Bibliometric Analysis of the Scientific Impact of Single-Authored Articles in Brazilian Journals of Information*

Abstract

This research aims to describe the scientific impact of single-authored articles published in Brazilian journals in information-related fields (Archival, Library Science, Information Science and Museology) between 2009 and 2017. This is a bibliometric study of a descriptive character, with an applied quantitative methodological approach. The ABCDM database, the Harzing's Publish or Perish software and the Lattes Platform were used for data collection, which were then fed into and analyzed as Excel table and SPSS (t-test). From 1680 single-authored articles, 313 were randomly selected for study. Main results regarding the authorship were: 55.12% of authors had more single-authored articles than multiple-authored articles; 67.36% of the most cited articles were single-authored. Main results regarding the articles were: 35.10% of single-authored articles were the most frequently cited among an author's entire body of work; in 49.67% of the cases, the average number of citations of single-authored articles exceeded the authors' total average number of citations; in 50.00% of cases, the average number of citations of single-authored articles exceeded the average number of citations of multiple-authored articles. The average number of citations of single-authored articles exceeded the average number of citations of multiple-authored articles and of articles in general.

Keywords: Single authorship; scientific impact; scientific journal; bibliometrics; information fields; Brazil.

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Análisis bibliométrico del impacto científico de los artículos de autoría única en revistas brasileñas de información

Resumen

Esta investigación tuvo como objetivo describir el impacto científico de los artículos de un solo autor publicados en revistas brasileñas en las áreas de información: archivo, biblioteca, ciencias de la información y museología, entre 2009 y 2017. Se trata de un estudio bibliométrico descriptivo, con un enfoque metodológico cuantitativo aplicado. Se utilizaron la base de datos ABCDM, el software Harzing's Publish or Perish y la plataforma Lattes para recopilar datos, que se alimentaron y se analizaron en una tabla de Excel y con una prueba t (SPSS). De 1680 artículos de un solo autor, 313 fueron seleccionados al azar para su estudio. Los principales resultados en cuanto a la autoría mostraron que el 55,12 % de los autores tenía más artículos de un solo autor que de varios autores y el 67,36 % de los artículos más citados son de autoría única. Entre los principales resultados en relación con los artículos se tiene que el 35,10 % de los artículos de autoría única fueron los más citados entre todo el trabajo de un autor; en el 49,67% de los casos, el número medio de citas de artículos de un solo autor superó el número medio total de citas de los autores; en el 50 % de los casos, el número medio de citas de artículos de un solo autor superó el número medio de citas de artículos de varios autores. El número medio de citas de los artículos de un solo autor superó el número medio de citas de los artículos de varios autores y los artículos en general.

Palabras clave: autoría única; impacto científico; periódico científico; bibliometría; campos de información; Brasil.

1. Introduction

In Brazil, single authorship articles correspond to approximately one third of the scientific production in journals from the areas of information (Archivology, Library Science, Information Science and Museology), according to studies by Vilan-Filho (2016) and Gabriel-Junior (2017), who analyzed the periods from 1972 to 2013 and from 1972 to 2017, respectively; however, this topic remains insufficiently studied. Most investigations focus on multiple authorship, a result of collaboration, which is encouraged by scientific policies, so this study aims to approach single authorship in articles from Brazilian journals in the information fields, analyzing their scientific impact, so as to obtain a more complete picture of the field.

Scientific impact measures, such as the number of citations received by authors, institutions or countries, may indicate the recognition of a researcher's work (Andrés, 2009). Citations thus provide information on the impact and quality of the scientific works developed by a given author, publication or country. Moreover, citations indicate that the article was read and that influenced another article (Finlay et al., 2012). Furthermore, data on citations may be useful to identify the most cited and most productive authors, research lines, an authors' impact factor, geographical and/or institutional origin, the type of document, the average age and obsolescence of the literature, the most cited journals, the core journals of a certain research field, etc. (Araújo, 2006).

