



# Academic Literacies: Appraisal and Social Sanction About Authorship and Scientific Integrity<sup>1</sup>

## *Letramentos Acadêmicos: Avaliatividade e sanção social sobre autoria e integridade científica*

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**ABSTRACT:** Research integrity has been under scrutiny, especially in regard to the legitimacy of academic authorship and co-authorship. We aim to bring a critical perspective to the debate, firstly by presenting how past and recent publications discuss (co-)authorship, and next by developing an appraisal analysis of discourse elements that make types of social sanction regarding the topic available. We conclude by pointing out certain criteria that validate (co-) authorship and kinds of evaluation produced in the reviewed literature. Our results indicate that (co-)authorship credit is affected by power relations and personal interest and that multiauthored publication is gaining significance in collaborative network research environments.

**KEYWORDS:** academic writing; authorship; research ethics; language evaluation; appraisal system.

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<sup>1</sup>The order of authors follows ICMJE recommendations proportionally: the first two authors (A) giving substantial contributions to the research conception and design, and to the analysis and interpretation of data, (B) drafting the article or revising it critically for important intellectual content, and (C) taking responsibility for the final approval of the version to be published, with Selbach having the responsibility for acting as the corresponding author. The third author substantially contributed to the elaboration of section 3. The final manuscript is a new work and does not include a literature review, data or data analysis from previous dissertations or theses.

**RESUMO:** Integridade em pesquisa tem estado sob escrutínio, especialmente em relação à legitimidade de autoria e de coautoria acadêmica. Nosso objetivo é trazer uma perspectiva crítica ao debate, primeiramente apresentando o modo como publicações prévias e recentes discutem (co)autoria e, a seguir, desenvolvendo uma análise da avaliatividade de elementos do discurso que disponibilizam tipos de sanção social em relação ao tópico. Concluímos, apontando certos critérios que validam (co)autoria e tipos de avaliação produzidos na literatura revisada. Nossos resultados indicam que a atribuição de (co)autoria é afetada por relações de poder e interesses pessoais e também que a publicação assinada por vários autores está ganhando significação em contextos em que a pesquisa é feita em redes colaborativas.

**PALAVRAS-CHAVE:** escrita acadêmica; autoria; ética em pesquisa; linguagem de avaliação; sistema de avaliatividade.

## 1 Introduction

The digital era has brought along fast electronic communication among scientists and immense digital databases. Against this backdrop, research integrity has been under scrutiny, especially in regard to the legitimacy of academic authorship and co-authorship practices: “complex phenomena of language-related real life problem” (RBLA, 2017).<sup>2</sup> In addition to giving access to past and present research, technology imposes responsibility upon researchers regarding scientific ethics, reliability, and recency, either by acknowledging previous research or highlighting the innovation of their personal endeavors in terms of accounting for an enormous amount of data in their own scientific research. This complex nature of research in the twenty-first century tends to generate a vast amount of work that cannot be done by one sole researcher in designing, developing, implementing, evaluating, and reporting the research process, thus demanding collaboration and leading to co-authorship. A simple review article (such as this one), for example, has to deal with an increasing amount of published material, involving the discursive, rhetorical, and textual analysis of millions of words in order to be submitted for publication. In a recent publication (MOTTA-ROTH; SELBACH; FLORENCIO, 2016), we reviewed 457 articles (around 3.5 million words) published over a decade in five of the most distinguished research journals in the area of Applied

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<sup>2</sup> Available at: <<http://www.periodicos.letras.ufmg.br/index.php/rbla/about/editorialPolicies#custom-0>>.

Linguistics (AL) in Brazil. To develop the research, an invitation was sent by the senior author to two junior scholars to join in a collaborative effort to generate and analyze the data, as well as to be the co-authors of the final report to be included as a chapter in a book representing research produced in Brazil in AL. It took the three researchers about 18 months to be able to produce the final co-authored manuscript, after submitting a number of revised versions to the reviewers for the volume. The complex nature of the research process tends to generate a complex authorship process, in which defining who has done what in order to produce the resulting published material becomes increasingly more difficult.

Likewise, the pressure for scientific productivity in terms of the number and impact of publications has long been felt by researchers around the world (ERLEN *et al.*, 1997; JOSÉ; BERTI, 2017): “publication of research is the key to the “Three P’s: Prestige, Promotion and Pay” (MITCHESON; COLLINGS; SIEBERS, 2011, p. 166). In Brazil, the debate over legitimacy of scientific productivity has been at the front of academic concerns. Paiva (2005) points out the lack of research on ethics of authorship practices among researchers and collaborators in AL. Although involving the same concerns of tenure, promotion, research grants, and funding, questions of ethics have raised divergent arguments. On one hand, there are those who resist the pressure exerted by governmental research agencies and universities for multiple publication at the cost of relaxing the control over sensitive information in Biosecurity, for example (CHAIMOVICH, 2005). Along the same line, some researchers add that such pressure leads researchers to overlook ethical issues regarding undeserved credit for multiple authorship (DOMINGUES, 2013). On the other hand, other members of the Brazilian scientific community contend that increasing the pace of publication is vital so as not only to amplify the local access to scientific information (DUDZIAK, 2010), but also to meet international bibliometric standards (LEITE FILHO, 2008). Pressure for scientific productivity has certainly been the main reason for the rise in multiple authorship phenomena and has also caused growing competition in academic life. However, the increase in collegiality and methodological sophistication, the adoption of multidisciplinary approaches to research, and more opportunities for international collaboration have also been identified as some of the reasons for the growth of multiple authorship (MACFARLANE, 2017).

This in turn has produced related problems, including the order of authorship of papers (ERLEN *et al.*, 1997; MACFARLANE, 2009). Furthermore, search for prestige, promotion, and pay has often created less than desirable or legitimate authorship practices, involving power relations and ethical issues. Authorship misappropriation phenomena, for example, have received such names as “gift”, “guest”, or “ghost” authorship, referring to various ways in which unsuitable authorship status is attained (DAVIDOFF, 2000; BERQUIST, 2009; MACFARLANE, 2017). This is a three-way categorization of fraudulent authorship described by Davidoff (2000) in a report drafted by a task force on authorship for the Council of Science Editors.<sup>3</sup> The first category explained in the report is “Gift authorship”, a process in which credit is given as a result of a relationship of dependency or a reciprocal exchange between the person who gives and the receiver of the fraudulent authorship, for example, “the head of a laboratory or someone who helped to obtain funding” (DAVIDOFF, 2000, p. 112).

The type of fraudulent authorship that uses power to demand credit is aligned with what Kwok (2005, p. 554) calls “The White Bull Effect”, the kind of “abusive coauthorship and publication parasitism” perpetrated by researchers that occupy powerful hierarchical positions: “The White Bull perpetrator uses his experience and deviousness to exploit uncertainties or ambiguities in research guidelines and prospers in poorly regulated, grey areas.” For example, “junior and less experienced academics and research students can either be excluded from a list of named authors or receive an authorship credit which reflects their organizational status rather than intellectual contribution” (MACFARLANE, 2017, p. 1196).

