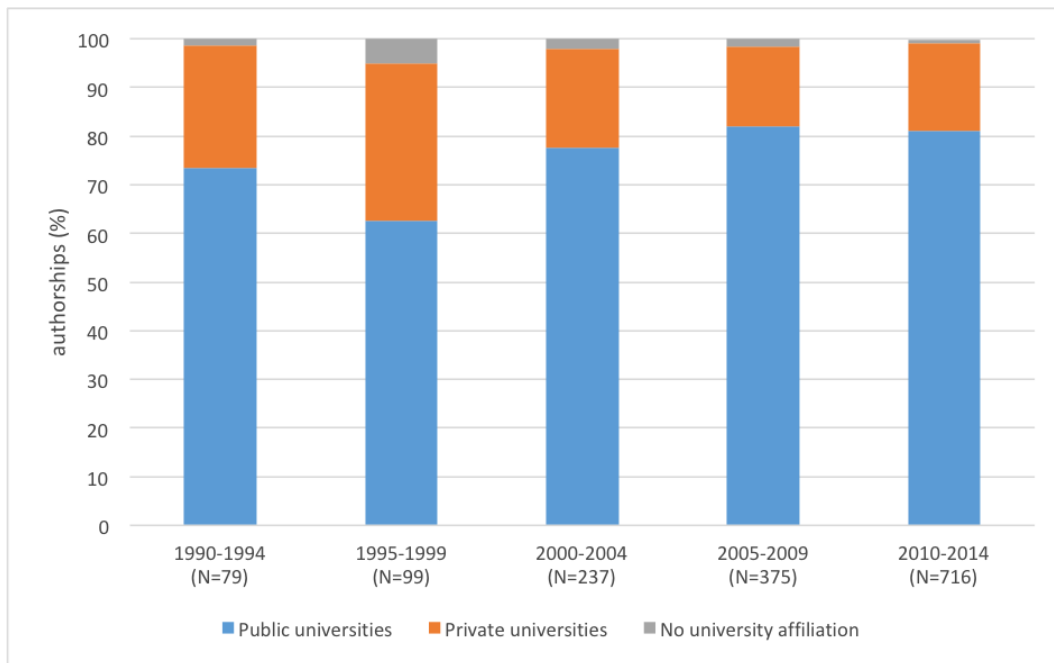
In the distribution of authorship between researchers from public and private universities (Figure 3) a clear predominance of researchers affiliated to the former can be observed in all of the five-year periods analysed. During the 1990s, the proportion of authorship between public and private was 70%-30%, though paradoxically, this difference progressively increased in the 2000s to 80%-20% in the three following periods. That is to say, until no less than 15 years ago, of every ten authors publishing in these journals, 8 were from public universities and only 2 were from private universities.

An appropriate analysis of this finding would require knowledge of the distribution of researchers within the scientific community at both types of university, as it is possible that the relationship between public and private institutions when it comes to the number of teaching staff and researchers is the same (80%-20%) as that reflected in the authorship data for the last 15 years. Without this information, we can test another approach by looking at the average number of authorships for each type of university, taking as a reference, for example, the most recent period (2010-2014). In this five-year period, the researchers affiliated to the 35 state universities offering Communication Studies degrees (Saperas, 2016) comprised 580 of the 716 authorships recorded (Figure 3), an average of a little more than 16 authorships per university. In the same period, there were 19 private universities with 130 authors, an average of nearly 7 authorships per university. It is very probable, therefore, that the presence of authors from public universities in the journals analysed has been, at least in the last 15 years, proportionally greater than the weight they have within the scientific community. It can be inferred, on the other hand, that the contribution by teaching staff at public



universities to communication research is becoming more prominent and continual than that of the teaching bodies affiliated to private universities.

