

## Does Science Communication Enhance Researcher Impact? A Survey among Scientists at Spanish Universities

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### Abstract

*This study evaluates the perception among researchers at Spanish universities of the impact that science-related news published through institutional communications offices has on their research. An online survey was sent to 2,774 researchers at 20 Spanish universities, and a total of 602 responses to the questionnaire were received, reflecting a response rate of 21.70%. The data was processed using the statistical software SPSS. The results showed that two out of three (65.4%) reported some form of benefit; almost half (46.5%) said that thanks to this institutional communication their research was better known among colleagues; one in four (27.2%) said that they had given speeches on their line of research following the publication of news items, and one in five (20.9%) said they had been contacted by companies interested in their field of research.*

**Keywords:** Science news, institutional communication, universities, impact of science journalism, public science communication

### Introduction

This study evaluates perceptions among researchers regarding the communication of science, technology, and innovation undertaken by Spanish state-funded universities, mainly through their institutional communications offices and Scientific Culture and Innovation Units (*Unidades de Cultura Científica y de Innovación* UCC+i in Spanish, referred to hereinafter as SCIUs). SCIUs are offices which specialize in the promotion of scientific culture and were created in 2007 to support science and technology communication and dissemination activities at Spanish universities and research centres. These SCIUs were rolled out with the support of the Spanish Foundation for Science and Technology [FECYT, 2016], which provides aid and subsidies for their creation, development, and continuity. These units were created to respond to a need to report developments in the field of science and technology within these institutions, bearing in mind that their internal audience includes researchers, who are both the creators of, and the sources for, scientific news reporting [Roca Marín, 2017]. Currently, almost 40% of Spanish universities have a SCIUs and around thirty of them offer specific communications services aimed at bringing science, in its various formats, closer to society [Parejo et al. 2016].

The work undertaken by communications offices in this field is relatively recent. It was not until the early days of democracy in the 70s and 80s that the first press services were launched at Spanish universities with a view to securing media coverage, an issue which had been overlooked until that time [Moreno Castro, 2004; Paniagua Rojano, Gómez Calderón and Fernández Sande, 2012]. However, communications activity by universities intensified in the 90s, especially following the arrival of private universities, and at that time new techniques were designed to promote these institutions' images [Parejo Cuéllar, 2016]. Traditionally, the role of these press offices was focused primarily on planning the university rector's agenda, handling media inquiries and issuing institutional press releases and certain press releases on the outcome of R&D and innovation activities. The situation in Spain is comparable to those of other countries; as highlighted by Lewenstein, science communication did not begin at universities, but at corporate organizations such as General Electric and AT&T, which sought to control and benefit from the research undertaken [Rogers, 1986].

According to Lewenstein, this in itself is not a bad thing; however, he explains that public communication of science and technology was not always done in a spirit of making information free and open to anyone who wanted it [Lewenstein, 2016]. The communication facilities in place at many universities in Spain have gradually grown, however, particularly since 2007, with the implementation of new services such as SCIUs [Parejo Cuéllar et al. 2017] and a view to allowing knowledge to flow freely and openly.

The communication activity carried out by universities is increasingly important given the current media landscape, in which “original output by journalists themselves has fallen substantially; not only do they print more press releases, they also respect the order of ideas that appear within them and rarely expand on the information with data held on file or by consulting secondary sources”, as found by a study undertaken at the Universidad de Burgos (Spain) on the importance of press offices for journalistic practice [Busto Salinas, 2013].

Thanks to the series of advantages offered by communications departments both for organizations and for the media, these are becoming increasingly widespread and have a growing influence on journalist activity. Against this backdrop, communications departments are indispensable in ensuring that the flow of information between science and society is successful, according to the head of the Press Office at the Spanish National Research Council (CSIC), Ainhoa Goñi [Moreno Castro, 2011]. In fact, the organization that acts as a “source” can even be considered a media outlet itself, given its relationship with the audience; this is the case, for example, with NASA, as highlighted by certain studies on science communication in the age of cyber-journalism [Elías, 2009].

The media and state universities both have a key role to play in increasing the degree of scientific knowledge among Spanish young people, via the use of the internet and Web 2.0. “In the case of universities, the results reflect the efforts they are making to connect science with these tools; 72.9% have a science news feed and almost a third had a Facebook and Twitter profile. However, the role of Spanish science remains highly limited in online newspapers. Only 35.4% of articles published refer to research in Spain”, according to a study by the Universidad de Granada [Olvera-Lobo, López-Pérez, 2014].

