Publishing in co-authorship: A comparison of the motivations between more and less prolific Management scholars in Brazil

Publicando em coautoria: uma comparação das motivações entre pesquisadores mais e menos prolíficos de Administração no Brasil

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ABSTRACT

In this study, we investigate what more and less prolific scholars – that publish more or less scientific articles – search for in their co-authorship ties. Specifically, we seek to understand if and how there are differences in the motivations presiding to co-authorship between more and less prolific researchers. Research on co-authorship is of interest to the academia, since the majority of the articles are published in co-authorship and co-authorships may have an important impact in the scholars' career. We have collected survey data with 171 Brazilian management faculty, about their motivations, pressures, and choices for co-authorship. We identify significant differences on the perceived pressures to publish, source of pressure, motivations to work in co-authorship and the contributions warranting co-authorship across more and less prolific researchers. We contribute to the debate on the development of scholars and the formation of co-authorship ties, suggesting that co-authorship may be strategically managed and evolving along the professional path of the researchers, and leaving the possibility that scholars' networks of co-authorship evolve strategically as they seek different goals.

Keywords: Publishing in Management; Co-authorships; Pressures to publish; Motives for co-authorships; Managing co-authorships strategically.

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RESUMO

Neste estudo pesquisamos o que pesquisadores mais e menos prolíficos – que publicam mais ou menos artigos científicos – buscam nos seus relacionamentos de coautoria. Especificamente, procuramos entender se e como há diferenças nas motivações presidindo as coautorias entre pesquisadores mais e menos prolíficos. A investigação sobre coautoria é relevante para a academia dado que a maioria dos artigos é publicada em coautoria e as coautorias podem ter uma impacto importante na carreira dos pesquisadores. Coletou-se dados por questionário junto de 171 pesquisadores brasileiros sobre as suas motivações, pressões e escolhas para a autoria. Identificaram-se diferenças significativas nas pressões percebidas para publicar, fontes dessas pressões, motivações para trabalhar em coautoria e as contribuições que merecem coautoria, entre os pesquisadores mais e menos prolíficos. O estudo contribui para o debate sobre o desenvolvimento dos pesquisadores e formação de laços de coautoria, sugerindo-se que as coautorias podem ser estrategicamente geridas e evoluir ao longo co percurso profissional dos pesquisadores, deixando antever que a rede de coautorias evolua estrategicamente com a prossecução de diferentes objetivos.
Palavras chave: Publicar em Administração; Coautorias; Pressões para publicação; Motivos para coautorias; Gestão estratégica das coautorias.

Introduçtion

Publishing scientific papers in academic journals is a fundamental requisite for researchers (HARZING, 2007; CHEN, 2011). In their academic careers, researchers establish co-authorship ties (HOLDER; LANGREHR; SCHROEDER, 2000) to face the pressures (ACEDO et al., 2006) and the difficulties of publishing (JUDGE et al., 2007; SERRA et al., 2008). The co-authorships seem to emerge from the need to publish or perish (HARZING, 2007; ROSSONI; GUARIDO FILHO, 2009) to advance in their careers and, in many universities, to obtain tenure (BACCINI et al., 2015; CRESPI et al., 2017). Co-authorship further seems to be one of the main forms researchers use to deal with the difficulties to get published, the time required in conducting the research and writing, the growing methodological sophistication involved in research (MANTON; ENGLISH, 2006), the need to bring in diverse knowledge bases (ROSSONI; GUARIDO FILHO, 2009; FERREIRA; SERRA, 2015), and so forth. However, it is largely unclear how co-authorship ties are formed and how the more

prolific scholars differ from those that publish less regarding their co-authoring ties, the motivations involved and the motives that drive their selection of co-authors. Moreover, most existing research uses secondary data, for instance extracted from the curriculum vitae of scholars or from secondary databases (ACEDO et al., 2014; RUIZ-CASTILLO; COSTAS, 2014; FALASTER et al., 2017) such as Web of science and have more rarely inquired the scholars themselves to gain firsthand knowledge regarding co-authorship.

In this study, we examine what more and less prolific scholars – that publish more or less scientific articles – search for in their co-authorship ties, analyzing the differences between the more prolific (those with greater experience in publishing) and the less prolific (with a shorter track record of publications) researchers. This analysis seeks to understand if and how there are differences in the motivations presiding to co-authorship between more and less prolific researchers. For instance, for researchers that have a smaller track record of publications, and predictably less mastery over what it takes to conduct good research and publish their findings, the co-authorship may serve to learn and increase the number of publications. In contrast, more experienced researchers may use co-authorships for pooling together different, perhaps complementary (LUNGEANU; HUANG; CONTRACTOR, 2014), competences. In other instances, these scholars may co-author simply because they also advise students through their masters or doctoral degree. Thus, we argue that the composition of the researchers' co-authorship networks will evolve over time and as researchers progress through their careers and level of competency. That is, over time it is likely to change what researchers seek from their co-authors. Notwithstanding, although there is evidence that the majority of the articles are co-authored (e.g., ACEDO et al., 2006; BIDAULT; HILDEBRAND, 2014), the extant research is scarce in pointing the underlying motivations to co-authorships (some exceptions in HUDSON, 1996; MANTON; ENGLISH, 2006; IGLIČ et al., 2017). Similarly, research is scarce in noting whether there are differences in the motivations across scholars on how they chose the co-authors. It is probable, for instance, as we argue, that the composition of the co-authoring networks is distinct for researchers in different stages, and that researchers may strategically manage their co-authorship ties to capture the desired outcomes.

Methodologically this study involved collecting primary data using a survey sent by e-mail with a sample of 171 management scholars. The survey collected data in the perspective of the scholars about their co-authorship practices, motivations and pressures for co-authorship, the factors underlying the choice of co-authors, the profile of the participants, among others. We distinguish more and less prolific scholars based on their overall experience in publishing, such that more prolific scholars are those that have published more (and not necessarily the more productive), and the less prolific are those that publish less.

This study has two main contributions. A more conceptual contribution by investigating not only the motivations for co-authorship, but also how these motivations may differ for more and less prolific researchers. Conceptually, it is interesting that the collaborative networks of the researchers may change not only due to external factors (for instance, changes in the doctoral students that graduate, or career moves to other universities) but also due to a more strategic element that is the need and perspective of the researchers. That is, it changes what researchers seek from their co-authors. Thus, while, for instance, younger researchers and newcomers to the field may need to develop their abilities in conducting research and writing towards publication, more senior researchers are likely to build their co-authorship networks differently. The findings of this study point that less experienced researchers (or less prolific) build ties to increase their personal learning, seek knowledge from their co-authors, and gain experience. In contrast, more experienced researchers (or more prolific) seek co-authorships that pool the competencies and skills of the co-authors, create a more stimulating working environment or helping a doctoral student.