The second type of nonauthor practice, “Guest authorship”, is a process in which the actual writers invite or sometimes pay a person with a high reputation to be listed as an author, because this person is believed to lend more credibility to the work and thus increase the chances that the paper will be published. Davidoff (2000, p. 114) also mentions less than fair interconnections between science and industry in that: “For commercial purposes, companies have also on occasion invited well-known experts to be guest authors on papers written by company employees.”

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<sup>3</sup> For more information see the Council of Science Editors site at <<https://www.councilscienceeditors.org/>>.

The third kind of unfair authorship is “Ghost authorship”, the process in which the person responsible for “the research or the writing of a paper” is not acknowledged as a substantial contributor: “Ghost authors may work for hire, knowing they will not be recognized as an author. A noncontributing author may take credit for the manuscript” (BERQUIST, 2009, p. 915).

In view of the complex web of personal and professional issues involved in knowledge production and publication, Erlen *et al.* (1997, p. 268-269) two decades ago called our attention to the growing problem of authorship attribution as a complex question involving scientific integrity, fairness, and responsibility, which translated into “a need to consider authorship issues more carefully than may have been done in the past.”

For more than three decades, the International Committee of Medical Journal Editors (ICMJE) has been issuing recommendations for authorship<sup>4</sup> in order to address the “unresolved [...] question of the quantity and quality of contribution that qualify an individual for authorship.” Considering that it “confers credit and has important academic, social, and financial implications” and “also implies responsibility and accountability for published work”, ICMJE has proposed criteria for authorship that distinguish authors from other contributors that have made less “substantive intellectual contributions to a paper”, so that they are NOT given credit as authors. These criteria also help “contributors credited as authors understand their role in taking responsibility and being accountable for what is published”.

The most recent ICMJE recommendations regulate the role of authors and contributors in a published work:

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or revising it critically for important intellectual content; AND
- Final approval of the version to be published; AND

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<sup>4</sup> The “Role of Authors and Contributors” is available at: <<http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>>.

- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

According to the ICMJE website, “[a]ll those designated as authors should meet all four criteria for authorship, and all who meet the four criteria should be identified as authors.”

In Hoen, Walvoort, and Overbeke’s (1998) study of self-evaluation of the compliance to the ICMJE criteria for authorship by 352 authors published by the *Dutch Journal of Medicine*, 128 (36%) of them considered that they did not fulfill these criteria. The topic is still controversial, so authors continue to reinforce the need for more research about the ethical dimensions of authorship credit in scientific publication (MACFARLANE, 2017, p. 1194) and the various validation systems through which to determine authorship (ERLEN *et al.*, 1997; PETROIANU, 2002) in different academic disciplines and communities of practice. Regarding codes of ethics, Macfarlane (2009, p. 3) sustains that generally they tend to address a very limited scope of ethical issues, for example, defining “research” quite narrowly and saying very little about (team) researcher-peer and researcher-sponsor/institutional employer relationships.

As an Applied Linguist interested in scientific discourse and head of LABLER/UFSM, the second author has developed several research projects on issues related to authorship and academic literacies since the beginning of the 90’s. Throughout these three decades, she has observed (both in literature and concrete life experience) how authorship can be a controversial issue among research team members, one that raises tension among more and less experienced researchers, as it involves the production of interpersonal meanings in text, as well as signals roles and relationships established along the material and symbolic processes of knowledge production. By 2014, Selbach and Schmidt had joined the research team as Motta-Roth’s research assistants and advisees in her CNPq-PQ umbrella project “Letramentos acadêmicos/científicos e participação periférica legítima na produção de conhecimento,”<sup>5</sup> developing, respectively, a doctoral subproject focused on academic literacies in the field of Robotics

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(SELBACH, in preparation)<sup>6</sup> and an undergraduate turned into a Master's subproject focused on Authorship in AL (SCHMIDT, 2015; 2016). The development of academic literacies projects and subprojects over the years from a discourse-analytical perspective (MOTTA-ROTH, 2002; 2013; PIPPI; PREISCHARDT; MOTTA-ROTH; ZIEGLER, 2015; MOTTA-ROTH; PRETTO; SCHERER; SCHMIDT; SELBACH, 2016), especially involving evaluation in academic discourse (MOTTA-ROTH, 1997; 1998), has produced evidence of the importance of reviewing the literature, bringing forth debates on authorship and the language of evaluation used in academic discourse. As we review and analyze the literature on the topic, we will adopt the term "Conversations" to refer to the various perspectives taken by different authors that we find in the literature. We adopt and adapt the term from Gee (1999, p. 13), who uses it to refer to debates circulating in society about a common topic that attains visibility in the media. We use "Conversations" to refer to a discursive intersection among circulating discourses in the social group of authors that write about authorship issues, trying to detect controversial or relevant related topics.

In this paper, we seek to contribute to the Conversations on authorship by highlighting positive and negative values associated with authorship practices and by systematizing a set of criteria collected in the literature on the topic in order to 1) help communities of academic practice to elaborate or improve their own evaluation system of fair authorship credit and 2) explore this axiologic dimension of scientific discourse since:

[...] any discussion about research ethics is located in the complex and ambiguous context in which it takes place. This is a context populated by individuals and groups with differing personal goals, ambitions, and ideological perspectives (MACFARLANE, 2009, p. 3).

Literature reviews on authorship are not new as our list of references indicates (for example MACFARLANE; ZHANG; PUN, 2012). Multiple/co-/shared authorship "has been the norm in sociological and psychological

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<sup>6</sup> SELBACH, H. V. "*Letramentos acadêmicos e robótica?*": um estudo de letramentos acadêmicos e participação periférica legítima em uma comunidade universitária. PhD Dissertation (PhD in Linguistics). Universidade Federal de Santa Maria, Programa de Pós-Graduação em Letras, Santa Maria. In preparation.

studies since at least the early 1990s (Endersby, 1996 *apud* MACFARLANE, 2017, p. 1195).” The number of contributors in research papers from the so-called *hard sciences* “tends to be higher than in the humanities and social sciences” (MACFARLANE, 2017, p. 1196), since those multiauthored publications reflect “the teamwork that goes into collecting and analyzing large data sets” (MACFARLANE, 2009, p. 114).

The present paper contributes with a systematization of specific aspects of these Conversations, ones which we find the most relevant at the moment: how authors focus on the challenges (topics) regarding authorship credit in multiauthor publications, the participants of the publication activity system that are mentioned in multiauthorship discussions, and the positive or negative values associated with the authorship credit debate.