**Figure 3. Authorship according to ownership of university**



### 6.3. Evolution of authorship

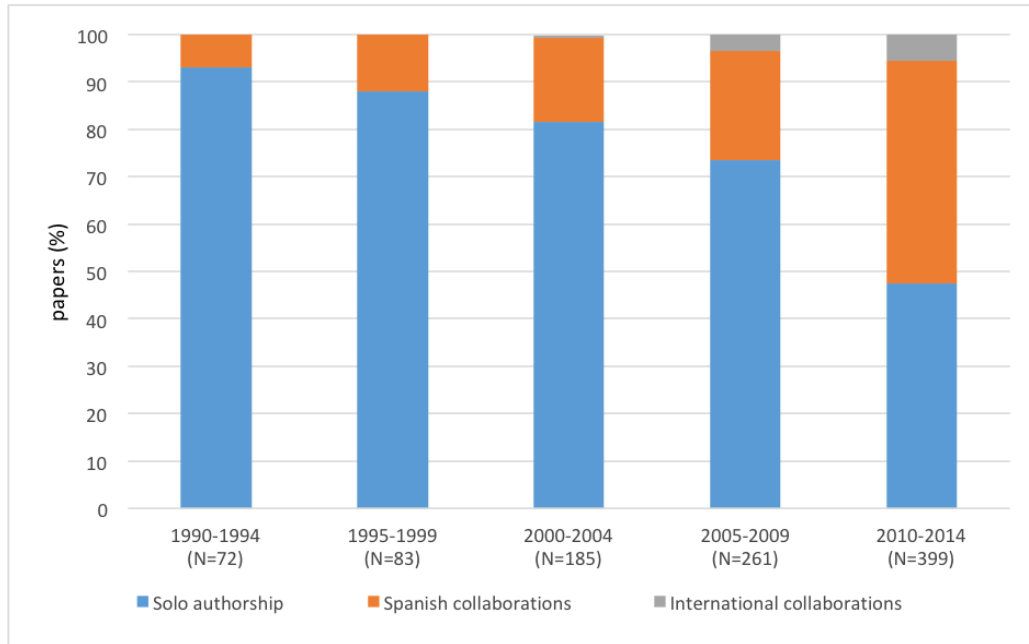
Looking at the type of authorship of the papers analysed confirms that the publication practices of communication researchers have dramatically changed in the last five-year period (Figure 4). Solo authorship is the dominant practice in the twenty-year period between 1990 and 2009, but this trend radically changes in the most recent period (2010-2014), in which co-authorship rises as a result of what we call “collaborative research”.

Papers by one solo author made up around 90% of those published in these journals during the 1990s, when collaborative research was merely symbolic. This situation began to change slightly in the following decade (2000-2009), but solo authorship still accounted for between 75% and 80% of the articles recorded. However, these fall sharply in the following five-year period (2010-2014) to less than 50%, almost 30% less than in the previous five-year period. Papers by multiple authors follow a moderate progression for twenty years, growing 5% between 1995 and 1999 in relation to the previous five years (1990-1994), slightly less than 6% between 2000 and 2004, and around 8% between 2005 and 2009. Accumulated over twenty years between 1990 and 2009, this difference approaches 20%. However, the increase in collaborative research in the last five-year period (2010-2014) is of around 30% with respect to the previous period, reaching more than half (52,6%) of the papers published in these journals.

Equally noteworthy is the modest yet significant rise in collaborative research carried out by Spanish researchers and those not affiliated to Spanish universities, a type of collaborative research practically absent in the Spanish journals analysed until the second half of the first decade of the 2000s (2005-2009), accounting then for only 3,4% of the articles published. In the following five-

year period (2010-2014), these international collaborations rose to almost 6% of the papers written by two or more researchers, although this occurs more frequently when Spanish researchers wrote in journals which are not published in Spain (Fernández-Quijada and Masip, 2013: 19-20).