This study also has a more managerial contribution to the doctoral programs' chairs and research groups in an institutional perspective. In this regards, it is relevant the institutional norms concerning issues such as how the programs and faculty are evaluated, for instance, for tenure. In Brazil, for instance, there is a central organization - CAPES (*Comissão de Aperfeiçoamento de Pessoal do Nível Superior*) – that establishes the regulatory framework for evaluating post graduate education and values substantially the scientific publications, both quantitatively and qualitatively, of the faculty members (MACCARI et al., 2009;). To these requirements, researchers may react by actively seeking and building co-authorship ties. Under-

standing what researchers search from their co-authorship ties is thus an initial step for promoting and managing co-authorships. We also point implications for regulatory agencies and journal editors.

This paper is structured in five sections as follows. First, we endeavor in a brief literature review on publishing and publication, and on the Brazilian institutional framework that sets the stage for the need and value of publishing for researchers. The second section is devoted to the methods where we include a description of the data collection procedures, survey instrument and sample. Following we present the results using mostly descriptive statistics. We conclude with a broad discussion, pointing the contribution and practical implications, and also avenues for future inquiry.

Literature Review

Publishing scientific articles is important for the career of faculty (HARZING, 2007; BENNETT; TAYLOR, 2003; CHEN, 2011) but also for universities, departments and research centers (JUDGE et al., 2007) because publications have become one of the more standard criteria over which faculty, universities, and programs are evaluated by national and international agencies. By publishing their studies in indexed, peer-reviewed, and high impact journals (WALTMAN, 2016), researchers contribute to the advancement of knowledge and of the academia (SERRA et al., 2008). Publishing in high impact journals (CRESPI et al., 2017) is the main indicator of academic success (BENNETT; TAYLOR, 2003; ABBASI et al., 2010; FERREIRA, 2015). Moreover, by publishing, scholars open the pathways to higher salaries (SANDNES, 2018), reputation and career advancement (CAMPANÁRIO, 1996; SULLIVAN, 1996; SERRA et al., 2008), obtaining financing for research projects (MUGNAINI et al., 2004), and mobility (ROTHMAN et al., 2003; FALASTER; FERREIRA, 2016), among other benefits (FERREIRA, 2015). In some instances, even the doctoral students are required to publish as a partial requirement to obtain their doctoral degree (BENNETT; TAYLOR, 2003; MUGNAINI et al., 2004; JUDGE et al., 2007; CHEN, 2011). The publication performance is a reputational element that legitimizes the function of the researcher. Thus, the need for publishing is driven, at least in part, by a set of

motivations that are both personal and organizational (HEMMINGS; RUSHBROOK; SMITH, 2006).

The need for researchers to publish clashes in the difficulties involved in publishing. The rejection rates of the papers submitted to top journals can be rather high (FERREIRA & FALASTER, 2016). For instance, Rynes et al. (2005) reported that about 84% of the manuscripts submitted to the Academy of Management Journal were rejected after the first round and, of the remaining 16%, only about half ended up published. Falaster et al. (2016) noted that the journals ranked A2 in the field of Management, Accounting, and Tourism in Brazil have rejection rates above 81%, of which about 40% are desk rejected.

The pressures to publish added to the difficulties imposed by high rejection rates, are a stimulus for researchers to pool efforts – that is, to joint co-authors (HOLDER et al., 2000; ROSSONI; GUARIDO FILHO, 2009). Indeed, extant research already points to the majority of the papers being written in co-authorship (MOODY, 2004) of two or more co-authors. The growing trend for co-authorships in detriment of sole authorship was noted, for example, by Phelan et al. (2002) in strategic management. The studies by Mugnaini et al. (2004), and Leal, Souza and Bortolon (2013) had noted the trend for multiple authorship in Brazil, following also the trend towards greater volumes of publication in the Brazilian management academy. The growth in co-authorships is likely a response to the added organizational and institutional pressures (BUFREM et al., 2010; CRESPI et al., 2017). Interesting in this respect is that the doctoral programs are also evaluated for joint publications between faculty and doctoral students (FALASTER et al., 2017).

RESEARCH AND PUBLISHING IN CO-AUTHORSHIP

Research on co-authorship has gained some interest in the last decades but more especially looking at the social networks of scholars (BARABÁSI et al., 2002; ACEDO et al., 2006; ABBASI et al., 2011; ORTEGA, 2014; PERSSON, 2017), the consequences of co-authorships (MOODY, 2004; DUCTOR, 2015; SANDNES, 2018), and the drivers of publishing and co-authorship (ROTHMAN; KIRK; KNAPP, 2003; SANDENS, 2018). Much of these studies rely on the idea that to assess scholars' performance we ought to measure the publication track record of scholars both quantitatively (i.e., the number of papers published) and qualitatively (i.e., the cita-

tion counts of the papers and the impact factors of the journals in which they have published (ABBASI et al., 2011; WALTMAN, 2016). Also on the idea that multidisciplinary teams are important to overcome the ever growing demands of a high stature publication (LUNGEANU et al., 2014). However, the extant research has looked far less into how co-authorship motivations are likely to vary among scholars and why that may be so.

The need to conduct solid studies with a significant contribution to theory advancement and the difficulties of getting the studies published seems to drive researchers to establish co-authorship ties (ROSSONI; GUARIDO FILHO, 2009). The literature already notes that high productivity - assessed by the number of papers published - is positively correlated to establishing collaborative relationships (KATZ; MARTIN, 1997; LEE; BOZEMAN, 2005). That is, researchers seek co-authorships to overcome the barriers imposed by the requirement of producing high-quality studies and the hazards of having those studies published in top journals (HOLDER et al., 2000).

In fact, researchers may establish co-authorship relations for several reasons (FERREIRA; SERRA, 2015). For instance, to reduce the time to publication (BARNETT et al., 1988; HEMMINGS et al., 2006), since scholars come together to do the study and the writing faster. Possibly the most commonly noted motivation for co-authorship is the search for partners with complementary knowledge and skills (GOFFMAN; WARREN, 1980; HUDSON, 1996; LEE; BOZEMAN, 2005; ACEDO et al., 2006; MANTON; ENGLISH, 2006; LUNGEANU et al., 2014), be these more theoretical knowledge (WRAY, 2006; MATHEUS et al., 2007) or knowledge pertaining to methodologies and statistics (MOODY et al., 2004). The complementarity will predictably help improve the quality of the study (HOLDER et al., 2000) and avoid problems in the method and theoretical contribution (or lack of) that often leads to rejection (FALASTER; FERREIRA; CANELA, 2016).

However, while the publications record and the networks in which scholars may be involved are possible metrics of performance, the actual criteria that scholars use in forming collaborative ties (or co-authorship ties) are less understood. Similarly, it is likely that these ties vary strategically. That is, we argue that scholars are likely to manage pro-actively their co-authorship ties to adjust to specific circumstances, idiosyncratic organizational and institutionalized pres-

sures, and their own more informal relationships (e.g., co-authoring with friends and graduate students).