Most scientists still consider “journalistic media” (print newspapers and magazines, radio and television, and the online editions of these outlets) as the main channels of communication with the public [Allgaier et al. a), 2013], despite public interest in “new media” such as blogs and social networks. However, another study by the same authors [Allgaier et al. b), 2013] based on interviews with German and US neuroscientists shows that most researchers consider communication with the public a moral obligation and a strategic requirement; many others, however, believe it distracts them from their true work.

### **Objective:**

The objective of this study is to evaluate researchers’ opinions on the work undertaken by institutional press offices at Spanish universities and the repercussions on their professional careers. The hypothesis tested is that, far from being a waste of time, public communication of research results via institutions’ professional services could have a positive professional impact for the researcher. For example, it could improve their career by increasing their ability to attract funds and their recognition within the institution and among colleagues at other research centres. As well as enhancing the university’s brand image, therefore, the communication of the results of R&D and innovation could enhance the value of the scientific community’s work.

In addition, the scope of this research also covers the degree of satisfaction among university researchers with the universities’ communications’ departments and with mass media journalists. According to prior studies undertaken in various European countries, North America, South America and Asia, most scientists classified their relationships with journalists as “generally good”, some classified them as mixed or neutral and very few said they were “mostly negative”. Despite the possibility of conflicts with journalists, frequent (generally minor) inaccuracies in the way the news is published and the risk of offending colleagues, superiors or press officers, recent studies show that for the most part scientists manage their relationships with the press satisfactorily [Peters, 2014].

The objective, then, is to look at the repercussions of the science communication undertaken by these institutional offices on the career of the researcher and the dynamic of the scientific activity itself. This information will offer greater insight into the professionalization of the science communication undertaken by university institutions, which, according to certain authors, is necessary for this field. In fact, the current attention to issues of professionalism and professionalization in science communication may be taken as a sign of the growing maturity in practice, education and research in the field [Trench, 2017].

The questions in the online survey were designed to reflect the objectives of the study, which, in short, were to find out: 1. The characteristics of the researchers who participate in public communications actions around R&D and innovation; 2. Their assessment of the impact of communication campaigns, as well as their attitudes towards and reasons for communication, and 3. The degree of satisfaction among researchers with the work undertaken by communications professionals and journalists.

### **Methods:**

Through various informal interviews carried out with professionals who work in the press offices and SCUIs at Spanish universities, we identified a broadly-held view: when well-planned communication campaigns are undertaken around R&D and innovation activities, this has a positive impact on the researcher's scientific career. To verify this within the framework of the study, an analysis was undertaken of the perception of researchers who have worked on communication campaigns with corporate communication offices and SCUIs. With regard to the latter, we refer to those SCUIs which communicate the results of R&D and innovation activity, an activity which is defined by the White Paper for Scientific Culture and Innovation Units (SCUIs) as follows: "activities to communicate the results of R&D and innovation are all those activities associated with the communication of information and content that comply with certain newsworthiness criteria. Specifically, they must be new and current and be directly linked to results generated at the research centres to which the SCIU belongs" [FECYT, 2012].

With a view to corroborating these observations, the study looked at the assessments given by the university researchers who have participated, over the last five years, in communications activities by institutional press offices and SCUIs. To identify the scientists' opinions, an online survey (computer-assisted web interview, CAWI) was designed. One of the problems with these types of interviews is the low response rate; the study sought to alleviate this issue by sending out specific emails and additional reminders to researchers. The questionnaire was also designed in such a way that it could be completed quickly, in under 5 minutes.