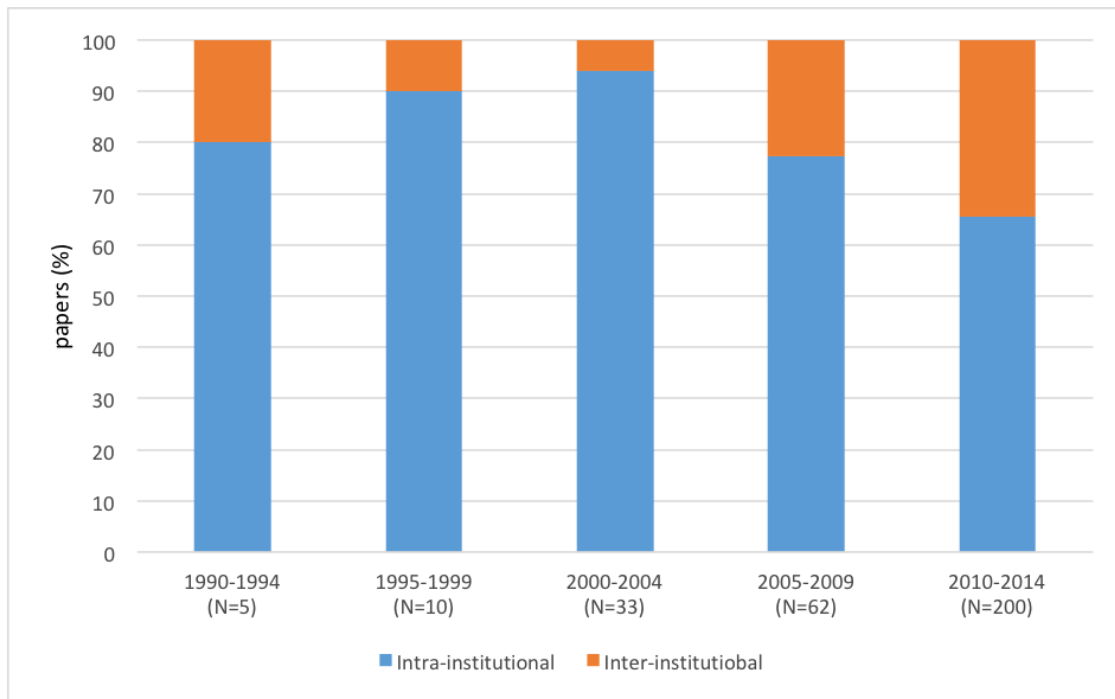
**Figure 4. Type of authorship**



#### 6.4. Forms of collaboration between Spanish researchers and funded research

The scarcity in the 1990s of co-authored articles (only one in every ten published in these journals) does not allow for significant results to be obtained as to whether these projects were intra or interinstitutional, as this publication trend was, at the time, simply a rarity (15 articles in ten years, Figure 5). It is not until the last 15 years of the period under analysis that collaborative research reaches a sufficient volume to analyse this question with adequate empirical evidence.

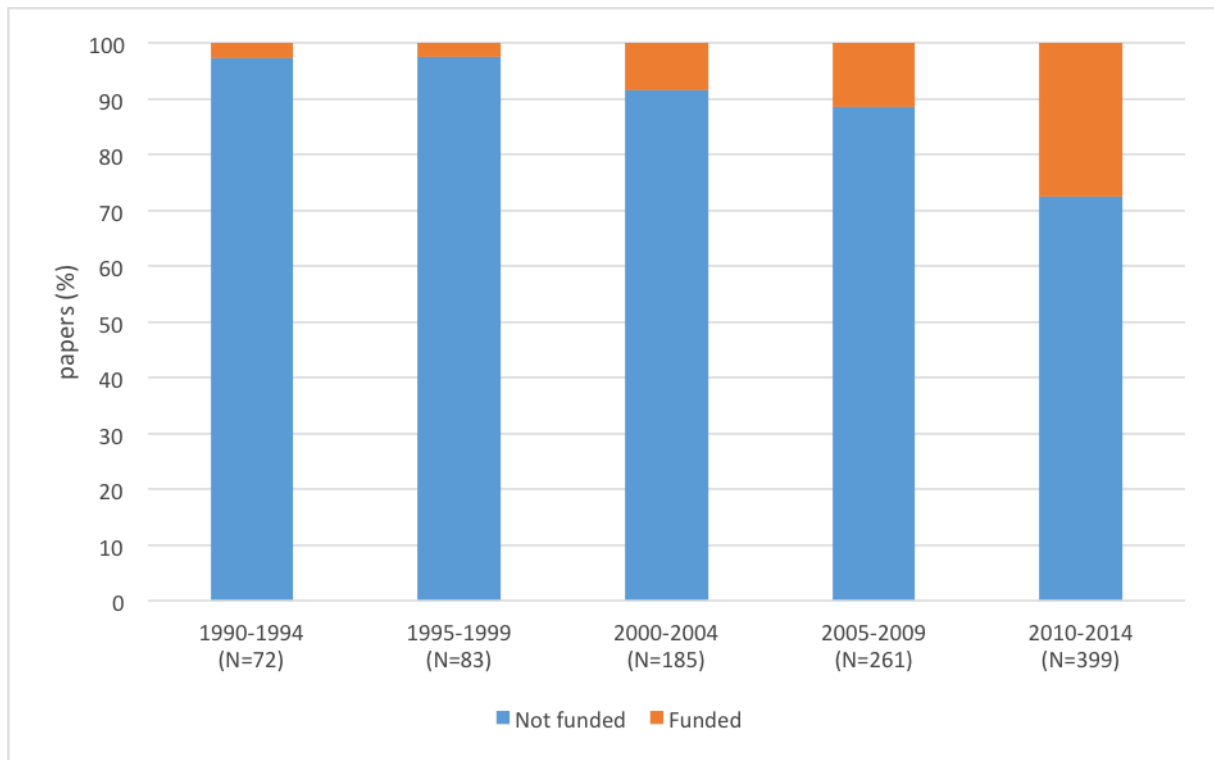
**Figure 5. Forms of collaboration between Spanish researchers**