Overall, we assume an analytical perspective of axiological discourse on (co-) authorship practices. For that purpose, we first explain the Systemic-Functional Linguistics framework (MARTIN; WHITE, 2005) that we have chosen in order to generate data on evaluative discourse on authorship practices in past and recent publications in different areas. Second, we identify types of academic social sanction regarding the topic, in terms of different foci on authorship credit, dedicating attention to ethical issues concerning problematic practices, such as gift, ghost, and guest authorship. Next, we identify differences and alignments among different authors in our data and try to combine them into one descriptive system of evaluation criteria on authorship. We conclude by problematizing the naturalization of discourse on authorship ethics and legitimation practices.

## **2 Appraisal theory: a theoretical-methodological framework for the analysis of evaluative discourse**

Authorship assumption is constitutive of the scientific production process as a whole, and aligned with the ICMJE recommendations for authorship credit described above, we argue that the tasks of designing the research project, collecting data, and accepting to be accountable for all aspects of the work demand an authorship attitude in addition to the writing of the manuscript itself. Conversely, writing the manuscript is as much a conception process as a designing of the research itself, for there is no ratiocination, relevant data, or sophisticated analysis if there is no text

that materializes these experiences, thus discursively constructing scientific knowledge.

Written texts are not only constitutive of our experience, but also offer an axiological dimension over this experience, for these are construed in relation to cultural models that project and reinforce specific values legitimated by social groups. According to Gee (1999), cultural models are presuppositions, shared by members of specific social or cultural groups, about what is appropriate, typical and/or normal, as interconnected theories about the world. From the literature we reviewed, we generated data that made it possible for us to interpret normative principles in cultural models or theories about authorship, shared by members in different disciplinary groups.

In analyzing the Conversations in our data, we adopt an analogous procedure to that described by Martin and White (2005): we make a strategic reading of the texts we analyze, and decide which linguistic exponents signal evaluation within the context in which they appear. We try to detect “lexical resources for judging behavior” (p. xi) in relation to the point in question. Our analysis concentrates on how writers “approve and disapprove, enthuse and abhor, applaud and criticise, and with how they position their readers/listeners to do likewise” (p. 1).

Martin and White (2005, p. 34-35) highlight the “wide array of resources that are used to negotiate group identity and so co-operate with appraisal and negotiation in the realization” of interpersonal meanings in three interacting domains: 1) *Graduation* deals with the grading of feelings, 2) *Engagement* deals with the degree of alignment and distance between opinions, and 3) *Attitude* deals with emotional reactions (Affect), evaluation of things (Appreciation), and value positions on people’s behavior according to adopted normative principles (Judgement). We are interested in this last “region of feeling” of *Attitude* involving judgements, in that it deals with emotion and especially ethics or practical reasoning about issues, such as “good, right, duty, obligation, virtue, freedom” (BLACKBURN, 1996) related to standards for practice in authorship credit as expressed in the literature we reviewed.

In theoretical terms, judgement has to do with rules and regulations that express social sanction (MARTIN; WHITE, 2005). We are concerned both with judgements of esteem that deal with *normality* (how natural, average, celebrated, peculiar, obscure, unusual, eccentric an author or

authorship practice is), *capacity* (how capable, clever, powerful, robust, insightful, balanced, productive, weak, unsuccessful, unproductive they are), and *tenacity* (how careful, resolute, dependable, flexible, accommodating, capricious, unreliable, disloyal, inconsistent they are), as well as with judgements of sanction which deal with *veracity* (how certain, truthful, honest, credible, authentic, deceitful, manipulative, deceptive some writer or practice is) and *propriety* (how ethical, fair, sensitive, respectful, generous, selfish, immoral, corrupt, unjust they are) (based on the principles found in Martin and White, 2005, p. 52-55). There are a number of different ways to express evaluation, including the system of mood and modality (the use of *can* to express capacity, *will* to express tenacity, or *should* to express propriety) or interpersonal metaphor (*This is certainly* to express veracity, or *It is usual for authors* to express normality); therefore, the examples presented above are only “a general guide to the meanings which are at stake here” (p. 52).

In this study, we analyze linguistic means by which writers “positively or negatively evaluate entities, happenings, and states-of-affairs with which their texts are concerned” (MARTIN; WHITE, 2005, p. 2). We focus on how authors evaluate authorship practices, their adequacy, propriety, and legitimacy, or the lack thereof. Although lexicalization produces relevant evaluation in relation to authorship, meaning production in text is prosodic, “i.e., meaning is distributed throughout a continuous stretch of discourse” (MARTIN; WHITE, 2005, p. 19). Any lexical realization of evaluation must be interpreted in its context; it “will vary its attitudinal meaning according to that context” (p. 52). Lexical items, such as “writing”, “revising”, “substantial collaboration”, “nondeserving”, and “pressured authorship”, are taken as kinds of “behavior”, which are associated with the research/writing practices that pertain to the scientific production activity system, and are therefore considered by us as loaded with positive or negative evaluation in terms of authorship credit attribution.

### 3 Conversations about authorship

The different views on authorship that arose in the literature reviewed in this study are summarized in Table 1, according to the field in which the paper was published, the views, and the source (author; year of publication). The views were categorized under three labels: 1) topic, 2) participants, and 3) evaluation. The first label (topic) identifies the main ethical issues

approached by the authors of the papers; the second label (participants) identifies nominal groups referring to social actors involved in situations associated with research paper writing and publication; the third label (evaluation) identifies lexical items that construe a positive or negative stance towards the topic(s) under discussion.

TABLE 1 – The 3 G's - Gift, Ghost, and Guest Authorship

FIELD	VIEWS	SOURCE
EDUCATION	<b>Topic:</b> authorship order <b>Participants:</b> supervisor, research student <b>Evaluation:</b> research ethics, ethical conduct	Macfarlane (2009)
	<b>Topic:</b> determining authorship credit <b>Participants:</b> students, faculty <b>Evaluation:</b> academic integrity, academic power abuse	Macfarlane; Zhang; Pun (2012)
	<b>Topic:</b> gift authorship, authorship order, legitimate claim to authorship <b>Participants:</b> multiple authors <b>Evaluation:</b> White Bull effect (Kwok 2005), Matthew effect (Merton 1973), legitimate authorship	Macfarlane (2017)
LINGUISTICS	<b>Topic:</b> co-author status criteria in collaborative research <b>Participants:</b> co-authors (postdoc, supervising professor, junior professor, more senior colleague) <b>Evaluation:</b> limited research experience, effective mentorship, work effectively with others, ethical (legal) responsibility	José; Berti (2017)