According to Packer and Meneghini (2006), the number of citations is used as a measure to identify a research product's reference character and, consequently, visibility (and as an effect, prestige). For these authors, by publishing in a journal researchers strive for their article to be reviewed, accredited, read and cited by peers. They also state that Rresearchers aim to maximize the visibility of their scientific articles and, consequently, their conditions as researchers. One of the greatest rewards scientists can receive is the knowledge that their works have been read and used by their peers. Individual scientists, therefore, are deeply concerned with their works' visibility.

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Likewise, Gomes (2013) explains that the use of published scientific knowledge by other researchers is identified through citations. Mueller (2003), in the same vein, explains that authors stand out for the frequency according to which they are read and cited, thus seeking a wide dissemination of their works. Maltrás-Barba (2003) states that the more often a publication is cited, the more scientifically influential it becomes due to the interest it arouses in scientists.

In fact, scientists hope for their research contributions to be recognized through citations (Ziman, 1988). More than publishing research for the sake of doing it, author and scientists want to persuade their peers that their discoveries are valid or plausible and that they are potential contributions to their respective fields.

Weinstock (1971) discusses the reasons for making citations: correcting one's own work; correcting the work of others; criticizing previous work; substantiating claims; alerting researchers to forthcoming work; providing leads to poorly disseminated, poorly indexed, or uncited work; authenticating data and classes; identifying original publications in which an idea or concept was discussed; identifying the original publication describing a concept or term; and disclosing the work or ideas of others. Cronin (1984) supplements these reasons with social and psychological factors (memories) and extrinsic factors, such as the target audience (number of readers, capacities and expectations); the status of the journal in which the article will be published; the scope, format, objectives and size of the article; the mastery of a given scientific area by the researcher; and the proper use of information sources. According to Meadows (1999), reasons for one researcher to cite another include the following: to pay homage; to give credit; to identify a methodology, equipment, etc.; to indicate readings on the topic; among others.

The search for recognition through citations can lead researchers to write single-authored scientific articles due to their status as prestigious and typical of efficient, applied and successful authors (Eliyan, 2014). For Chuang and Ho (2014), single-authored works demand great effort, so this type of work is seen as the gold standard and as a testament to the scientist's commitment. Furthermore, for these authors, the citation of a single-authored article is a notable scientific achievement that can lead researchers to be consecrated in their fields.

Likewise, for Reif (1961), scientists ascribe great importance to prestige, since they perform their work in an environment where favorable opinions by their peers are crucial and where their reputation translates into benefits. As such, personal recognition is even more important for scientists than for other people, and thus the former strive to achieve maximum prestige. Reif (1961) also believes that researchers' need for recognition stems from the fact that success is not quantifiable: success can be ascertained only through peer recognition.

In their studies, Beaver and Rosen (1978) and Katz and Martin (1997) understand recognition and visibility as a result of collaboration (co-authorship); however, these characteristics may also come from single authorship, and perhaps in greater proportions depending on the scientific area in question, something that was also noted by Beaver and Rosen (1978).

Some studies are clearly aligned with this hypothesis. For example, Pinto and Costa (2018) studied the system of production and dissemination of knowledge in the Social Sciences and Humanities communities, involving 496 professors from the University of Minho, in Portugal, from 2007 and 2008. They observed that most communities have a preference for conducting research using single-authored sources. In Social Sciences, 54.4% of professors preferred to conduct their research using single-authorship sources, while in Humanities this proportion reached 71%.