The survey, which was designed to allow for completion in under 5 minutes, comprised 29 questions. There were three dichotomous questions (yes/no answers) to ask researchers whether they had taken part in communication campaigns and science dissemination activities and whether they had social media profiles. Another two questions were used to identify the context for the communication campaign and the year in which it took place and to ascertain who took the initiative to carry out it. The three following questions focused on the degree of satisfaction among researchers with journalists and institutional communication professionals and the interest generated among readers, based on a Likert-type scale from 1 to 5. The next four questions were agree/disagree (A/D) questions used to evaluate statements related to science communication. Subsequently, seven questions (Likert scale from 1 to 5) were used to determine the degree of confidence in various media types. There was then one question on researchers' main reasons for communicating science research to the general public, out of 8 potential options (respondents had to select at least 1 and a maximum of 3, with one field open for comments). These were followed by two multiple choice questions to analyze the positive effects (9 options with a field for comments) and the negative effects (7 options with a field for comments) identified by researchers after taking part in the communication campaign. Subsequently, one question was used to give a general assessment of whether the communication campaign had been beneficial or detrimental to the researcher (on a scale of 1 to 5 as follows: 1 It was detrimental to me. 2 It had a negative impact. 3 It had no impact on my career. 4 It had a positive impact. 5 It was beneficial to me). Finally, 6 questions were used for demographic profiling and to compile information on the age, gender, experience, scientific field, professional category and origins of the researchers.

Cooperation was requested from the main Spanish state-funded universities that carry out institutional communications activities around R&D and innovation for the distribution of the questionnaire. The 35 SCUIs at Spanish universities were contacted by FECYT, the ministerial organization that coordinates the SCIU network. At the same time, individual contact was made with all communications offices at the 38 universities with the highest profiles for science-related media content, according to recent research undertaken at the Universidad de Salamanca [Pérez Rodríguez, 2016]. In total, positive responses were received from 25 universities. These were informed individually about the terms of cooperation, which involved distributing the questionnaire among the researchers with whom they had worked on communication campaigns over the last five years. In the end, 20 universities distributed the questionnaire: Universidad de Alcalá, Universidad de Alicante (UA), Universidad Autónoma de Barcelona (UAB), Universidad Autónoma de Madrid (UAM), Universidad de Barcelona (UB), Universidad Carlos III de Madrid (UC3M), Universidad Complutense de Madrid (UCM), Universidad de

Córdoba (UCO), Universidad de Granada (UGR), Universidad de Jaén (UJA), Universidad Jaime I de Castellón (UJI), Universidad de Málaga (UMA), Universidad de Oviedo (UO), Universidad Politécnica de Madrid (UPM), Universidad Politécnica de Valencia (UPV), Universidad Rey Juan Carlos (URJC), Universidad Rovira y Virgili (URV), Universidad de Sevilla (US), Universidad de Valencia (UV) and Universidad de Zaragoza (UNIZAR).

The response collection period total led approximately a month, from 28 June 2016 to 31 July 2016. In total, the questionnaire was sent to 2,774 researchers at Spanish universities, a significant proportion of the Spanish university research community, which stands at 57,641, according to the 2015 Indicators of the Spanish Science, Technology and Innovation System put out by the R&D and innovation observatory ICONO [FECYT, 2015]. A total of 602 responses to the questionnaire were received, reflecting a response rate of 21.70%. The data was processed using the statistical software SPSS.

### **FIGURE 1**

- Total Spanish university researcher population: 57,641
- Proportion of the Spanish researcher population relevant to the study: 14,300
- Field work undertaken: 28-06-16/31-07-16
- Sample identified: 2,774 individuals
- Sample taken: 602 individuals
- Response rate: 21.70%

### **Results:**

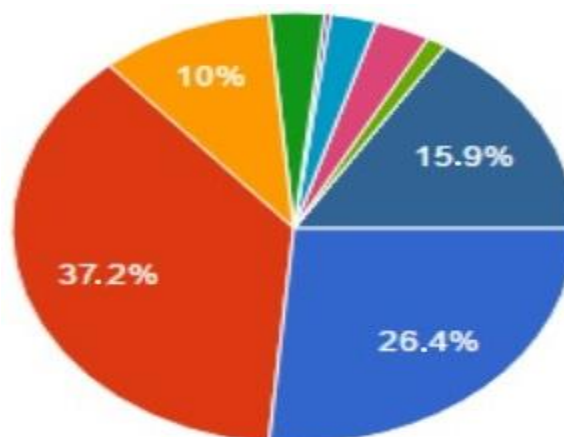
#### **1. Characteristics of the researchers who participate in public communication activities around R&D and innovation**

**Age.** Most of the researchers who responded to the survey were aged between 45 and 54 (36.7%), followed by those aged 35 to 44 (28.9%) and those aged 55 to 64 years (22.4%). Young researchers aged 25 to 34 accounted for 8% and over-65s for 4%. A total of 88%, therefore, were aged between 35 and 65.