<b>MEDICINE</b>	<p><b>Topic:</b> coauthorship roles, publication position</p> <p><b>Participants:</b> young investigators, senior collaborators</p> <p><b>Evaluation:</b> White Bull effect, reward, greed, dishonesty, unscrupulous senior researchers, fraudulent behaviour, scientific misconduct, fraud, power asymmetry/intimidation, unfair arrangements, ambition, vanity, desire for fame, laziness, code of silence</p>	Kwok (2005)
	<p><b>Topic:</b> authorship conflicts: ownership of data, gift authorship, academic competition, personality differences, intellectual passion</p> <p><b>Participants:</b> members of the University College of Medical Sciences</p> <p><b>Evaluation:</b> ability to correctly identify criteria for authorship, intuitive understanding of authorship, well-defined criteria, willful disregard of criteria, misappropriation of authorship, severe emotional stress, academic fatigue, inappropriate academic practices, inappropriate behavior, poor awareness of criteria for authorship</p>	Dhaliwal; Singh; Bhatia (2006)
	<p><b>Topic:</b> Gift authorship, Guest authorship, Ghost authorship</p> <p><b>Participants:</b> authors, contributing authors, acknowledged contributors</p> <p><b>Evaluation:</b> substantive contributions, desire for credit and academic promotion, responsibility for content</p>	Berquist (2009)
	<p><b>Topic:</b> Gift authorship</p> <p><b>Participants:</b> junior lecturer, professor</p> <p><b>Evaluation:</b> misappropriation of authorship, degree of awareness of authorship criteria for peer-reviewed publications, academic competition, co-author inappropriately included</p>	Mitcheson; Collings; Siebers (2011)

<b>NURSING</b>	<p><b>Topic:</b> inclusion, order in multiauthored publications</p> <p><b>Participants:</b> principal investigator, co-principal investigator, team members, nurses, statistician</p> <p><b>Evaluation:</b> “honorary” credit, rewards of writing in collaboration (improved quality of writing, more available resources for research, increased productivity by team members), lack of adequate guidelines, pressure to publish, integrity, responsibility, accountability, recognition, fairness in publications, lack of agreement on assignment of publication credits, assigning authorship based on status or position</p>	Erlen <i>et al.</i> (1997)
	<p><b>Topic:</b> conflict of interest, disclosure concerns, protection of subjects, copyright, desire for authorship status</p> <p><b>Participants:</b> authors, editors, reviewers, publishers</p> <p><b>Evaluation:</b> intellectual property, promotion, to secure funding or grants, ego, status, tenure ambitions</p>	Carlson; Ross (2010)
<b>PSYCHOLOGY</b>	<p><b>Topic:</b> Gift authorship (gifts of credit)</p> <p><b>Participants:</b> faculty in doctoral programs (experienced researchers), professional psychologists, students</p> <p><b>Evaluation:</b> incompetent supervision, inadequate supervision (leave students for themselves), supervision abandonment, intrusion of the supervisor’s values, abusive and exploitive supervision, mutual attraction faculty x student</p>	Goodyear; Crego; Johnston (1992)

Concerns about the assignment of authorship order, for example, were frequently presented by authors chronologically distributed over two decades (ERLEN *et al.*, 1997; KWOK; 2005; DHALIWAL; SINGH; BHATIA, 2006; CARLSON; ROSS; 2010; MACFARLANE; ZHANG; PUN, 2012; MACFARLANE, 2009, 2017; JOSÉ; BERTI, 2017). José and Berti (2017, p. 92) specifically call our attention to the different levels of participation that authors can offer in collaborative research and propose:

[...] an assessment of who contributed to the analysis of the data, after which the question of whether other contributing roles are also deserving of authorship could be considered. A related point with a similar solution (i.e., each research team ultimately has to sort this out for themselves) is whose name will be listed first, second, third, and so on.

The way power relations and power abuse are interspersed in issues related to authorship attribution was also recurrently addressed by authors. In Education, for example, pressured authorship is one of the debated ethical issues, i.e, a senior researcher is included as an author regardless of the amount of their contribution to the manuscript. Macfarlane (2017) highlights the role of power relations in academic writing for publication and the need for attention to institutional policies on scholarly authorship. Thus, a simple authorship ordering is not a simple task. It involves recognition, fairness and ultimately hierarchichal relations and power. To measure merit and participation, most publications we reviewed suggest the adoption of a well-defined set of criteria; however, Macfarlane (2009, p. xiii) sustains the importance of problematizing rules and regulations so that we can understand research publishing ethical practices:

[...] we need to get behind, or beyond, the rules and regulations and the often conflicting principles they express. In practice ethical problems are often experienced in the form of a dilemma. Principles collide. Rules and regulations don't always work.

The language of evaluation exemplars in Table 1 emphasize “ethical conduct”, “academic integrity”, “responsibility, accountability, recognition, fairness in publications”, against a dramatic scenario of academic “power abuse”, “power asymmetry/intimidation”, “greed, dishonesty, unscrupulous senior researchers”. When discussing il/legitimate authorship, authors mention different participant positions in various kinds of power relations. These various positions are featured as participants with “limited research experience” in opposition to those that provide “effective mentorship”, or participants that “work effectively with others”. Thus authorship credit is such a complex and controversial issue that it is regarded by some authors as stemming from an “intuitive understanding” at the same time that it is considered by others as a system that can only exist with “well-defined criteria”.

A pattern seems to emerge from the data. It seems that “fraudulent behaviour, scientific misconduct, fraud, unfair arrangements, ambition, vanity, desire for fame, laziness, all follow along the same path of incompetent supervision, inadequate supervision (leave students for themselves), supervision abandonment, intrusion of the supervisor’s values, abusive and exploitive supervision. Moreover struggles in power relations associated

with authorship misconduct seem to be associated with a code of silence, a pressure for naturalization of a condition of intellectual property that is in fact constructed by force.

However, aside from verifying a severe criticism in the literature of the frequent and varied phenomena of misappropriation of authorship involving differences in hierarchical positions, we found a validation of writing in collaboration in terms of effective mentorship, improved quality of writing, more available resources for research, and increased productivity by team members.

#### **4 Authorship actions as criteria for credit**

Authors such as MacFarlane (2017, p. 1194-1195) are positive in stating that the ICMJE four recommendations are now widely adopted “across all academic disciplines by a large number of research-intensive universities” and “in higher education systems, such as Australia”, despite having initially been elaborated for medical journals. We have analyzed recommendations by the authors in our corpus according to the extent they seem to relate to the ICMJE system and our analysis, in fact, validates this assumption. In Table 2, we present the various actions involved in knowledge production and writing for publication, considered as criteria for authorship credit by Erlen *et al.* (1997), Hoen, Walvoort, and Overbeke (1998), Petroianu (2002), and Carlson and Ross (2010).