In a study exploring the trends, characteristics and impact of citing collaborative works – also focused on collaboration networks (at country, institutional and author level) – Fu and Ho (2018) gathered highly cited articles (with 100 citations or more) in the Environmental Engineering category, published between 1967 and 2013 and present on the Web of Science database, and found 3304 articles and 7895 authors (among which only 3% were single-authored articles). Among the 26 main authors, 11 had single-authored articles. The percentage of top authors who had single-authored articles was higher than the overall average. Furthermore, per publication, citations of single-authored articles were higher than citations of co-authored articles. The authors concluded that the results of international, interinstitutional, and interpersonal collaboration did not improve the analyzed articles' impact. According to them, although collaboration is beneficial in several research areas, this does not apply to highly cited studies in the field of Environmental Engineering. The authors concluded that single-authored articles had more visibility (obtained more citations) than collaborative articles. Furthermore, Wagner et al. (2019) show in

their research that collaborative studies are not always innovative. For the authors, international collaboration seems to produce high conventional measures and low measures of novelty. In single-authored articles, it is very likely to find studies with innovative and also atypical and less conventional knowledge.

Chuang and Ho (2014) investigated the characteristics of 1760 single-authored articles in the Web of Science's Science Citation Index Expanded, concluding that these articles had recurrent citation peaks. When the citation peaks were reached, citations decreased by a few years and then surpassed the previous high. They also found that single-authored articles were composed of a higher percentage of reviews, equivalent to 33% of the top-cited articles in the Science Citation Index Expanded (SCI-EXPANDED). Moreover, they found that 72 Nobel Prize winners published 124 single-authored articles.

In a study on the presence of single authorship in 21 research areas encompassing Web of Science articles published between 1981 and 2012, King (2013) found that the percentage of single-authored articles is highest in the field of Social Sciences, reaching 40%. The author found that, although single authorship is in decline, this type of research still has substantial weight within the scientific community since single-authored articles remain widely cited.

Based on the premise that co-authored articles are of superior quality to single-authored articles, Hart (2007) analyzed the academic literature in the field of Librarianship. To this end, the researcher assessed citation counts from the Journal of Academic Librarianship (JAL) and from College and Research Libraries (C&RL), during a period of 10 years after the articles' publication from 1986 to 1993. Among the 542 articles analyzed and their 2590 citations, the author found no significant statistical difference to support this premise. Thus, for Hart (2007): "The benefits of collaboration to the production of a manuscript should not be construed as a difference in quality [as it pertains] to published papers" (p. 195).

Thus, based on Bourdieu's (1996) premise that individuals do not perform gratuitous acts, the objective of this research was to describe the scientific impact of single authorship in articles from Brazilian journals in the fields of information during the period from 2009 to 2017.

2. Methodology

This was a bibliometric study of a descriptive character, with a quantitative methodological approach of an applied nature. The universe of this research comprised all single-authored articles published in Brazilian journals in the areas of information, from 2009 to 2017, available from ABCDM database - acronym for A (Archeology), B (Librarianship - Biblioteconomia in Portuguese), C (Information Science – Ciência da Informação in Portuguese), D (Documentation) and M (Museology) - created and managed by the University of Brasilia (UnB), which hosts more than 14,000 references to articles from Brazilian and Portuguese journals in the areas of information in 36 journals, since 1963. The data extraction was performed directly on a copy provided by email pgcinf@unb.br.

The following data were collected: (1) journal name and year of publication; (2) article title; (3) author's name. Data imported from the ABCDM database were saved in .txt format, and then transferred to Excel (Microsoft Office). In cases where there were conflicts or lack of information, the articles were consulted directly in the online journals, so as to resolve uncertainties. To clarify doubts and obtain additional information about the authors, CNPq's Lattes Platform was also consulted (http://lattes.cnpq.br).

Following, the data filtering process was started, first by removing duplicate records of articles published in Portuguese journals and/or articles with cataloging errors. Thus, out of the 1713 records originally collected, 1680 remained, written by 1241 different authors. Then, authors' names were subjected to data cleanup.