**Gender.** Men accounted for the majority of responses at 71.4%, whilst women accounted for 28.6%. According to official figures (Ministry of Education, Culture, and Sport, 2015), 39.4% of Teaching and Research Staff within the Spanish University System are women, which would suggest a small degree of distortion that could be interesting to explore.

**Professional category.** Most of the responses (63.6%) came from professors (tenured, civil servants) (37.2%) and full professors (tenured, civil servants) (26.4%), as reflected in the image (Figure 2). This percentage is substantially higher than the proportion of these professional categories at Spanish universities (47.06% in total).

**Figure 2**

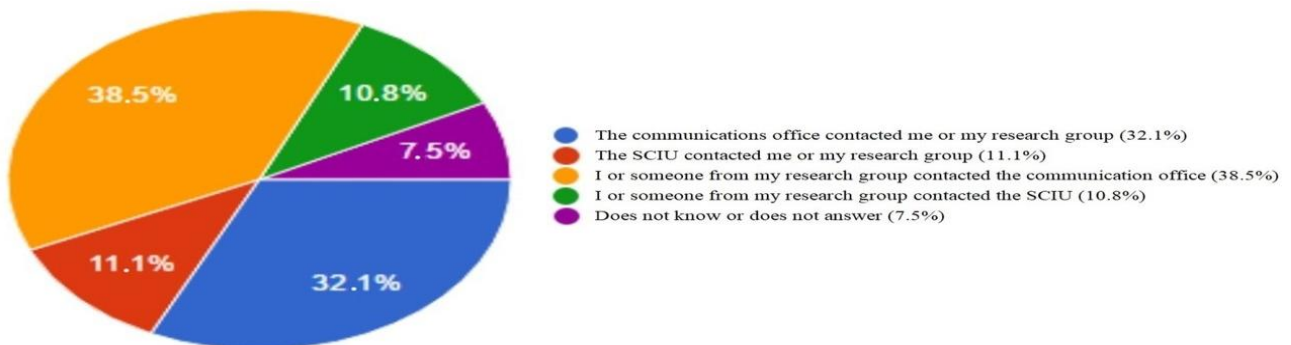


Research areas. The researchers belonged to all fields of knowledge used by the National Assessment Commission on Research Activity [Ministry of Economy, Industry, and Competitiveness, 2017]. According to the responses, there was a certain prevalence of Communication, Computing and Electronic Engineering (17.1%), Natural Sciences (13%), Social, Political, Behavioural and Education Sciences (11.8%) and Biomedical Sciences (10.6%). The four least prevalent areas were: Economic and Business Sciences (2.7%), Philosophy, Language and Linguistics (2%), Law and Jurisprudence (1.2%) and Knowledge Transfer and Innovation (1.2%).

Three out of four researchers also undertake activities related to scientific dissemination. In response to the question on whether they had personally taken part in activities disseminating science to the general population, (for example, public science fairs, talks at secondary schools, Science Week, etc.), 75.6% of respondents said they had.

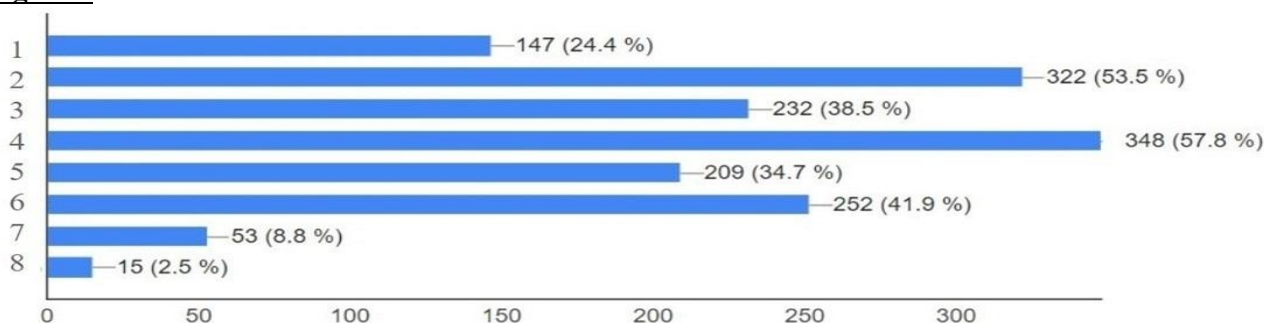
Initiative: How was contact initially made with a view to carrying out this communication? There was a similar trend among communication offices and universities' SCIUs: approximately half of the time the researcher started the process (49.3%), whereas in 43.2% of cases it was the professional communication service that did so (see Figure 3). In general terms, more responses were obtained from researchers who had undertaken the communications process with communications offices, although this factor is somewhat ambivalent given that in some cases, SCIUs are integrated into the Communications Service, such as at the Universidad Carlos III de Madrid, Universidad de Granada and Universidad de Zaragoza, for example.