The findings indicate that, in this most recent period, collaboration between researchers from the same university and generally the same faculty or department (intra-institutional collaboration) has been predominant in Spanish communication research, accounting for almost 80% of the collaborative research published in these journals over the past 15 years. That is to say that in barely two out of every 10 co-authored article were the authors affiliated to different universities (inter-institutional collaboration), suggesting a situation which could be characterised as “research endogamy”, of networks or groups primarily formed of colleagues in the same faculty or department.

The evolution of the behaviour of this variable in the most recent period is, however, very significant. In the first five-year period considered (2000-2004), inter-institutional collaboration was still residual (only 6,1% of the articles), but it begins to take off in the following period (2005-2009), in which it makes up almost 23% of collaborative work and almost 35% in the final five-year period analysed (2010-2014). In the most recent period, therefore, more than a third of collaborative research by Spanish researchers was carried out by researchers affiliated to different universities, giving a sense of a seemingly less endogamic academic community, and, in consequence, one which is more engaged in multicentre scientific collaboration.

**Figure 6. Funded research**



The evolution of the presence of funded research in the corpus analysed shows a practically identical trend (Figure 6), tempting speculation of the existence of a relationship between both parameters. The funded projects carried out in the 1990s (barely 4 of the 155 recorded, 2,6%) are symbolic, but these do not markedly increase in the first decade of the 2000s, making up only around 9,0% (46 out of 446). In any case, the growth which begins to be noted in the second five-year period in this decade (2005-2009) becomes clearly notable in the final five-year period (2010-2014), in which almost 30% of the articles published in journals are based on funded research, an increase of around 20% compared with the previous five-year period, pointing to an increasing centrality of the National R&D Plan as a funding source.

In the period 2000-2004, 8,6% of the articles analysed were based on funded research, of which only 1,1% are articles related to the National Plan, and the rest (7,5%), to initiatives generally funded by regional programmes or university grants. In the following five-year period (2005-2009) the National Plan remains secondary among funded projects (4,6% of papers compared with 6,8% from other sources), but the increase in funded research in the most recent period (2010-2014) is owing to the launch of the National Plan in the field of Communication. In this final five-year period, projects funded by this means almost quadrupled compared with the previous period (4,6% to 16,1%), clearly overtaking those funded by other programmes, either public or private (11,5%).

## 7. Discussion and conclusions

This paper has analysed some of the changes which have been experienced within the academic community of Spanish communication researchers over the past quarter of a century, using patterns of authorship as an indicator in a sample of 1,000 articles published between 1990 and 2014 in five peer-reviewed journals published in Spain. Given the size of the sample, the study is of an

exploratory nature, whose findings, however, are significant in indicating how this scientific community has transformed in this period.

The progressive incorporation of women into Spanish communication research has been confirmed, accounting for about 30% of authorship until the middle of the first decade of the 2000s when their presence grew, reaching half of authorships recorded in the past decade (2005-2014). This coincides with the fact that in practically the same period (2007-2013), the doctoral theses on communication defended at Spanish universities were equally distributed between men and women, modifying the clear predominance of the former in the previous 15 years in which women only defended around a third of the theses presented. The authorship of scientific papers published in these journals also indicates the clear incorporation of women into communication research in Spain over the past decade.

However, the recent balance between men and women in scientific research in Communication still does not reflect the “feminisation” of university degrees in Communication Studies in Spain in this period. The most detailed analyses on this point refer exclusively to the field of Journalism Studies, a degree in which, since the mid-1990s, almost two thirds of students have been women (Rivero, Meso & Peña, 2015). It is probable that a similar pattern occurs in other Communication degrees (Audiovisual Communication, and Advertising and Public Relations), and thus the relative presence of men in university teaching and research seems greater than the proportion of male graduates (only a third). Put another way, there are proportionally fewer female graduates in Communication Studies than men opting to become higher education professionals in teaching and research.