The process described yielded a heterogeneous and non-biased representative sample, with 95% confidence, 5% margin of error, and 50% proportion (since there was no estimate of proportion), totaling 313 articles. The sampling decision was based on the use of Harzin's Publish or Perish software in the second stage of the research, which involved manual data collection for a qualitative investigation. To obtain these sample elements, Re-

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search Randomizer (https://www.randomizer.org/) was employed, so as to select 313 articles.

The second stage of the research involved the assessment of the impact of the analyzed articles in terms of their citations using Harzing's Publish or Perish (https://harzing.com/resources/publish-or-perish), a program that retrieves and analyzes academic citations with data from Google Scholar and Microsoft Academic Search, for example (Harzing, 2007). Searches using this program were done by specifying the name of the author and the name of the sample article, while selecting Google Scholar as the target database and 2009 as the initial year.

Harzin's Publish or Perish – Google Scholar was used in place of sources such as the Web of Science or Scopus due to the low representativeness of Brazilian journals in information fields in international databases (i.e.,: only 6 of the 27 journals found in the study were on the Web of Science). Thus, a more faithful representation of the Brazilian scenario could be obtained.

According to Fedderke (2013), there is an ongoing debate about the robustness of the citation counts available on Google Scholar. On the one hand, says the author, some studies question Google Scholar's reliability, due to the attribution of certain publications to ghost authors, inclusion of non-academic publications, exclusion of some important academic journals, unequal research-field coverage, less comprehensive coverage of publications prior to 1990 and inconsistent accuracy.

On the other hand, Fedderke (2013) states that many studies suggest that Google Scholar is more robust and accurate than the database of the ISI, for example. The reasons cited by the author are that the ISI database does not include citation references with minor errors, which means its more susceptible to citation noise; provides excessive representation for the English language and for journals based in the United States and United Kingdom; is inclined towards the citation of articles (as opposed to books, book chapters, working papers, reports, conference papers, etc.); significantly restricts citations to journals; underreports citations in disciplines with significant publication delays; underreport citations in general; and is sensitive to institutional signatures.

Furthermore, Kousha and Thelwall (2007) and Fedderke (2013) state that every discipline has fewer publication records in ISI than in Google Scholar, with a marked divergence in the case of Social Sciences, since the field records a significantly smaller number of citations per article and lower h-indexes in the ISI citation system as compared with Google Scholar.

Thus, the following data were collected: (1) total number of articles; (2) total number of article citations; (3) number of citations of the most cited article, as well as its type (single authorship or multiple authorship); (4) number of citations of the analyzed article (article chosen by Research Randomizer to compose the sample); (5) number of single-authorship articles; and (6) total number of citations of single-authorship articles. It is important to note that although the object of study was single authorship, an investigation that did not adequately contextualize this object in relation to the other types of authorship would be incomplete. So, whenever necessary, the results found were analyzed in a comparative way with multiple authorship but keeping the focus on this study's main object. It is emphasized that one of the selected authors was not found (nor was his article selected), so the analysis comprised a total of 312 authors.

Finally, all collected data elements were first treated in Excel software. This allowed descriptive statistical analysis to be performed, with the construction of Table 1. The t-test was performed in order to understand whether the difference between citations of single-authored and multiple-authored articles is significant.

3. Presentation and Discussion of Results

The 312 authors analyzed had from one to 319 articles (between publications in single authorship and co-authorship), according to Table 1, in which only the 31 authors (10%) with a higher number of citations in descending order, according to column C(AT). The author with the largest number of articles (319) is a foreign sociologist considered one of the most influential thinkers in the world, which, perhaps, explains the high number of publications.