THE BRAZILIAN INSTITUTIONAL FRAMEWORK

The institutionalized system in each organization and country is likely to create diverse levels of pressure to publish and scholars' responses on how they achieve the performance metrics required. That is, the institutional systems in which researchers operate matters. The usual requirement for faculty, for instance, to obtain tenure, is to publish in highly reputed journals (HARZING, 2007; WALTMAN, 2016; PERLIN et al., 2017). However, there are great disparities across countries in the research/publications requirements and the manner in which the "quality" of the research is evaluated. Ann-Will Harzing's "Journal quality list" (2015 and others) presents a number of journal rankings used by different universities across the globe, with significant differences in the assessment of journal quality. Moreover, there are a number of sources to identify impact factors and quantitative measures of performance of diverse sorts (ORTEGA, 2014; RUIZ-CASTILLO; COSTAS, 2014; WALTMAN, 2016; PERLIN et al., 2017; PERSSON, 2017).

Co-authorships are also a reflection of the changes in the institutional setting and the growing emphasis of the universities towards publications. These changes are at least in part driven by the regulatory agencies that increasingly value publications (ABBASI et al., 2011; PATRUS et al., 2015), but has induced rather profound changes in such aspects as the hiring of new faculty and promotion (FERREIRA; SERRA, 2015). While in the US the system in practice has a tradition of valuing the publications it is now rapidly being adopted in other countries worldwide. The institutionalization of the track record of publications, and publications in the recognized top peer-reviewed journals, is a core pressure for universities, departments, and faculty (PATRUS et al., 2015). That is, the "publish or perish" is becoming a worldwide trend (HARZING, 2007) adopted beyond the Anglo-Saxon countries in which it emerged. Part of the institutionalization is developed nationally, through the national agencies norms, but also internationally as the rankings of universities (see, or instance, the Financial Times ranking) consider the publications of the faculty and even the accreditation of programs and schools takes into account the scientific performance.

In Brazil, for example, the institutional system has been evolving rapidly and in a few years the set of criteria over which researchers and doctoral programs are evaluated regarding the scientific output evolved from considering only conference presentations to now focusing on the JCR impact factors of the journals (among other criteria) (SHIGAKI; PATRUS, 2013). In Brazil, a governmental agency called CAPES - Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – establishes the publication output required by the universities and the researchers (MACCARI et al., 2011; SHIGAKI; PATRUS, 2012; MACCARI; NISHIMURA, 2014; PERLIN et al., 2017). In fact, CAPES has established a national wide system called Qualis that organizes all journals by strata following criteria based on quality, impact, and relevance (BEUREN; SOUZA, 2008). The Qualis applies to all disciplines, not only management/business. The CAPES agency was created in 1951 by the Brazilian government, initially to oversee the provision of qualified specialized personnel needed for the country's development (SHIGAKI; PATRUS, 2012). In 1977, CAPES initiated evaluating the graduate programs (Castro & Soares, 1983) and it now assesses a number of indicators pertaining to the performance of the masters and doctoral programs and ranks them in a 7 points scale (MACCARI; NISHIMURA. 2014). Among the indicators assessed it places a heavy emphasis on the scientific publications in peer-reviewed journals (SHIGAKI; PATRUS, 2012). Other indicators include such issues as the programs' proposition, profile, experience and stability of the teaching staff, the quality of the theses and dissertations, students' publications and integration in the society (MACCARI et al., 2014).

An important element of the Brazilian institutional setting is thus the Qualis list of journals. The Qualis is the Brazilian classification of journals, in all disciplines, in an eight points scale that ranges from the strata A1 in the upper side (currently only internationally reputed journals such as AMJ, AMR, SMJ, Org. Science and so forth), A2, B1, B2, B3, B4, B4 and C, in the lower side. The criteria for classifying the journals are publicly announced (http://qualis.capes.gov.br/webqualis/principal.seam). The journals in each strata need to conform to a number of criteria that include the impact factor, the number of years, indexing in databases, editor, reviewing process, ISSN, periodicity, submission norms, among others (see also PERLIN et al., 2017). Moreover, the ranking of the journals in the Qualis is revised periodically (TULESKI; BARROCO, 2010; CAPES, 2014a).

An additional institutional feature is an obligation that all scholars in graduate programs (less so for undergraduate faculty) to keep updated information of their curriculum vitae in a nationwide, and freely accessible, web-based platform of CVs. This platform is called LATTES (http://lattes.cnpq.br/) and was created by the Brazilian National Research Council (CNPq). In 2010, Lattes already included over 1,6 million CVs of researchers affiliated to Brazilian universities (PERLIN et al., 2017). The advantage of this platform is to make readily available the performance of researchers and some biographic information as it includes the publications, reviewing activity for journals and events, projects, teaching assignments, advising roles, educational background, among other items (LEITE; MUGNAINI; LETA, 2011; PERLIN et al., 2017). Researchers have an incentive to keep their Lattes CVs updated since this is the nationally accepted format for the CVs used by all governmental agencies, for instance, for funding purposes, and also by the universities when periodically assessing the performance of the faculty. Diniz-Filho et al. (2016) reported that there were about 6,000 universities in Brazil, both public, private and community, offering about 37,500 undergraduate degrees and nearly 4,000 graduate (Master and Doctoral) programs.

There are a number of criticisms to citation-based analysis and other quantitative metrics that underlie also much of the Brazilian institutional system (e.g., BORDONS ET AL., 2002; TULESKI; BARROCO, 2010; MESQUITA et al., 2013). Nonetheless, the use of citation counts is widespread and probably made easier by the use of software and dedicated platforms such as Lattes. However, we should probably be cautious of reducing the faculty performance only to quantitative indicators accessible in secondary databases. The paper by Waltman (2016) provides a clear review of the use of citation-based measures

Despite having a reasonably recent system of higher education and taking initial steps in high impact research, Brazil has made a significant path improving the scientific output in many scientific domains, even if perhaps less in Management/ Business than in other disciplines (ALMEIDA; GUIMARÃES, 2013; PERLIN et al., 2017). It is likely that the growth in scientific output of Brazilian scholars (ALMEIDA; GUIMARÃES, 2013; DINIZ-FILHO et al., 2016) has been, at least in part, also due to the institutionalization of a number of norms, systems of control and evaluations such as Qualis and Lattes that help make all information available and provide more transparency to the system and uniform guidelines across the country.