TABLE 2 – Authorship criteria

ICMJE'S 4 CRITERIA FOR AUTHORSHIP				
CONCEIVING THE STUDY AND GENERATING DATA				
A) <b>Substantial contributions to the Conception or design</b> of the work; or B) <b>Acquisition</b> , C) <b>Analysis</b> , or D) <b>Interpretation of data</b> ; or P) <b>participation in specific payment</b>				
	Erlen <i>et al.</i> (1997)	Hoen, Walvoort, and Overbeke (1998)	Petroianu (2002)	Carlson and Ross (2010)
1.	A) make substantive contribution to paper; renegotiate deadlines in case of unforeseen circumstances; meet the established deadlines (All Authors); specify time frames and deadlines (First Author)	A) design the study; B) department head; supervision; financing; coordinating data collection; providing patients, subjects, chemical/biological material, research space; collecting data; performing pilot study; patient care; physical examination; laboratory investigation C) statistical analysis D) statistical advice; providing illustrations	A) create the idea that originated the work and elaborate hypotheses; individual/collaborative mentor work; coordinate the group; B) head the place where work was carried out; obtain funds; structure the method; provide patients/material; create tools; work in the daily routine without intellectual contribution; collect data; C) analyze results statistically; D) solve fundamental problems; P) participate in specific payment	provide substantial contribution throughout the project, from [...] A) <b>conception and idea creation</b> [...]
WRITING AND REVISING				
E) <b>drafting</b> the work or F) <b>revising it critically</b> for important intellectual content or P) <b>participation in specific payment</b>				
2.	E) develop first draft; submit it to coauthor(s) within specified time frame (First Author); F) revise paper using suggestions of/in collaboration with other authors; invite and select coauthor(s) to assist with paper (First Author); review entire paper before submission (All Authors)	E) write first version; F) critical reading; rewriting	E) review literature; E+F) write manuscript; mentor writing of manuscript; F+) present important suggestions; F-) present minor suggestions; P) participate in specific payment	provide substantial contribution throughout the project, [...] through E) <b>drafting</b> and F) <b>revision</b> [...]

ASSUMING RESPONSIBILITY FOR THE PUBLICATION OF THE ENTIRE CONTENT OF THE WORK <b>G) Final approval</b> of version to be published or <b>P) participation in specific payment</b>				
3.	assure paper is prepared according to guidelines; forward copy of paper/abstract to be submitted to main investigator for review; forward copy submitted to all authors and principal investigator; forward copy of published article to all authors and to principal investigator (First Author)	approve definitive version	P) participate in specific payment	<b>G) agree with content and findings in final product;</b> provide substantial contribution throughout the project, [...] <b>until final version is approved</b>
BEING ACCOUNTABLE FOR ALL ASPECTS OF THE WORK <b>H) Ensure</b> that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved or <b>P) participation in specific payment</b>				
4.	sign appropriate authorship disclosure statements (All Authors)	giving a lecture	prepare presentation of work; present work in a scientific event; P) participate in specific payment	provide responsibility for/familiarity with final product

In Table 2, Petroianu (2002) is the only source that provides authorship credit based on score from a ranking order. This author (2002) proposes an authorship attribution methodology based on participation, and the collaborators/participants who score 7 points are entitled to authorship. The two top ranked actions are the initial steps in the research process. They relate to ICMJE’s first criterion (conceiving the study and generating data, specifically, the substantial contributions to the conception or design of the work): 1) “Create the idea that originated the work and elaborate hypotheses” and 2) “Structure the method of work”. Each of these actions score/value six points. The first “is certainly the basis, without which the work would never exist. Therefore, the one who had the idea and knew how to expose the

problem deserves to receive the highest score”<sup>7</sup> (PETROIANU, 2002, p. 61). The second action is “as important as the idea, it is its structuring to test the hypotheses or seek the solution of the problem. [...] Given the importance of this phase, its value can not be lower than that granted to those who had the idea”<sup>8</sup> (PETROIANU, 2002, p. 61). The lowest ranked actions (worth one point) are: 1) “present minor suggestions that were incorporated in the work” and 2) “work in the daily routine without intellectual contribution” (PETROIANU, 2002, p. 61). The presentation of a minor suggestion receives the lowest score if it “did not significantly alter the conduct of the research nor influenced its conclusions”<sup>9</sup> (PETROIANU, 2002, p. 62) as well as the participation which is restricted to the routine performance (e.g. technicians’ and secretaries’ work) and which “do not have a greater involvement with the research”<sup>10</sup> (PETROIANU, 2002, p. 64). Mitcheson, Collings and Siebers (2011, p. 170) point out the lack of knowledge of authorship criteria as a possible reason for authorship conflicts and suggest “explicit documented authorship guidelines and a formal process for resolving authorship problems.” Kwok (2005, p. 554) states that in most medical surveys:

[...] the first author is generally acknowledged for key contributions to planning, conduct, and writing of the project [...]. The general perception of what constitutes grounds for the remaining coauthorship roles and publication position are, however, mixed, except for the last author, who is often seen as the laboratory/group head.

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<sup>7</sup> In the original Portuguese: “é certamente a base, sem a qual o trabalho jamais existiria. Portanto, aquele que teve a ideia e soube expor o problema merece receber a pontuação mais elevada” (PETROIANU, 2002, p. 61).

<sup>8</sup> In the original Portuguese: “tão importante quanto a ideia, é sua estruturação para testar as hipóteses ou buscar a solução do problema. [...] Diante da importância desta fase, o seu valor não pode ser inferior ao concedido a quem teve a ideia” (PETROIANU, 2002, p. 61).

<sup>9</sup> In the original Portuguese: “não tiver alterado consideravelmente a condução da pesquisa e influenciado em suas conclusões” (PETROIANU, 2002, p. 62).

<sup>10</sup> In the original Portuguese: “não têm um envolvimento maior com a pesquisa” (PETROIANU, 2002, p. 64).

Regarding authorship order, Erlen *et al.* (1997) and Carlson and Ross (2010) assign the first author's responsibilities and accountability. The first author is expected to "take primary responsibility for writing the paper, make substantial contributions to the research project from the beginning to completion, and have the necessary resources to make that happen" (ERLEN *et al.*, 1997, p. 266). The first author's responsibilities and accountability are translated into nine tasks (letters A through G, and P<sup>11</sup> in Table 2), which cover ICMJE's four criteria: they go all the way from inviting co-authors, organizing the work, producing the first draft, and revising the manuscript to forwarding a copy of the published article to all authors. According to Carlson and Ross (2010, p. 266), the first author is "[t]he individual most responsible for the idea, research, and writing", the one who "provides most intellectual contribution, support for manuscript development, and is most familiar with final product" and who is also "expected to present the work at scientific or education meetings". Dhaliwal, Singh, and Bhatia (2006, p. 52) point out the lack of literature on the subject and indicate authorship order as one element of conflict in academic publication: "[h]alf of all [reported] conflicts were related to academic competition, personality differences, intellectual passion, and order of authorship. [...] We believe that these represent the reprehensible underbelly of the research environment."

[...] two forms of practice in determining authorship order are commonplace. Firstly, gift ordering occurs where author order is determined by career and performative considerations rather than intellectual contribution. Secondly, the survey shows that power ordering, where author order is decided by considerations of hierarchy and management control within research rather than intellectual contribution, is also widely practised [...] (MACFARLANE, 2017, p. 1208).