**Figure 3**



## 2. Evaluation of the impact of communication campaigns and of the attitudes towards and reasons for communication

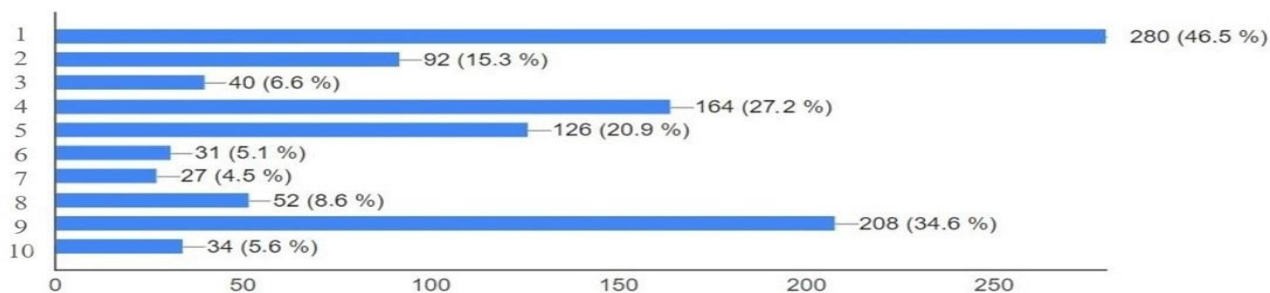
Reasons for communicating: What was your main reason for communicating your research to the general public? In response to this question, over half said they did so because of a duty to report on publicly-funded research (57.8%) and to generate greater social support for research to foster its development (53.5%). The third most common reason was that it was a topic of importance for social progress and the improvement of the quality of life (41.9%). Conversely, the factors that motivated the researchers the least were to raise awareness of the research among colleagues so it would be cited more in their work (8.8%), to contribute to scientific literacy among society to improve knowledge levels (24.4%) and to contact potential investors, industry or sponsors (34.7%). In short, the main reasons researchers communicate their work are the democratic/informative (reporting on a publicly-funded project) and proselytic/pro-scientific (secure greater support for research) arguments cited by certain prior studies on the reasons given for science communication and journalism [Knobel, 2014].

**Figure 4**

1. To contribute to scientific literacy among society to improve knowledge levels.
2. To generate greater social support for research to foster its development.
3. To improve scientific knowledge among citizens so that they are better informed and better positioned to opine and participate in political life.
4. The duty to report to citizens on publicly-funded research.
5. The research could be of interest to companies and underpin innovation, as well as contacting possible investors, industry players and sponsors.
6. It is a topic of importance for social progress and the improvement of quality of life.
7. It will generate greater awareness of the research among colleagues, which will lead to increased citations of my work.
8. Other reasons.