Method

The empirical study was supported in primary data collected using a survey sent by e-mail to a random sample of over 900 scholars that had published papers in a set of Brazilian management journals during the period 2012 to 2014. Scrutinizing Brazil is interesting not only because as we have noted there has been substantial growth in the Brazilian scientific output, but also because of the institutional reforms that have been put in place and provide the country with an idiosyncratic system, albeit one that is in development. Moreover, Collet and Vives (2013) noted that as the US is losing some ground, other players are emerging, including some emerging economies. Moreover, research on Brazil has resorted to the large secondary datasets that are made available by the institutionalization exposed above, namely the Lattes platform (LEITE et al., 2011; ALMEIDA; GUIMARÃES, 2013; DINIZ-FILHO et al, 2016; FALASTER et al., 2016; CRESPI et al., 2017; PERLIN et al., 2017), and Brazil is thus a possible benchmark to other emerging economies that wish to also improve their scientific performance. Using primary data, collected using a survey, we are able to deepen our understanding of the individual faculty perceptions in an institutional environment that, albeit being innovative and organized, is still in flux, as the government and governmental agencies streamline their criteria for assessing the quality of graduate programs, productivity of the researchers and ranking of universities (MACCARI et al. 2009; MACCARI et al., 2011; MACCARI; NISHIMURA, 2014).

INSTRUMENT AND DATA COLLECTION

To collect the data we used a survey based in Holder et al. (2000) and Tarnow (2002) including questions that permitted identify the perception of the Brazilian scholars regarding three aspects: their perceptions on the pressure to conduct research and publish, the motivations and co-authorship relations, and their assessment on what are the tasks that warrant co-authorship in a paper. Holder et al. (2000) analyzed why the most successful scholars worked in co-authorship, the activities that according to them warranted co-authorship, and how they determined the order of co-authors listed in a paper. Tarnow (2000) studied ethical issues in scientific co-authorships. The survey used required some adaptations of the items to

the Brazilian academic reality in management and was subjected to a pre-test with five professors in doctoral programs.

The final survey comprised four sections as described following (survey available from the authors). In the first section, we collected data on the demographic profile of the participants, their publication record (number of articles published and percentage written in co-authorship) and organization (especially the more teaching or research orientation of the department). The second section included items regarding their perception on the pressure to publish and the sources of the pressure, with items such as "The pressure for publication comes from..." (with alternatives such as the department, peer colleagues, yourself, etc.).

The remaining sections comprised explicitly co-authorships. The third section, included questions on the motivations to write in co-authorship with items such as: "Why do you write in co-authorship?", with alternative responses as: "improve the quality of the paper", "jointly pursue an idea", "pool complementary competencies", "increase learning", etc. In the fourth section, we surveyed about which tasks in an article, in the perception of the participant, are considered legitimate to assign co-authorship to a researcher. We included the question: "In your opinion, would you give co-authorship to someone that did ONLY the following task?", with alternative responses such as "having the original idea of the study", "do the statistics", write the literature review", obtain financing", prepare the figures", etc. The responses related to the pressure to publish, motivations for co-authorship and the tasks in a paper were presented on a 5 points Likert type scale anchored in 1 – Totally disagree and 5 – Totally agree.

The survey did not include any item requiring for the identification of the participant or that could permit even the researchers to identify the respondent and anonymity was assured to all participants to increase the response rate. The drawback of this procedure is that without knowing the participant we cannot triangulate data with, for instance, their curriculum registered in Lattes (Lattes is the official CV for all academics in Brazil).

SAMPLE

In identifying the sample of potential participants we followed a number of procedures. First, to identify scholars that had written in co-authorship we ran-

domly searched articles published in Brazilian management journals included in the database SPELL. It is worth pointing out that there are currently over 200 management journals published in Brazil and officially recorded in the official agency (CAPES). We have specifically ensured to include the more traditional and high-status Brazilian journals such as Brazilian Administration Review, Revista de Administração Contemporânea, and Revista de Administração de Empresas but also journals such as Tecnologias de Administração e Contabilidade (TAC) that publishes technical reports, to guarantee that we had a large scope regarding the researchers potentially included in our study, namely those that probably would have a lower emphasis on publication.

To select the articles we used a three years period, between 2012 and 2014, with the restriction that we included only articles that had two or more authors. That is, all articles in our sample were co-authored. From these articles, we collected the names and e-mails of all co-authors. When the e-mail contact was not available in the article a search was conducted on the internet and webpages of the universities to which they were affiliated. The e-mails were then used to send the survey that was presented as a hyperlink after a short e-mail presentation requesting their collaboration in our study.

Of the 990 researchers invited to participate, we had 171 valid responses, for a response rate of 17%. Given our concerns in maintaining complete anonymity, we cannot compare the respondents to the non-respondents, and all data was exclusively compiled using the survey. The sample is heterogeneous and included doctoral students (26 participants), master students (6), former academics (10), undergraduate professors (30), professors of MBAs (10), but with the majority of the participants acting in the Doctoral program (89, or 52% of the sample). The majority were male (106) and had an earned doctorate (119) or even a post-doctorate (26). It is worth noting that it is common for Brazilian master and doctoral students to publish, albeit only, or mostly, in national outlets.

Regarding the publication track records of the 171 participants, 44% (or 75 participants) had published between 1 to 10 articles, 15% (26) published 11 to 20 articles, and 41% (70 participants) had more than 21 articles published (Table 1). Not surprisingly, 49 of those less prolific had not completed a doctoral degree and were students. All the more prolific researchers had a Ph.D. and 90%

were involved in the doctoral programs of their universities. Table 1 describes the sample concerning the number of articles published and the percentages in co-authorship. It is also worth noticing that the previous institutionalized system for evaluating researchers productivity and graduate programs was based on incentivizing greater numbers of publications, somewhat disregarding the quality of the publications – and hence, we actually find scholars with a fairly large number of articles published. This practice was perhaps institutionalized when the Brazilian National Research Council (CNPq) initiated awarding a "Productivity scholarship" where, among other criteria, the sheer number of publications (and not really their quality) was heavily weighted.

Table 1. Percentage of articles written in co-authorship.

Number of articles published by the participant	% of articles written in co-authorship					Total	Total (%)
	0-25%	26-50%	51-75%	76-99%	100%		
1-5	5	2	1	3	34	**45**	26.0
6-10	1	2	4	3	20	**30**	17.3
11-15	0	1	2	8	4	**15**	8.7
16-20	1	0	1	6	3	**11**	6.4
21-50	3	2	7	27	10	**49**	28.3
51 or more	2	0	4	12	3	**21**	12.1
Total	**12**	**7**	**19**	**59**	**74**	**171**	100%

Note: Percentage of articles written in co-authorship on the total number of articles the participant published.

The co-authorship relations were preponderant in all levels of publication record. This data reflects what has already been observed in other countries and disciplines that most articles are currently co-authored (PHELAN et al., 2002; ACEDO et al., 2006). Almost 80% of the participants had the majority of their publications in co-authorship. The more prolific scholars tend to have a slightly lower percentage of articles co-authored than the less prolific scholars; our sample

shows that 72% of the less prolific had all their papers co-authored. Overall, our sample seems consistent with other national and international evidence regarding co-authorships (PHELAN et al., 2002; WRAY, 2006; MANTON; ENGLISH, 2007; LEAL et al., 2013).