The listing of subsequent authors follows the order of contribution/participation (ERLEN *et al.*, 1997; PETROIANU, 2002; CARLSON; ROSS, 2010). When Petroianu's rank (2002, p. 61) is applied, the "authors' sequence

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<sup>11</sup> Petroianu (2002) includes the criterion of "participation on specific payment". Provided that this kind of participation may occur in any stage of the research, we chose to add it to ICMJE's four criteria (Table 2).

will be in descending order of score”<sup>12</sup> and will not be based on distinctive tasks for first and subsequent authors. Erlen *et al.* (1997, p. 266-267) problematize the co/multi-authorship assignment, especially in situations when the work and the level of involvement in the paper are equally shared, and offer suggestions for the likely dispute:

[...] the group needs to make a decision about the order of authorship before writing the paper. They may wish to state in the authors’ note that they had equal roles in the research study and in the writing [...] may decide to have the first author make the designation of order, or the order can be alphabetical or rotated. [...] Not infrequently, teams may decide that the major paper that comes from the study is the responsibility of the principal investigator. Some authors [...] have suggested that when equal time is spent on each task of the project, senior authorship should belong to the principal investigator, not the person who wrote the final paper. Another suggestion is that the principal investigator should be acknowledged in every paper that is developed from the research project [...].

Respondents of Hoen, Walvoort and Overbeke’s (1998) questionnaire mention an “honorary author” as someone who does not provide contribution to the writing of a paper. The reasons for honorary authorship attribution may be a personal, professional, or scientific tribute to someone within or outside the research group. According to Petroianu (2002, p. 64), the honorary author:

[...] has to be invited and his/her name can only appear in the authorship of the work after his/her explicit approval, preferably in writing. Once included in the publication, this author will also be responsible for the content of the work. Therefore, he/she should only accept this honor after analyzing the manuscript very well and making sure the truth of all the information contained therein.<sup>13</sup>

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<sup>12</sup> In the original Portuguese: “A sequência dos autores será em ordem decrescente de pontuação” (PETROIANU, 2002, p. 61).

<sup>13</sup> In the original: “[...] tem que ser convidado e seu nome somente pode constar na autoria do trabalho após a sua aprovação explícita, de preferência por escrito. Uma vez incluído na publicação, esse autor será também responsável pelo conteúdo do trabalho. Portanto, ele somente deverá aceitar essa honra após analisar muito bem o manuscrito e certificar-se da verdade de todas as informações nele contidas” (PETROIANU, 2002, p. 64).

In addition, Petroianu (2002, p. 64) alerts readers that “at the end of the paper, researchers may decide to incorrectly assign authorship to a person outside the research.” In his view, honorary authorship is the most common malpractice in publication, accounting for “up to 25% of scientific articles.”<sup>14</sup>

## 5 Authorship practices for publication

As previously stated, authorship practices for publication are taken in this study as “complex phenomena of language-related real life problem” (RBLA, 2017). Any social practice is constituted by power relations (FAIRCLOUGH, 1989; 1992; 2003), including authorship (DAVIDOFF, 2000). Furthermore, life experienced in the academic environment is hierarchically organized in terms of the level of education, scientific productivity, reputation, and thus power. In that regard, academia, much like any other institution in society, is prone to having a stratified structure within which struggles for power emerge.

One of the most central issues in the struggle for academic power is authorship credit, since it directly results in benefits, such as the three P’s mentioned in our Introduction, and as such tends to be sought after either by coercion or by naturalization of consent (FAIRCLOUGH, 1989, p. 3-4), or both, as in cases associated with the White Bull effect (KWOK, 2005), or with romantic involvement between two authors (GOODYEAR; CREGO; JOHNSTON, 1992). In any case, power tends to become veiled; therefore, discussion or even resistance to certain questionable (co-)authorship practices become a taboo in the sense that they are not overtly discussed (MACFARLANE; ZHANG; PUN, 2012, p. 15). One evidence of this taboo, in which questioning ethical issues in authorship practices involving authors of different hierarchical status is avoided is the use of understatements such as “gift”, “guest”, or “ghost” (DAVIDOFF, 2000; BERQUIST, 2009; MACFARLANE, 2017) or “The White Bull Effect” (KWOK, 2005, p. 554) to refer to authorship misappropriation.

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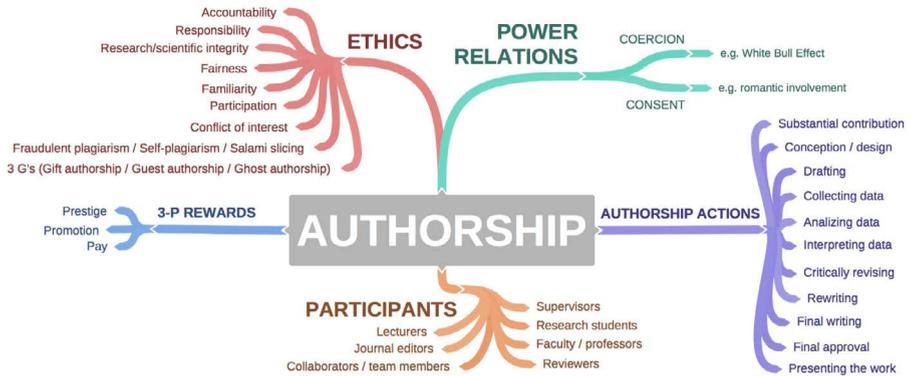
<sup>14</sup> In the original: “Finalizado o trabalho, os pesquisadores podem decidir conceder, de forma incorreta, autoria a uma pessoa alheia à pesquisa. [...] até 25% dos artigos científicos [...]” (PETROIANU, 2002, p. 64).

Authorship practices for publication can be summarized in terms of an activity system that involves ethical issues concerning a wide range of participants who take part in activities related to the production of the research paper for publication, as well as in issues involved in the interpersonal relations concerning the writing process.

Language is a central element that constitutes and structures the social activities of a given social group. Social activities can be defined as actions through which people attempt to reach certain aims and that were motivated by other actions performed by the same people themselves or by other participants in a dynamic historical process (KOZULIN, 1986, p. xlix). Whenever social activities are recurrently constituted in/by language, we have discourse genres. Thus, when we refer to an academic genre, such as a research paper, we are referring to a system of social activities, the social roles and interpersonal relations established between/among the social actors that participate in the activity, and the role language plays in the specific institutionalized context of the activity (MOTTA-ROTH, 2008). The concept of activity system is taken as “any ongoing, object-directed, historically-conditioned, dialectically-structured, tool-mediated human interaction” (RUSSEL, 1997, p. 4).

The recurrent terms detected in our analysis are used to draw a semantic map of authorship practices (Figure 1). Several of these terms consist of evaluation loaded lexical items that construe the activity system of authorship as a taboo topic, involving power, ethics, and rewards. Figure 1 is an attempt to capture the complexity of authorship phenomena in a visual representation of the activity system and the complex set of elements involved in the production of a research report for publication. Thus, our representation of this activity system includes **actions** (e.g., the initial design of the research and the production of the final version of the manuscript), **participants** (e.g., research students and reviewers), the **rewards** that move people to publish, the various dimensions in publication **ethics**, and the **power relations** constitutive of authorship practices.