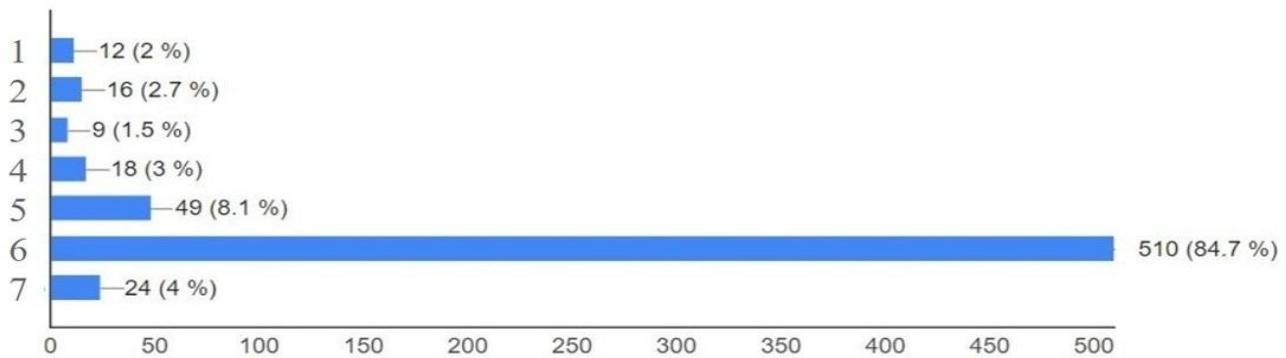
Social media: Do they impact science communication positively? Three out of every four researchers (74.6%) agreed that social networks were an important (35.9%) or very important (38.7%) instrument to enhance science communication. However, less than half of the researchers had a social media profile that was particularly active in science communication. Specifically, just 41.4% of university researchers said they used a social network like Twitter for these purposes.

Positive effects: Did you observe any advantages after your research was communicated and gained media exposure? Two out of three researchers (65.4%) observed some kind of benefit after communicating their research outcomes. Almost half (46.5%) said that as a result, their research had gained greater recognition from colleagues in Spain. One out of four researchers (27.2%) said they had been invited to speak at conferences on their areas of research following the publication of the piece and one in five (20.9%) had been contacted by companies interested in their field of research.

**Figure 5**

1. Research colleagues in Spain are more aware of the research.
2. Research colleagues internationally are more aware of the research.
3. The number of citations of the paper increased after the news was published.
4. I have been invited to speak at conferences on the issue as a result of the news published.
5. I have been contacted by companies interested in my line of research.
6. I have signed an article 83 cooperation agreement or other contract with a company following the communication of this research project.
7. I found a sponsor for my field of research following public communication of the news.
8. I received an award or accolade following the publication of the news.
9. I noted no benefit of any kind.
10. Other (Please specify):

Negative effects: Did you observe any negative impact after your research appeared online and in the media? A substantial majority of the researchers (84.7%) noted no negative impact from communicating the results of their research to society. Approximately one in ten (8.1%) felt that the news had been distorted or misinterpreted in media reporting.

**Figure 6**

1. It was a waste of time: it took time and effort and I have not received any recognition
2. It is a "distraction" from scientific goals: research and publication
3. I achieved public recognition but lost a certain degree of prestige among my colleagues
4. I have been subject to criticism or contempt from colleagues for communicating to the general public
5. The news was distorted or misinterpreted in media reporting
6. I noted no detrimental impact of any kind
7. Other (please specify):

### 3. Degree of satisfaction among researchers with the work undertaken by communication professionals and journalists

Assessment of the work undertaken by communications professionals at universities. The assessments of the work done by these professionals were better than the assessments of the work carried out by journalists at media outlets, the results show. In total, 84.7% of the researchers gave a positive opinion, defining their work as good (32.4%) or very good (52.3%), whilst just 4.5% were unhappy with their work.

Assessment of the work undertaken by journalists at media outlets. On very rare occasions, researchers express discontent with the work done by these professionals: just 7.8% said that journalists had reported poorly (5.5%) or very poorly (2.3%) on their research work. However, most researchers (68.6%) felt the media had reported and represented the topics at hand very well (26.6%) or well (42%).

Researcher confidence in the media, broken down by type of media outlet. The media formats that generated quite a lot or a lot of confidence among researchers were the following: scientific and technical journals (91.2%); institutional reports and/or reports by universities' communications offices (85.5%); print press (62.039%); radio (53.7%); internet: online press, social networks and other websites (39.4%); television (36.7%); and weekly general news magazines (36.4%). By contrast, the media formats that generated the least confidence among the researchers were: television (25.9%); weekly general news magazines (22.1%); internet: online press, social networks and other websites (20%); radio (11.6%); print press (8.8%); institutional reports and/or reports by universities' communications offices (2.8%); and scientific and technical journals (1%).