ANALYSIS OF THE DATA

The analyses we conducted were eminently descriptive, based on frequencies and percentages. For instance, to distinguish the scientific publications of scholars we split the scholars into three groups according to the number of articles published: 0 to 10 articles (less prolific), 11 to 20 articles (intermediate), and 21 articles and over (more prolific).

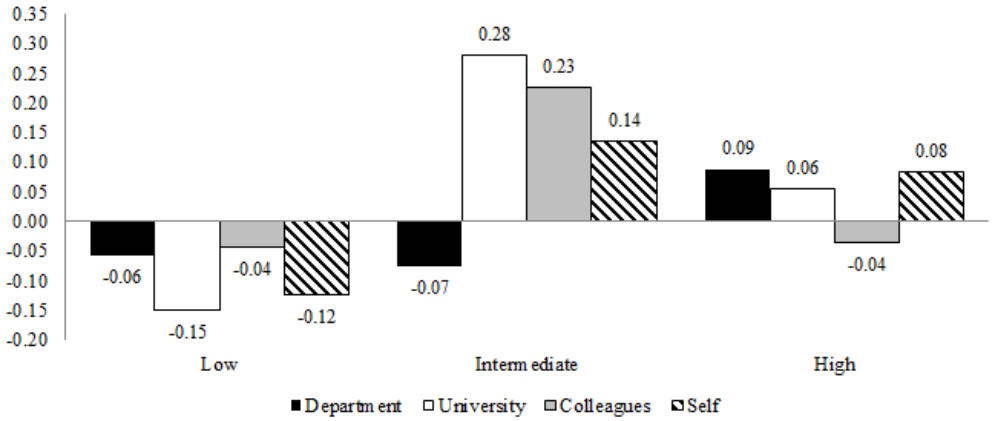
Results

PRESSURE TO PUBLISH

We surveyed the participants on whether they feel pressured to publish. Results (see Figure 1) indicate that the researchers that have an intermediate number of articles published are those that feel greater pressure, followed by the group with a higher number of articles published. These findings are interesting and may be evidence that when the pressure to publish is low researchers will tend to publish less. The researchers that publish the most are probably already selected to more demanding programs because they have a better record of publications and are used to greater publication requirements. It is also possible that those researchers that are less prolific suffer from lower pressure to publish because they are in less demanding universities. In the intermediate levels of publication record, the pressure to publish may be high when these researchers are affiliated to universities that need to improve their ratings and seek accreditation. Finally, the more prolific scholars may feel less pressure because they already have a longer track record of publications. It is worth noting that in Brazil the system does not distinguish outright the universities in teaching and research as in the US, but the regulatory agencies (especially CAPES) rate the doctoral programs using several metrics of publication (MACCARI et al., 2009).

Examining the sources of the pressure to publish (Figure 2), the results indicate that researchers tend to perceive greater pressure originated in the university, colleagues and themselves. Scholars in Departments more oriented towards research are likely exposed to greater pressure to publish, but other sources of pressure, including intrinsic to the individual may be relevant. In the figure, the positive values represent how many points each group responded above the mean of the full sample, while the negative values how much below the mean. An intrinsic motivation emerges especially for the group of researchers with an intermediate level of publications (0.14) and for those that are more prolific (0.08). The university or the department have different effects across the groups; the intermediate group of researchers perceived greater pressure from the university than those more and less prolific. This is interesting because in the Anglo-Saxon systems a similar finding could probably be the consequence of the need to stabilize contracts. The scholars' strategy is to achieve tenure and once achieved they do not need to publish at a high rate. Arguably, pure researchers have a parallel strategy: to gain visibility and prestige in their communities, and this strategy keeps even once tenured. However, in Brazil, the evaluation of the scholars and doctoral programs to which they are affiliated occurs every four years continuously and the incentive is permanent to publish. However, even in Brazil, there is a substantial difference between the State and Federal universities, where obtaining tenure does not really require a publication record and it is mainly a matter of time and the private and confessional universities where tenure (understood as guarantee of permanent employment) is not awarded. Concerning peer pressure, it is interesting that it is more felt in the intermediate group, where it is above the mean (+0.23), but considerably lower for both the more and less prolific (-0.04).

Figure 1 Sources of the pressure to publish, by level of publication.



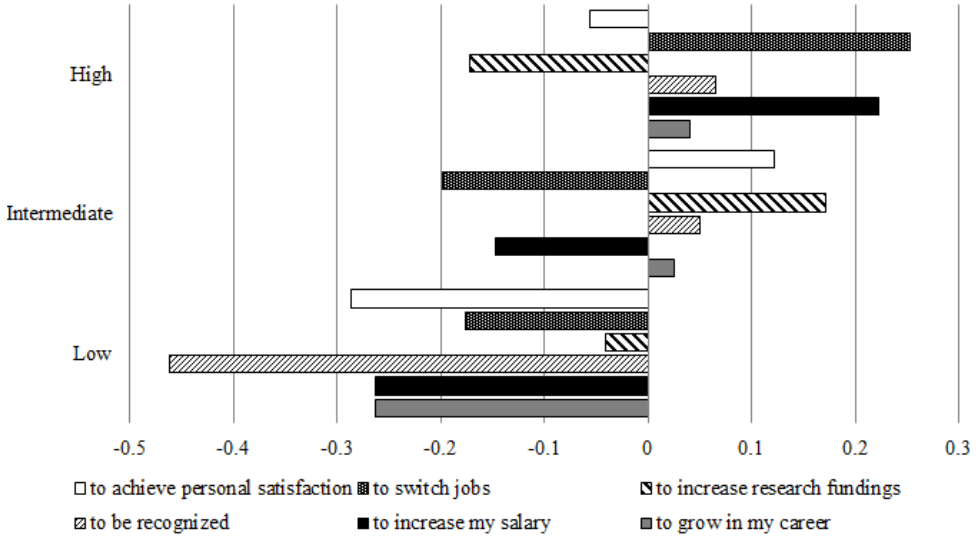
Note: the vertical axis shows the Likert type scale anchored in 1 – Totally disagree and 5 – Totally agree, sub-tracting the average (of the full sample) of each question, to facilitate a comparison between groups.

MOTIVATIONS TO PUBLISH

What motivates researchers to publish? We questioned the participants "With the publication of your articles you expect...". The findings in Figure 2 show that, regardless of the prior track record, personal satisfaction and growing in the career are relevant motivations to endeavor in trying to publish. However, publishing is not seen as a means for professional mobility or to improve salaries. Perhaps these perceptions reflect that in Brazil publishing is not usually tied to improved income (the majority of the universities does not pay per publication, albeit some start doing it and finding alternative means such as internal scholarships for those that are more prolific) or even career opportunities (although promotions take to, some extent, the publications into account). This context contrasts sharply with the US or English reality where the track record of publications is crucial for promotion, tenure and mobility (STEPHAN, 1996; THOENIG; PARADEISE, 2014).

There are, however, substantial differences in the motivations among the groups of researchers. For example, professional mobility and an increase in salary are very important for the more prolific scholars, while, conversely, personal satisfaction is more motivating for the intermediate researchers. The less prolific scholars seem to have lower motivation levels in all items.