FIGURE 1 – Authorship Activity System



The *ethical issues* involved in authorship publication practices account for familiarity with and accountability for the work, ethical and legal responsibility for the final product, research/scientific integrity, effective participation in the investigation process, conflict of interest, as well as fraudulent behavior, such as (self) plagiarism and salami slicing.

These issues concern a wide range of *participants*, such as research students, professors, lecturers, collaborators, publishers, journal editors, and reviewers. Macfarlane (2017, p. 1196) points out that the imbalance in power among participants is rarely discussed and the perspectives of those less powerful and powerless in academic hierarchy, such as junior academic faculty and research assistants, go unnoticed. In the literature, the perspectives of the powerful participants in the authorship activity system (e.g. journal editors) receive attention (MACFARLANE, 2017, p. 1196).

The participants take part in *activities related to the production of the manuscript for publication*, which range from conception of the research project, drafting, collection, analysis and interpretation of data, critical revision and (re)writing until the research paper is approved by all authors who, in turn, are able to present the research in scientific events: “[i]ncreasingly, a team collaborates to conduct the research, present the results perhaps in a poster and/or oral presentation, and develop the manuscript for publication” (CARLSON; ROSS, 2010, p. 265).

*The interpersonal relations concerning writing for publication* is still another relevant aspect. It relates to the 3 P’s: “Prestige”, related to researchers’ ego; “Promotion”, concerning job/career status; and “Pay”, pertaining to tenure ambitions, funding, or grants (CARLSON; ROSS, 2010, p. 265). In single-

authored papers, authorship may “carry a higher premium for individuals looking to gain prestige and kudos” (MACFARLANE, 2009, p. 114).

Current literature seems to present a unified view on the pernicious nature of the 3 G’s: “Gift authorship”, the bestowing authorship upon someone; “Guest authorship”, the name recognition that is likely to enhance publication chances; and “Ghost authorship”, the writing without due credit. Gift authorship is “often given to please someone for benefit, or reciprocity, or from servility or obligation to persons in charge of institutions, departments, services or disciplines [...] the very individuals who are in positions to make or mar the research climate at ground level” (DHALIWAL; SINGH; BHATIA, 2006, p. 52).

[...] there are low levels of understanding as to what constitutes a legitimate claim to authorship [...]. Intellectual contribution can be overridden by considerations of power and performativity in academic life. These practices misrepresent authorial credit and can have a particularly significant impact on the development of early career researchers. This highlights the need for junior academics, in particular, to be better informed about their rights and responsibilities in regard to publication and for university policy and training programmes to pay more attention to equity issues connected with authorship. Junior researchers need to be better informed about the consequences of gift and power ordering and how the Matthew effect can retard rather than accelerate their scholarly recognition when publishing with more renowned senior academics. (MACFARLANE, 2017, p. 1209).

In this regard, the “White Bull Effect” (the senior researcher’s coercion and intimidation for authorship resulting in pressuring for authorship), becomes a consistently unethical practice. At times, however, the “Pink Bull Effect” may occur: an inexperienced and immature junior researcher might believe that sole authorship is due in a publication that in fact reports the results of a collaborative research umbrella project under which they have received more than substantial contribution to develop and write their scientific initiation and final undergraduate paper/thesis/dissertation.

The activity system of authorship for publication that entails its participants’ (ethical) actions with respect to the writing itself, as well as with respect to the interpersonal/power relations embedded in this complex social process, reassert that:

[...] the future research agenda might focus more on ways to identify and establish better or 'best' practice in areas where the potential for the abuse of academic power is common, such as determining authorship credit or in dual relationships between students and faculty (MACFARLANE; ZHANG; PUN, 2012, p. 15).

We understand, as stated by Macfarlane, Zhang, and Pun (2002, p. 15), that this research agenda:

[...] is methodologically challenging and it demands courage to tackle taboo topics in some cultural contexts. The interweaving of personal relationships and academic power means that the results of such research do not necessarily, or neatly, transfer into simple, or perhaps simplistic, policy statements. Fine-grained analysis is needed to untangle the complexity of such issues and contribute to a gradual process of cultural change in enhancing professional self-awareness within academe.

To account for a multidimensional phenomenon, such as publication credit, Macfarlane (2017) adds that this kind of investigation requires a careful qualitative research approach that combines different methodologies, including questionnaires, interviews, focus groups, and case studies.

## **6 Problematising what may seem natural ethics in legitimate authorship practices**

Because authorship is not a clear-cut matter, but a subjective struggle, open negotiation (CARLSON; ROSS, 2010) with the involvement of the entire team in the dialog about the definition of guidelines for author responsibilities and the identification of the roles of each member of the research team (ERLEN *et al.*, 1997) are actions that have the potential to decrease tension, and at the same time enhance team collaboration and productivity. In addition, Carlson and Ross (2010, p. 266) suggest the reevaluation of the author's status so that a “[p]erson may be shifted or removed from the author list according to intellectual contributions” (p. 266). Those who offered no substantial intellectual contribution do not deserve author status. They argue for the adoption of “ongoing reevaluation to determine if the designation of ‘author’ is still deserved” (p. 269). Carlson and Ross’ Guidelines for Authorship (2010, p. 268-271) is aligned with ICMJE’s observation that “an author should be able to identify

which co-authors are responsible for specific other parts of the work,” besides having “confidence in the integrity of the contributions of their co-authors”.

Erlen *et al.* (1997, p. 269), from the field of a Nursing Project question concerning possible conflicts raised by (co-)authorship attribution, reports that we have often encountered, along our path as researchers, either by our own questioning or other colleagues’ and students’ doubts:

For example, what if the principal investigator says that he or she must be included as an author on every paper that results from the research project even though that person has not been involved in the development or writing of each paper? What part does the intellectual contribution of the principal investigator play in the paper’s development? ... What if others, who have made only limited contributions to the paper, want to be listed as authors? ... What is the order of authorship on the paper to be? Who should be the first author, and should all research team members be acknowledged on each paper? When is a team member being exploited or treated unfairly? How will conflicts be resolved?

In our view, all of these questions call attention to the ultimate issue: when referring to the material processes of investigation, such as collecting data and doing statistical analysis, are we dealing with an equal or equivalent process to writing? Is the research process the same as the writing of a publishable article, is the treatment of data the same as the production of a textual piece that semiotizes the material processes of investigation? A case in point is how journals advocate that supervisors must not be included as co-authors in articles that they write with their advisees which report data from scientific initiation, final undergraduate papers, theses, and dissertations, based on Law 9.610, Feb. 19, 1998. Art. 15: § 1º.<sup>15</sup>

Art. 15. Co-authorship of a work is attributed to those in whose name, pseudonym, or conventional sign is used.