Table 1. Citations in Harzing's Publish or Perish of single- and multiple-authorship articles in Brazilian journals of information, indexed in the ABCDM between 2009 and 2017 (n = 31)

P	C(TA)	F(TA)	$\bar{x}$(AT)	C(SA)	F(SA)	$\bar{x}$(SA)	C(MA)	F(MA)	$\bar{x}$(MA)	HC	T
P177	4709	319	14.76	2565	206	12.45	2144	113	18.97	1306	AM
P193	2742	154	17.81	352	27	13.04	2390	127	18.82	145	AM
P118	1022	33	30.97	4	7	0.57	1018	26	39.15	474	AM
P125	487	188	2.59	171	95	1.80	316	93	3.40	33	AU
P214	387	80	4.84	55	6	9.17	332	74	4.49	52	AM
P039	368	148	2.49	80	16	5.00	288	132	2.18	39	AM
P217	344	63	5.46	31	4	7.75	313	59	5.31	158	AM
P150	340	62	5.48	119	31	3.84	221	31	7.13	60	AM
P097	320	109	2.94	206	71	2.90	114	38	3,00	36	AU
P225	315	69	4.57	167	38	4.39	148	31	4.77	80	AU
P050	309	49	6.31	211	20	10.55	98	29	3.38	89	AU
P161	303	24	12.63	303	22	13.77	0	2	0,00	52	AU
P309	301	51	5.90	238	40	5.95	63	11	5.73	36	AU
P202	281	44	6.39	61	14	4.36	220	30	7.33	55	AM
P059	264	31	8.52	93	7	13.29	171	24	7.13	77	AU
P020	259	120	2.16	47	17	2.76	212	103	2.06	19	AU
P231	254	69	3.68	133	30	4.43	121	39	3.10	38	AM
P286	235	43	5.47	227	32	7.09	8	11	0.73	67	AU
P009	233	72	3.24	163	33	4.94	70	39	1.79	32	AU
P023	233	72	3.24	163	33	4.94	70	39	1.79	32	AU
P253	226	150	1.51	103	67	1.54	123	83	1.48	17	AM
P033	224	54	4.15	19	7	2.71	205	47	4.36	82	AM
P224	222	95	2.34	149	43	3.47	73	52	1.40	63	AU
P061	219	43	5.09	158	26	6.08	61	17	3.59	38	AU
P078	216	63	3.43	106	43	2.47	110	20	5.50	44	AM
P187	208	41	5.07	54	8	6.75	154	33	4.67	85	AM
P051	207	37	5.59	57	12	4.75	150	25	6,00	29	AM
P298	207	22	9.41	49	11	4.45	158	11	14.36	97	AM
P060	199	89	2.24	43	17	2.53	156	72	2.17	29	AU
P101	199	45	4.42	53	10	5.30	146	35	4.17	39	AM
P152	194	24	8.08	160	7	22.86	34	17	2,00	114	AU

Caption: P – researcher; C(TA) – total number of article citations; F(TA) – total article frequency; $\bar{x}$(AT) – average total citations per article total; C(SA) – citations of single-authored articles; F(SA) – frequency of single-authored articles; $\bar{x}$(SA) – average citations per single-authored article; C(MA) – multiple-authored article citations; F(MA) – frequency of multiple-authored articles; $\bar{x}$(MA) – average citations per multiple-authored article; HC – researcher's highest number of citations; T – type of the researcher's most cited article.

Source: Research data obtained from Harzing's Publish or Perish software.

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Among the 312 authors examined, 16 (5.12%) had the same number of single-authored and multiple-authored articles; 172 (55.12%) had more single-authored articles than multiple-authored articles (of these, 65 [20.83%] had no multiple-authored articles); and 124 (39.74%) had a lower number of single-authored articles than multiple-authored articles. These results suggest that a portion of authors from the scientific community in the area of information have a preference for writing single-authored articles.

The analyzed authors received up to 4709 citations. There were 24 (7.69%) authors who did not receive any citation (be it for single- or multiple-authored publications). The author with the highest number of citations (4709) is the previously mentioned foreign sociologist, who also had the largest number of published articles.