Figure 2 Motivations to publish.



Note: the horizontal axis shows the Likert type scale anchored in 1 – Totally disagree and 5 – Totally agree, subtracting the average (of the full sample) of each question, to facilitate a comparison between groups.

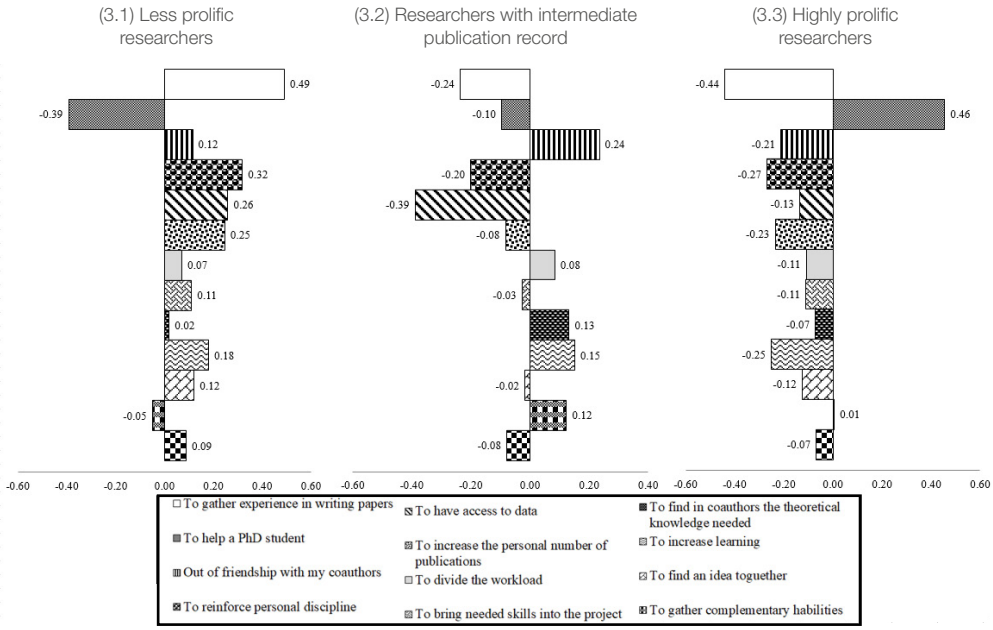
MOTIVATIONS FOR CO-AUTHORING

And, what are the motivations for co-authorship? Our working hypothesis is that the larger the number of articles a researcher publishes, the larger his/her experience in publishing, and hence his/her capability associated with the process. We surveyed the participants on "Why do you write in co-authorship?". Results are shown in Figure 3 and are evidence on how more prolific, intermediate and less prolific scholars perceive the value of the co-authorships. To analyze this data and depict it visually in figure 3, we have followed the same procedure, subtracting the average of the entire sample from the average of each group, thus highlighting differences across groups of researchers – or more specifically, how each group distances from the overall average.

Notably, the motivational profiles in co-authorships are different for more and less prolific scholars (see Figures 3.1, 3.2 and 3.3). Researchers with greater track records of publication use co-authorships as a manner to help their doctoral students that are newcomers to the academic career (see also Falaster, Ferreira and

Serra, 2016). In contrast, a number of other aspects tend to be less relevant such as "To gain experience in writing articles" (-0.44), possibly because they are already experienced writers, "increase discipline" (-0.27), "increase personal learning" (-0.25) and "increase the number of articles published" (-0.25).

Figure 3 Motives for co-authoring: What do researchers seek?



Note: the horizontal axis shows the Likert type scale anchored in 1 – Totally disagree and 5 – Totally agree, subtracting the average (of the full sample) of each question, to facilitate a comparison between groups. Researchers that had published up to 10 articles were rated as less prolific, 11 to 20 as intermediate publication, and above 21 as highly prolific.

On the other hand, the less prolific researchers differentiate for searching co-authorships to increase their experience (+0.49) and augment their discipline in writing the paper (+0.32). The less prolific researchers have higher averages in almost all items when compared to their more prolific peers. The only major exception is in the item "To help a doctoral student in his/her papers", which is probably due to these researchers not being involved in the doctoral programs or in advising doctoral students.

In an intermediate position, the researchers with 11 to 20 publications value more the possibility to "help a friend researcher", "increase personal learning", "benefit from the theoretical knowledge of the co-author" and "pool together complementary abilities". In contrast, they value less "access to databases" and "gain experience". This seems to be a group in transition. While some seek knowledge and the ability of colleagues, they also tend to not acknowledge that they seek to benefit from the experience of the co-authors.

The above noted differences across motivations of less and more prolific researchers, suggest that there are effective differences in their needs for co-authors, that they will need to manage strategically by pooling together other scholars that bring complementary knowledge and skills. For instance, in an initial stage, when the researcher initiates the career and starts publishing the first articles, the need may be more utilitarian – searching for manner to increase the volume of publications, searching co-authors that write and also share opportunities to co-author in their own studies, and speed to get it done and published. At a later stage, when the researcher is already experienced, the concerns are likely to focus more on the quality of the articles and in publishing in higher tiered journals. Perhaps also in advising doctoral students (FALASTER et al., 2017).

CO-AUTHORS' CONTRIBUTIONS

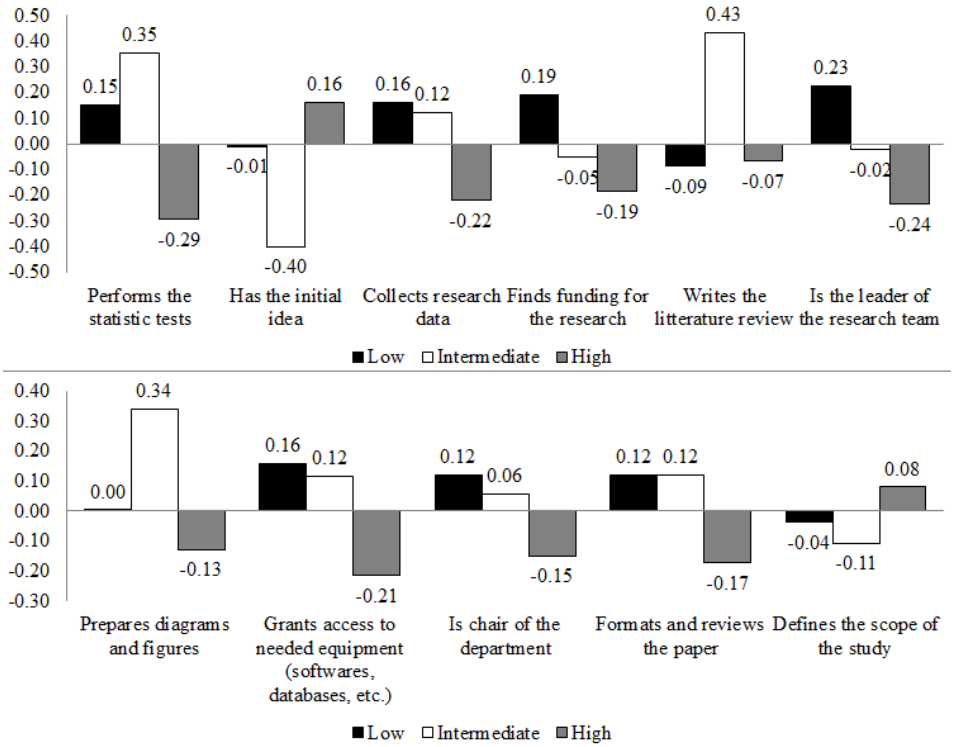
The academic debate on what is truly a co-authorship and who deserves to be named co-author is not new. Albeit different perspectives co-exist and different researchers have different practices (FERREIRA; SERRA, 2015) this is an issue that is not regulated or for which there is a manual of ethical behavior. Nonetheless, there seems to be a growing consensus that the researcher needs to make a significant contribution to be included as co-author (HUTH, 1986; OSBORNE; HOLLAND, 2009). Therefore, a complementary manner to understand what researchers seek from co-authorships is to analyze what they consider to be relevant, or substantial, contributions that warrant co-authorship. That is, the contributions they seek from their co-authors.