§ 1º One should not consider a co-author to be those that simply help the author in the production of the literary, artistic, or scientific work, revising it, updating it, and supervising or directing its edition or presentation by any means.

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<sup>15</sup> Integral text of Law 9.610 is available at: <[http://www.planalto.gov.br/ccivil\\_03/leis/L9610.htm](http://www.planalto.gov.br/ccivil_03/leis/L9610.htm)>.

We believe there is a misconception here: supervising is not the same as actually and materially writing a research paper. In considering dissertations and research papers, we are definitely not dealing with the same genre – the same set of interrelated social activity, interpersonal relations, ideational content, and linguistic form. It is fair to question whether the writing activity of a scientific initiation or final undergrad paper/thesis/dissertation offer the same challenges as the writing of a research paper, considering that each genre involves different choices for content (e.g. choice of which pieces of information should be included), social relations (e.g. need to face peer reviewing processes as compared to the examination by the committee), discursive differences (e.g. specifications of epistemological stance and communicative purpose), textual features (e.g. synthetic rhetorical structure and length) of each genre. Our answer would definitely be that the writing of each genre demands different writing and linguistic abilities as well as the breadth of disciplinary knowledge.

Specifically in relation to legitimate authorship practices between advisors and advisees in AL, Paiva (2005, p. 51) states that:

If this issue is already clear for some fields, such as Physics, for example, there is still no consensus among us on whether or not we have the right to claim co-authorship in the work of our advisees. I understand that this co-authorship is only justified if we have a substantial participation in the work to be published, as recommended by the Vancouver group.<sup>16</sup>

We argue in line with Macfarlane (2009, p. 130-131) that:

[...] [s]upervising others may be regarded as a form of collaboration. This can formally result, on occasions, in joint authorship of academic papers between supervisor and research student. Informally, many supervisors speak of the way their relationship with a research student can shift from apprentice to peer during the course of time and the rich possibilities for co-learning.

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<sup>16</sup> In the original Portuguese: “Se essa questão já está clara para algumas áreas, como a física, por exemplo, para nós ainda não há consenso se temos ou não o direito de reivindicar co-autoria nos trabalhos de nossos orientandos. Entendo que essa co-autoria só se justifica se tivermos uma participação substancial no trabalho a ser publicado, como recomendado pelo grupo de Vancouver” (PAIVA, 2005, p. 51).

At the same time, as we paraphrase the Vancouver group (i.e. the ICMJE) recommendations, we maintain that defensible post-graduate and undergraduate scientific initiation work and publishable research papers refer to different social activities. Thus, authorship credit of a research paper should be given to every member that has given substantial contribution in all stages of its elaboration: (a) conception or design of the RESEARCH PAPER; or the acquisition, analysis, or interpretation of data for the RESEARCH PAPER; AND (b) drafting the RESEARCH PAPER or revising it critically for important intellectual content; AND (c) final approval of the version to be published; AND (d) agreement to be accountable for all aspects of the RESEARCH PAPER in ensuring that questions related to the accuracy or integrity of any part of the RESEARCH PAPER are appropriately investigated and resolved.

Goodyear, Crego, and Johnston (1992, p. 208), in Psychology, offer a very relevant consideration on authorship attribution in research articles resulting from dissertations:

Some of the more contentious problems arise in determining what authorship, if any, a faculty member can take on an article developed from a dissertation. This, in turn, seems grounded in assumptions about what a dissertation is or should be: If it literally is independent research in which the student has formulated the problem, developed the design, gathered data, and conducted analyses with relative independence, the authorship certainly is the student's. Some faculty apparently believe this is how all dissertations are to be developed. One respondent asked, for example, "Is it ever appropriate for an advisor to coauthor an article based on a student's dissertation?"

In practice, few dissertations would meet such a rigorous standard of independence. This is so because students approach their dissertations with differing levels of preparation and therefore faculty often must assume substantial roles in the conceptualization and execution of the projects. Moreover, students often participate in larger research projects, from which they obtain real benefits.

A case in point is scientific initiation mentoring, which is not mentioned in our data, but is a well-established practice in Brazilian research groups. Scientific initiation students are true newcomers to the professional community of practice (LAVE; WENGER, 1991), and the interaction

established with more experienced members, such as graduate students and the head of the project/advisor, is essential for their progressive integration and learning of the written practices valued by their community. Ultimately, this occurs through participation in co-authorship practices of conference abstracts, posters, research reports, scientific articles, for example.

The ICMJE<sup>17</sup> attempts to clarify the issue of authorship credit by providing “Examples of activities that alone (without other contributions) do not qualify a contributor for authorship”:

- acquisition of funding
- general supervision of a research group or general administrative support
- writing assistance
- technical editing
- language editing
- proofreading

Erlen *et al.* (1997); Hoen, Walvoort, and Overbeke (1998); and Petroianu (2002) provide authorship credit criteria in disagreement with ICMJE’s four criteria. The authorship tasks they mention involve solely reviewing the paper, formatting the manuscript according to the journal’s guidelines (ERLEN *et al.*, 1997), supervision, financing, being the department head, providing research space (HOEN, WALVOORT, OVERBEKE, 1998), obtaining funds to carry out the work and working in the daily routine without intellectual contribution (PETROIANU, 2002).

Along the same lines, Carlson and Ross (2010, p. 269) claim that honorary authorship is not acceptable. The same is true for “mechanical support”, such as entering data into a database; providing consultation and statistical assistance; helping to design, format, or construct a research poster; or giving general editorial support. “Often individuals provide important support for the project but lack the intellectual or developmental

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<sup>17</sup> Available at: <<http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>>.

contributions to the research study, project, or manuscript to be considered an author” (CARLSON; ROSS, 2010, p. 266).

## 7 Final remarks

According to our results, the literature on the topic indicates that (co-) authorship credit is affected by power relations and personal interest, and that multiauthored work is gaining significance in collaborative network research environments.

The central point we want to make in relation to authorship is that any decision is not (or should not be) based on power or status, personal benefit, or alphabetical listing of last names (CARLSON; ROSS, 2010, p. 269). Berquist (2009, p. 915-916) argues for a method “that reminds (sounds better than forces) authors of their responsibilities each time they submit a manuscript”, including the organization of a special task force formed by all parts involved in the production and publication of a research manuscript. From our perspective, an optimal point of departure for such a task force would be the definition of authorship as the prerogative and responsibility of writers in choosing the objective, the content and the style of the text, as well as its target audience, considering that disciplinary cultures vary in terms of knowledge production processes and deserved authorship credit (MOTIA-ROTH, 2007, p. 831, based on IVANIC, 1998).

At the end of our study, what has become clear is the need for more qualitative research about authorship, as we welcome a “rising proportion of multiple authored papers” (MACFARLANE, 2017, p. 1196), for “even where ‘publish or perish’ isn’t a rule per se, it is still a guiding academic principle that affects us all in one way or another” (JOSÉ; BERTI, 2017, p. 88).

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