The survey also included other questions to gauge the respondent's level of agreement or disagreement with certain statements in order to analyze other perceptions about science and technology news published in the media:

- The science and technology news reported in the media is sensationalist or poorly researched. A total of 40.4% of respondents agreed with this statement and 17.5% disagreed, though the majority did not take a clear position. The percentage of respondents who answered "strongly agree" (9.3%) was almost the same as the 8.1% of researchers who stated that news on their work had been distorted or misinterpreted in media reporting.
- There is a need for specialist science and technology journalism to ensure accurate reporting on these topics. This was the statement that generated the strongest agreement: 96.1% of researchers thought that specialization was necessary, and a particularly high proportion strongly agreed with this statement (78.7%). In short, the vast majority of researchers believe that there is a clear need for specialist science and technology journalism.

- Reporting in the media on R&D and innovation topics has improved in Spain in the last decade. A total of 66.9% of researchers agreed with this statement, whilst just 8.7% disagreed. In general terms, therefore, the researchers had observed a positive trend in specialist R&D and innovation reporting in recent years in Spain.

### ***Discussion and conclusions***

We believe the self-selected sample was broad enough to make the conclusions representative of the whole body of researchers who participate in science communication, especially considering that the researchers who do participate in communications activities do tend to be in the minority. In fact, according to a survey [The Wellcome Trust, 2000], 13% of British scientists have carried out outreach activities and 26% of those have been published at least once during their career. A later survey [Royal Society, 2006], which includes a broad definition of what can be defined as publications aimed at non-specialists (such as articles for the media, informative essays and books) gave a similar figure: 25% of scientists had written science communication articles in the preceding year. If we extrapolate this percentage to the Spanish research landscape, we can infer that out of the total of 57,641 university researchers, just 14,410 participate in communication activities in Spain. The figure of 14,410 would represent the specific segment of the researcher population relevant to this survey.

Does science communication increase the impact achieved by university researchers? The results of this study show that the main reasons why researchers engage in science communication are the duty to report on publicly-funded studies (57.8%) and to generate greater social support for the research (53.5%), which is in line with the findings of previous studies [Dunwoody, 1986; Hilgartner, 1990; Kalleberg, 2000; Kyvik, 2005; Nielsen, Kjaer and Dahlgard, 2007; Besley, Oh and Nisbet, 2013; Lewenstein, 2016]. Conversely,

The least common reasons for communication campaigns on research activities were to generate greater knowledge of the research among colleagues and consequently more citations (8.8%) and to contact possible investors, industry or sponsors (34.7%). However, the most common advantage observed following the communication of research through the media was that thanks to said communication the research was better known by colleagues in Spain (46.5%) and abroad (15.7%). This could subsequently contribute to these research pieces being more widely cited by colleagues, as was found by a study by University of Wisconsin-Madison [Scheufele et al, 2014], which showed that scientists can increase citations of their academic research by participating in discussions on science on social networks like Twitter. This study, in the words of its authors, “provides the first comprehensive empirical evidence that outreach activities, such as interactions with reporters and being mentioned on Twitter, can assist a scientist’s career by promoting his or her scientific impact”.

According to the perceptions of the researchers who participated in our study, there are other beneficial effects to be gained from taking part in communication campaigns. After communicating their research through the media, the vast majority (84.7%) said they observed no negative impact, one in four (27.2%) received requests to speak at conferences on the topic and one in five (20.9%) was contacted by companies interested in their research area, which could strengthen synergies with the industrial and corporate world. However, in order to corroborate these perceptions, a broader, more exhaustive study could be undertaken using indicators from the R&D and innovation system. The challenge would be to identify the right indicators to provide evidence of a cause and effect relationship when evaluating the impact of public communication of science.

In general terms, the relationship between the researchers and the media is fairly satisfactory: the majority (68.6%) believe that journalists reported and represented their work well or very well and only a few (7.8%) were unhappy with the media coverage. The researchers were generally happier with the work undertaken by universities’ institutional communication professionals: 84.7% said it was good or very good and just 4.5% were unhappy. However, the researchers said they had greater confidence in specialist media outlets and scientific and technical journals (91.2%) than in the information reported by institutional communications units (85.5%), despite the fact that this kind of content tends to be revised by the researchers themselves.