There are many functions and tasks a co-author may play, from data collection to writing in the manuscript. However, to assess our participants' perceptions we asked them the following: "In your opinion, would you give co-authorship to someone that had done only the following task" (tasks in the figure). Overall, we

observed they value specific tasks such as conducting the statistics needed in the paper (45%), collecting the data (44%), write the literature review (62%). Conversely, the following were considerably less valued: having the initial idea for the article (30%), obtain financing for the research (25%), prepare the figures (4%), and formatting and revising the paper (13%).

How can we distinguish the more and less prolific researchers as to their perceptions on who deserves co-authorship? A comparative analysis is displayed in figure 4, showing how perception changes between less, intermediate and more prolific authors.

Figure 4 Contributions warranting co-authorship.



Note: the vertical axis shows the Likert type scale anchored in 1 – Totally disagree and 5 – Totally agree, subtracting the average (of the full sample) of each question, to facilitate a comparison between groups. Researchers that had published up to 10 articles were rated as less prolific, 11 to 20 as intermediate publication, and above 21 as highly prolific.

The less prolific researchers tend to perceive the more operational tasks as deserving co-authorship, such as conducting the statistics, collecting data, providing access to the equipment required for the research, or other elements that are more "political" such as being the department chair. The contrast is great with those more prolific researchers that value the more intellectual matters as having the idea for the project and defining the scope of the study as more worthy of co-authorship than their peer groups.

Discussion and Final Remarks

In this study, we examined two core issues in publishing in the perspective of researchers: the pressure to publish and the co-authorships. Specifically, we endeavored to identify distinct patterns among those researchers that are more and less prolific (i.e. that have published more or fewer articles in scientific management journals) regarding their co-authorship relations. To conduct the study we constructed a dedicated database comprising primary data collected using a survey to 171 Brazilian management scholars. The findings show that co-authoring is a common practice in the Brazilian management academy, similarly to other disciplines and countries (MASKE et al., 2003). The majority of the participants having the larger part of their paper written in co-authorship – close to 80% of the participating researchers wrote more than 75% of their published articles in co-authorship and 43% had all articles in co-authorship.

Conducting research and publishing thus influenced by organizational and institutional factors. The pressures emerging in the departments and universities are largely top-down since they are designed centrally by the Brazilian regulatory agencies of higher education. Researchers react to the pressures to publish seeking co-authors with whom to share the task (BUFREM et al., 2010). Notwithstanding, albeit widely debated the benefits of co-authorships (FALASTER et al., 2017) and the potential difficulties of managing the relationships with the co-authors (HOLDER et al., 2000), the debate has been far less munificent in scrutinizing how the co-authorship networks vary among scholars. In this study, we suggest that researchers will search for the co-authors that bring in the desired pool of skills.

This argument is based on the idea that co-authorships neither emerge casuistically nor are stable. In fact, we suggest that the co-authorship ties vary and evolve as researchers accumulate experience in researching and publishing. Hence, we may expect that established researchers, or those that are more prolific, are likely to have a network of co-authorship with a composition that is largely different from that of newcomers or less prolific researchers. In this manner, given the pressures to publish, managing the network and altering its composition may be essential to achieve the required publications.

All participants reported some degree of pressure to publish, albeit with very disparate intensities and origins. This may be a reflection of the institutional system and reflected in a lasting debate in the Brazilian academy criticizing a productivism logic that has allegedly prevailed (PATRUS et al., 2015) valuing the volume of publications over the quality. Currently, there are significant institutional changes underway pointing to, predictably, placing greater value on the quality of the publications. Albeit Brazil has an unusually sophisticated institutional system that integrates the evaluation of the journals with the researchers and that of the graduate programs, and is nationwide, it is growingly resorting to the usual practices based on citation counts – and using the standard JCR impact factor, Scopus, and the local equivalent SPELL impact factor.

Independently of the track record of publications, we found that the main motivations driving researchers to establish co-authorships are to improve the quality of their papers (HOLDER et al., 2000), and bring in the theoretical knowledge and complementary competencies of the co-authors (MANTON; ENGLISH, 2006; ROSSONI; GUARIDO FILHO, 2009). However, we also found remarkable differences among more and less prolific scholars regarding co-authorships. For instance, the more prolific researchers have an added “burden” of helping doctoral students to launch their careers (Falaster, Ferreira & Serra, 2016) and get those publications needed for a job position or through tenure. Conversely, less prolific researchers use their co-authorship as a means to learn and absorb from more experienced scholars their knowledge, both theoretical and the more tacit knowledge on how to navigate the editorial process and handle reviewers (HUDSON, 1996; GOFFMAN; WARREN, 1980; LEE; BOZEMAN, 2005; MANTON; ENGLISH, 2006).

Finally, what task, or tasks, warrant co-authorship are also perceived differently across our groups of researchers. This is interesting because it is likely a reflec-

tion of the institutional changes that have been gradually implemented since 1951 when CAPES was created by the government, in 1999 the Lattes platform for CVs, and the Qualis classification of journals in 2000. As the criteria used by the agencies change, it is also likely to change how scholars manage their co-authorship ties. Hence, our findings show that the less prolific researchers consider that even the more operational tasks such as conducting the statistics or doing the data collection are deserving of co-authorship (see also Holder et al., 2000). In contrast, the more prolific researchers require a more intellectual input that may include providing ideas or defining the scope of the study and such tasks as collecting data are not deserving. Interestingly, the less prolific researchers emerged more "political" with higher frequency revealing they would provide co-authorship to a department chair, for instance, even if they did actually have an input in the study. This, however, may also be evidence that the Brazilian management academy is still in a rather infant stage and such practices as ghost authorships are likely rather present.