The most cited article, which was also authored by said foreign sociologist, received 1306 citations. This is a single-authored article. The 1306 citations of this single article correspond to 27.73% of the author's total citations. In fact, when considering the percentage of citations of the most cited article by each author within the total number of citations received by each author, in 41 (13.14%) cases this percentage is equal to or greater than 50.00%. This corroborates Meadows (1999), who argues that a limited number of publications receive the majority of the researcher's citations.

Still considering the most cited article by each author (in this case, this measure was ascertained only for 288 authors [92.30%], since 24 [7.69%] received no citations), there were 194 (67.36%) cases in which the most cited article was of the single-authorship type and 94 (32.63%) cases in which the most cited article was of the multiple-authorship type. Although the most cited article was multiple-authored, Hart (2007) –premised on the assumption that co-authored articles are of superior quality in comparison to single-authorship articles– analyzed citation counts of Librarianship journals but found no statistical evidence of significance to support the claim that co-authored articles were superior.

The author with the largest number of single-authored articles presented 206 publications (again, the foreign sociologist). He also had the highest number of citations of single-authored articles, with 2565 citations (distributed among his 206 single-authored articles, resulting in 12.45 citations per article on average). It is interesting to note that the three authors with the highest number of citations of single-authored articles are linked to renowned foreign universities, strengthening Reif's (1961) interpretation that there is a direct relationship between the prestige of the scientist and the prestige of the institution.

Regarding the 313 selected articles, 31 (9.90%) were not found, 94 (30.03%) received no citation and 188 (60.06%) received between 1 and 31 citations during the analyzed period. Among the 188 single-authored articles that received citations, 66 (35.10%) were their authors' most cited articles (when considering the totality of the author's articles, that is, both single authorship and co-authorship). These 188 articles received a total of 1015 citations. Among them, 33 (17.55%) received 504 citations (49.66% of the total), that is, these 33 elements had practically half of the received citations.

So, when it comes to the selected articles, the author with the highest average of citations (22.86 citations per article) had only seven articles of the single-authorship type (compared to 17 articles in multiple authorship, which received an average of two citations per article). This is in line with Ziman's (1988) argument that a researcher who has published a single work may receive more recognition than a researcher who has written several works. In this case, the author with the highest average of citations had 29.42 times fewer articles than the author with the highest number of single-authored articles (nevertheless, the author with the lowest average citations is highly recognized by the scientific community due to his overall contribution [Ziman 1988], as we have explained previously).

The study by Pinto and Costa (2018) may help explain the significant number of citations of single-authorship articles. In their research, these authors found that 54.4% of the professors of Social Sciences at the University of Minho, in Portugal, prefer to carry out their research through single-authorship works. In the same vein, a study by Hartley and Cabanac (2016) on scientific blogs showed that posts written by pairs of authors were slightly less readable than single-authorship posts. According to the authors, this result challenges the current view on the advantages of writing in pairs. In a

study on the quality of collaborative research versus single-authorship research, Finlay et al. (2012) found that single-authored articles did better than co-authored articles in terms of their use by undergraduate students. In the same sense, Chang's (2008) research identified the critical factors driving the value of knowledge created by individual scientists and research groups, concluding that single authors tend to generate more valuable knowledge. The generation of more valuable knowledge probably results in a greater number of citations.

Regarding the articles' average citations, when comparing each author's total citations (single authorship plus multiple authorship) with their average of citations of single-authored articles, there were 50 (16.02%) cases in which the number was the same; 155 (49.67%) in which single-authored articles had a higher average of citations than the author's average number of total citations; 83 (26.60%) in which the total average number of citations exceeded the average number of citations of single-authored articles; 24 (7.69%) in which there were no citations. As we have discussed, King (2013) found that, although single authorship is in decline, this form of research still has substantial weight within the scientific community due to being widely cited.