Regarding the distribution of authorship between researchers affiliated to public and private universities, it has been noted that between 1990 and 2004 researchers from private universities accounted for a little more than 25% of recorded authorship, but this percentage falls to 20% in the last decade (2005-2014). Although to evaluate this we would need to know the percentage of members of the scientific community affiliated to public and private institutions, the distribution of the number of authors from public and private universities offering Communication Studies degrees in the five-year period 2010-2014 gives an average of 16 per public university and only seven for the private ones. This finding indicates that the contribution of private universities to scientific research in this field is below their potential. It is possible that public universities have an older and more experienced teaching body with a greater capacity, therefore, for research. But it is also possible that private universities are neglecting the contribution to scientific research which universities ought to undertake, for which it is indispensable to offer teaching conditions which allow staff to dedicate sufficient time to this area of academic activity (financial support, continued methodological training, reduced teaching hours, etc.).

When it comes to patterns of authorship, a radical decrease in sole authorship has been observed during the period analysed, and a corresponding increase, especially in the final five-year period (2010-2014), in multiple authorship. In the twenty-year period between 1990 and 2009, between 75% and 80% of the articles analysed were of sole authorship, with a moderate progression in papers authored by two or more researchers. This situation clearly changes in the most recent period, when collaborative research accounts for more than half of that published in these journals. The turning point came about in the transition between 2005-2009 and 2010-2014, when the change in trend is so abrupt (the percentage of collaborative projects doubles between one and the next going from almost 25% to more than 50%) which can probably only be explained by pressure from external factors.

To explain this recent rise in collaborative research we put forward an “institutional” hypothesis which proposes the recognition of Communications as a specific sub-area in of Social Sciences within the National R&D Plan since 2010 as a triggering factor. Taking the past 15 years as a

reference (2004-2017), in the eight calls for funding bids since this recognition (2010-2017), the average number of Communication projects funded within the framework of the National Plan practically doubled when compared to the previous period (2004-2009), rising from 14 to 25 per call (Martínez-Nicolás, 2018). The findings of this study indicate that in the final five-year period analysed (2010-2014), which precisely coincides with the recognition of Communication within the National Plan, collaboration between researchers affiliated to different universities on the authorship of articles analysed (interinstitutional collaboration) increased by more than 10% compared with the previous five-year period (2005-2009), reaching almost 35% of co-authored papers. Even clearer is the change in trend in this last period (2010-2014) of articles based on funded projects, almost triple that of the previous period (27,6% compared with 11,5% in 2005-2009), and with a growing centrality of those linked to the National Plan. As these state funded projects are often led by teams at different universities, it is very plausible that the increase in collaborative research in the most recent period (2010-2014) is owing to the creation of multicentre research networks, which are generally less permeable to the spurious exchange of authorship than those made up of faculty or department colleagues. These findings, therefore, debunk the other “cynical” hypothesis which, without anything other than anecdotal evidence, proposes that the increase in co-authored papers recorded in recent years is owing to the unfair practice of authorship exchange (“if you include my name, I’ll include yours”) rather than the consolidation of collaborative research worthy of the name. It does not appear that the empirical evidence supports this theory.

## Notes

<sup>1</sup> Accessed: <http://ec3.ugr.es/in-recs/acumulados/Comunicacion-5.htm>.

<sup>2</sup> Accessed: <http://epuc.cchs.csic.es/resh/indicadores> (Ciencias Sociales-Comunicación).

**Funded research.** This study is part of the project *25 años de investigación sobre Comunicación en España (1990-2015): producción científica, comunidad académica y contexto institucional* [25 years of research into Communication in Spain (1990-2015): scientific research, academic community and institutional context] funded by the National Plan for Scientific and Technological Research and Innovation (CSO2013-40684-P). <https://www.geac.es/incomes-25/>

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### How to cite this article in bibliographies / References

M Martínez-Nicolás, A Carrasco-Campos (2018): “The transformation of a scientific community. The evolution of authorship patterns in the Spanish communication research published by peer-reviewed journals (1990-2014)”. *Revista Latina de Comunicación Social*, 73, pp. 1368 a 1383.

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DOI: [10.4185/RLCS-2018-1311en](https://doi.org/10.4185/RLCS-2018-1311en)

Article received on 18 September 2018. Accepted on 10 October.  
Published on 20 October 2018.