The fundamental contribution of this study is in examining what researchers seek from their co-authorships, why they write in co-authorship and what are the benefits they perceive in their ties with co-authors. We tackled this endeavor comparing more and less prolific researchers. There is thus a contribution to the literature that has been scarce in examining perceptions on publishing and especially on the co-authorship ties and networks. This has implications for the management academia. Our findings reveal differences on the motivations to co-author and even the perception of what is a contribution warranting co-authorship. These differences were salient contrasting more and less prolific researchers. That is, the desired objectives with the co-authorships vary across the groups and it is relevant to understand how they may change to promote collaborative research. Moreover, understanding what motivates researchers to publish is possible to promote the desired behaviors. For instance, more prolific researchers seem the perceive publications as a vehicle for mobility and better salary (including financial incentives per published article), while intermediate researchers pursue aspects such as recognition and self-realization. For doctoral students and recent doctoral graduates, this is also interesting for understanding the importance of developing relationships and co-authorships for professional advancement. In sum, holding a better understanding it is possible to think more strategically about co-authorship ties and how to promote them.

This study also has a more managerial contribution to the doctoral programs' chairs and research groups. For the department chairs and program directors, understanding what researchers search from their co-authorship ties is an initial step for promoting and managing co-authorships. A number of actions may be put into place to promote the exchange of ideas that may lead to co-authorship, including exchange programs, visiting positions, conducting research seminars and so forth. In fact, at least some doctoral programs started to assess the network of ties of their faculty especially observing the co-authorships of the professors with current and formers students and with faculty in other national and foreign universities. At the core of the organization into research groups and centers there is, at least in part, the underlying motivation to foster and promote collaborative ties among the members. The debate of ideas and the bringing in of research projects is likely to lead to co-authorship ties. Often these groups pool together faculty and students, primarily master and doctoral students involved in conducting research.

Other implications may reflect on the regulatory and financing agencies from an institutional perspective. In this regard, it is relevant to the institutional norms concerning issues such as how the programs and faculty are evaluated, for instance, for tenure. In Brazil there is a central organization - CAPES (*Comissão de Aperfeiçoamento de Pessoal do Nível Superior*) – that establishes the regulatory framework for evaluating postgraduate education and values substantially the scientific publications, both quantitatively and qualitatively, of the faculty members (MACCARI et al., 2009). To these requirements – improving the quality of their studies and increasing the volume of publication in journals with impact factor -, researchers may react by actively seeking and building co-authorship ties. It is worth noting, for instance, that the national and international recognition of the researcher is already an item evaluated by the Brazilian CNPq (e.g., *Bolsas de Produtividade em Pesquisa*). In the context of Brazil, and perhaps other more peripheral countries outside the US and European Union, these issues are important because they influence the scientific credibility of the country but also other more objective aspects such as obtaining international accreditation by agencies such as EQUIS or AACSB. The Brazilian government has an institutionalized set of agencies that establish the norms and rules that the universities, graduate programs, and the faculty need to abide by. These agencies oversee the evaluation which they exert by defining the quality of the jour-

nals (the official ranking is the QUALIS), and the overall criteria to evaluate the performance of both universities and faculty members (largely through two agencies: CNPq and CAPES).

Finally, for journals and journal editors assessing the relevance and accuracy of the co-authorship is relevant. An evidence is that some journals already have specific forms that must be filled when submitting an article where the contribution of each co-author needs to be identified – usually, selecting from a brief list of tasks. Perhaps our study provides a contribution for journals to better design those forms by identifying which tasks the researchers themselves perceive as being worthy of a co-authorship.

LIMITATIONS AND FUTURE RESEARCH AVENUES

There are a number of limitations worth highlighting. The findings of our study do not aim to be generalizable since we have focused on only one country and discipline (management/business). Moreover, we have highlighted throughout the need to consider the specificities of the Brazilian institutional system in which the publishing incentives (or lack of) exist. However, they may be relevant to other emerging economies and to countries to may seek to set broader and transparent criteria do regulate and incentivize further scientific output. Moreover, our findings and issues pertaining to co-authorship do not aim to be generalizable across research fields, since the practices are likely to differ. For instance, it is not common for management research to be conducted in research groups or centers. The scope of this study was based on analyzing management scholars, and differences between research fields - as well as between different national/regional science/research systems – are likely to be substantial. Nonetheless, additional studies may reveal those differences and they are likely relevant since while we have idiosyncrasies across the disciplines we are growingly converging to similar criteria in assessing scholarly performance.

The study was designed to be descriptive, not aiming at hypotheses testing and thus we are not able to explore better other elements that emerged as potentially relevant. Moreover, we did not collect information on who were the participants to guarantee anonymity and improve response rate, but the drawback is that we cannot triangulate data. For instance, it could be interesting to use a mixed re-

search design enabling to observe the collaboration network of these participants and whether what they said (from the questionnaire) is consistent with what they did (the collaboration network). In addition, the results indicate that the more prolific researchers perceive greater pressure to publish than those that are less prolific. While this may seem paradoxical, it would be interesting to cross this data with the university to which the researchers are affiliated and examine their tenure criteria and whether it has mechanisms of incentive to publish. It is worth noting that some Brazilian universities pay per publication to their faculty members, following a list of journals deemed worth of additional financial compensation. Future studies may observe co-authorships and identify cause and effect of what makes researchers perceive greater pressure to publish and what is the impact of the pressure to publish in effectively leading the faculty to publish. It is also interesting to better understand what is the impact of the incentive mechanisms in place (e.g., pay per article, tenure, promotion, etc.) when the aim is to improve the publication record. At least in part, the mechanisms of incentive exist in the US system where tenure is achieved by fulfilling publication requirements in high stature journals. Such mechanisms are largely absent in the private Brazilian universities (and private universities account for the majority of the universities and students enrolled).

There are also limitations pertaining to the data. Although we used a reasonably sized sample, the all population of management scholars in Brazil is much larger (see, for instance, PERLIN et al., 2017). A possibility for future studies is to consider all researchers that have an active official CV Lattes, and randomly select a sample based on this pool. Similarly, the data was collected inquiring about the participants' perspective and practice, however, some triangulation of the data with secondary data of their track record of publications may shed additional insights on their actual practices regarding co-authorships. This possibility, however, faces the probably low response rate when using non-anonymous surveys on a practice that may be sensitive.

To conclude, additional in-depth studies on the co-authorship relationships over the researchers' career may help in better understanding academia as a whole since a large portion of the scientific work (and publication) is developed in co-authorship. Our study contributes to identify how the co-authorships are used by researchers and what they look for in selecting co-authors. This is a complementary step, in

the context of the Brazilian academia of management, in the effort to understand the differences and similarities pertaining co-authorships, and how more and less prolific researchers perceive a core part of the institutional environment that dominates.

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