When considering the average number of citations among articles of single and multiple authorship, among the 312 authors analyzed here, 24 (7.69%) had no citations, as already described; 47 (15.06%) had no multiple-authorship articles (and thus it was not possible to obtain an average); 156 (50.00%) had averages for their single-authorship articles that were higher than for their multiple-authorship ones (among these, 37 [11.85%] authors had no citations of their multiple-authorship articles); 84 (26.92%) had lower averages for single-authorship articles than for multiple-authorship ones (among these, 17 [5.44%] authors had no citations of their single-authored articles); and one [0.32%] had the same average number of citations of both single and multiple-authorship articles.

Regarding the results, is important to say that the t-test for paired samples was applied after confirming that all assumptions of the parametric test were satisfied. First, the distributions of the two variables [$\bar{x}$(AU) e $\bar{x}$(AM)] were normal, which was confirmed by the Shapiro-Wilk normality test, and the normality assumption was satisfied, with $p=0.001$. The null hypothesis that the variances of the two variables are equal was not rejected with $p=0.16$ which shows that the variances of the two variables are the same and the assumption of equality of the variances was satisfied. Thus, the criterion for the decisions of the statistical tests was the significance level of 5%. Single authorship presented a mean citation of 2.83, a median of 1.79 and a standard error of 0.19. On the other hand, multiple authorship had a mean of 1.85, median of 0.74 and standard error of 0.20. So, when both conditions were met, the t test for paired samples was performed, with a result of $p<0.001$. In view of this result, there was a significant difference between the number of citations, with single authorship generating more citations than multiple authorship [$t(311)=3.782$, $p<0.05$].

Given the above, the results found here contradict Meadows' (1999) thesis that collaborative works (that supposedly resulted in co-authorship) would receive more citations. However, these results are in line with the study by Fu and Ho (2018), in which per-publication citations of single-authored articles were higher than citations of co-authored articles, even in the area of Environmental Engineering. This led the authors to conclude that single-authored articles (together with single-country and single-institution articles) had more visibility than collaborative articles.

4. Final Considerations

The results of this study allowed us to verify that the sampled authors had more single-authored articles than multiple-authored articles. Although the sample of authors was selected from single-authored articles, this result allows us to infer that there is a considerable portion of authors (who publish in Brazilian journals in the areas of information) who seem to prioritize publishing single-authorship works, or at least have a considerable percentage of single-authored works within their total body of work. Such preference for single authorship may result, for example, from individual research (a characteristic of areas such as Archival Science and Museology), from the author's personal reflection, from individual professional reports, from the author's preference to work alone, from academic works, from the author's time management, among other factors.

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Furthermore, when analyzing the total number of citations, we found that the most cited articles by each author were, in their majority, of single authorship. The inferential statistical test showed that there is significance in the sample, showing the difference between citations received from single-authored articles and multiple-authored articles. One third of the analyzed articles in the sample were the most cited by the sampled authors. These results show that single-authorship articles are of high quality, even though Ziman (1988) questions whether the number of citations is really valid as a measure of scientific importance. In any case, citations are, generally speaking, an accepted measure of a work's or author's reference character (Maltrás-Barba, 2003; Mueller, 2003; Gomes, 2013) and, consequently, of their visibility (and as a consequence, their prestige) (Packer & Meneghini, 2006).

Thus, since single-authored articles seem to provide for greater citations, which, in turn, can imply recognition – at least according to Merton (1957), Reif (1961), Bourdieu (1983), Hochman (1994), Ziman (1988), Meadows (1999) and Maltrás-Barba (2003) –it is possible to hypothesize that authors who write alone may be looking to enhance their scientific reputations. This means that said authors may be seeking to satisfy their need for esteem (Maslow, 2001) first and foremost through personal satisfaction (Hochman, 1994), which comes in the form of peer recognition. And nothing may be more effective in fulfilling such a need, we might add, than not having to share this recognition, keeping it for oneself. Furthermore, given the results found and the discussions held, it is recommended that future studies pay attention to single authorship, which, contrary to many predictions, is still present in certain scientific areas and appears to be far from disappearing completely.

5. References

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