The next media format that generated the most confidence among researchers was the print press (62.39%), followed by radio (53.7%). The remainder of the media generates poor levels of confidence, with the worst being the television (25.9%), weekly general news magazines (22.1%) and the internet (online media, social networks, and other websites), with 20%. However, in relation to social media specifically, three out of four researchers (74.6%) agreed that these are an important tool to help improve science communication. However, less than half (41.4%) have a public profile on social networks (such as Twitter) through which they actively communicate science research.



This figure is similar to the percentage of researchers (39.4%) who say they have confidence in the information reported on the internet (online media, social networks, and other websites), which leads us to ask the question: Could the use of these platforms and the degree of confidence in the content that appears on them be related? This could be an interesting line of research for the future.

A total of 66.9% of the researchers surveyed agreed that the news reported in the Spanish media on R&D and innovation has improved over the last 10 years, versus just 8.7% who disagreed with that statement. These researchers have therefore observed a positive trend in specialist R&D and innovation reporting in recent years. Practically all of them (96.1%) agreed that there is a need for specialist science and technology journalism to report accurately on these news items.

This study also revealed the main profiles of research staff who tend to be proactive in terms of communications activities on their work. With regard to age, it would appear that science communication is not particularly prevalent among young researchers (aged 25-34), who represent just 8%, or among over 65s, who account for just 4%. The majority (88%) are aged between 35 and 64, and the most active communicators are the 45-54 segment (36.7%). Most of the responses to the survey (63.6%) came from professors (tenured, civil servants) (37.2%) and full professors (tenured, civil servants) (26.4%); this is a far higher proportion than the 47.06% represented by these professional categories at Spanish universities overall. Certain prior studies have already indicated that academic staff whose work is communicated publicly in the media have higher levels of scientific publication and academic rank [Bentley, Kyvik; 2011], identifying a positive correlation between scientific publication and media communication across all academic fields among university researchers in 13 countries (Germany, Argentina, Australia, Brazil, Canada, the United States, Finland, Hong Kong, Italy, Malaysia, Mexico, Norway and the United Kingdom).

As regards gender, the majority of responses came from men (71.4%), though male researchers account for just 60.6% of the total teaching and research staff at Spanish universities. It could, therefore, be interesting to explore this distortion through a gender study. However, it is also important to consider that full professors (tenured, civil servants) account for a substantial proportion of the sample and that women represent a minority in this professional category in Spain (21.7% of Spanish full professorships are held by women).

Three out of four researchers (75.6%) also participate in science communication activities such as public science fairs, talks at secondary schools and Science Week, among others. This information allows us to outline the researcher profile most likely to participate in communication activities: male, aged between 45 and 55, a civil servant (tenured professor or full professor) and also takes part in other science dissemination activities.

This information could be useful to science communication professionals at universities, as certain authors have been arguing for years: “We need such theoretical work to give researchers, students and professional practitioners better tools to describe and classify what they observe, to explain why things happen as they do, to understand relations and processes, to assess effects and outcomes, and to consider the likely consequences of an initiative of this kind or of that kind” [Trench and Bucchi, 2010].

Another issue future studies could examine is the extent to which these opinions coincide with those of other university research staff. In other words, would the perceptions be very different among researchers who had not had contact with the media? Or to put it another way, does contact with universities’ communication professionals and with journalists generate any kind of change in researcher perceptions? It could also be interesting to analyse the case of researchers from other scientific research centres outside the university landscape, such as the *Consejo Superior de Investigaciones Científicas* (Spanish National Research Council), *Instituto de Astrofísica de Canarias* (Canary Islands Institute of Astrophysics) and *Instituto Nacional de Técnica Aeroespacial* (Spain’s National Institute of Aerospace Technology).

In conclusion, when interpreting these results it is important to remain aware of the methodological limitations of the survey. The study offers a valuable overview, but not an explanation, of the perception among Spanish university researchers of the media, their reasons for taking part in communication activities and the effect these activities have on their careers. It does not, for example, provide deeper insight into the causes that give rise to these situations or into the mechanisms through which the researchers’ opinions were constructed. These are issues that could be looked at by future reports, using qualitative methodologies.

However, the data collected shows that independently of the communication and dissemination undertaken by the researcher on their own behalf, the role played by the institution in the public communication of its science research outcomes, far from being in any way detrimental, generates a series of positive effects on the researcher's career, raising their profile and impact in the science community, enhancing professional prestige and increasing their chances of securing greater financing for future lines of research.

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