The Impact of Byline Order of Corresponding Author: A Preliminary Study

Abstract: Corresponding author (C-Au) holds an important position in byline order. Some papers have analyzed the contribution of C-Au, but they do not consider the variation in different byline order. Furthermore, some studies use questionnaire and found that people perception on other authors' contribution would be influence by the byline order of C-Au, but the real situation remains unclear. Thus, this poster aims to analyze two questions: (1) What kind of byline order do C-Au have and are their contribution influenced by their byline order? (2) Are other authors contributions influenced by the byline order of C-Au? Three main findings emerge: firstly, the last author are not always to be C-Au; following with the decline of byline order of C-Au, the contribution of C-Au deceases; finally, as the byline order of C-Au changes, other authors' contribution change significantly. For instance, second author has the lowest contribution when the last author is C-Au.

Keywords: Authorship contributions, Corresponding author, Collaboration

1 Introduction

Corresponding authors (C-Au) play an important role in their studies [1]. However, there are only few researches on this area. Larivière et al. found that the first and corresponding author make major contribution to their studies, assuming that the last author is the C-Au [2]. But with different positioning strategies in the byline, the contribution of C-Au may change. Thus, we draw the first question: What kind of byline order do C-Au have and are their contributions influenced by their byline order?

Besides, Bhandari et al. found that people's perception of other authors' (except C-Au) contributions is influenced by the byline order of C-Au [3]. But this study only used questionnaire survey whose participants were limited. Then, we draw the second question: Are other authors' contributions influenced by the byline order of C-Au in scientific practice (e.g., scientific publications)?

To answer these two questions, we are to parse more than 100,000 author contribution statements in fulltext articles and to quantify authors' contributions.

2 Methodology

2.1 Data Collection

We collect 170,000 full-text journal articles with byline order and authors contribution

from 2006-2015 published in *PLoS*[1]. 27,231 articles are filtered since their contribution statement cannot be precisely parsed, and 24,864 articles without C-Au information are deleted. The final dataset comprises 117,905 full-text articles.

2.2 Data Analysis

Author Classification. We classify byline orders into four categories: first authors (F-Au), second authors (S-Au), middle authors (M-Au) and last authors (L-Au). M-Au are those not listed as first, second, or last. Specifically, the second author of a two-author article is listed as S-Au and not L-Au, according to [4].

Contribution Annotation. There are 6,028 different contributions in our dataset. Different contributions with the same meanings are united. For instance, 'write the paper' and 'write manuscript' are both annotated as 'write manuscript'. Thus we have got 1090 unique contributions.

Indices. Two indexes are adopted to quantify the degree to which authors participate in different contributions. First index is Proportion of Contribution (PoC) [4]—number of contributions including specific authors (F-Au, S-Au, M-Au and L-Au) divided by number of contributions in the article. This index shows the proportion of contributions the author contributed. Second index is Participate Degree (PD) [4]—frequency of specific authors in the contribution divided by frequency of contribution in a data set. This index shows the degree to which the author participated in various categories.

3 Results Analysis

3.1 Byline Order of C-Au and Their Contribution

Table 1. The number of Articles with C-Au in Specific Byline Order

Byline Order	Number of Articles	Percent (%)
F-Au	38,355	32.53
S-Au	8,360	7.09
M-Au	27,349	23.20
L-Au	43,841	37.18

Table 1 shows that L-Au are the most likely to be C-Au; and S-Au are the least likely to be C-Au. However, every byline order can be a possible position for C-Au.
The contribution of C-Au can be influenced by their byline order. Firstly, the PD of contributions is changing among various byline orders of C-Au. As Fig. 1-A shows,

[1] http://www.plos.org/

when the F-Au are C-Au, whose most frequent contribution is 'Write Manuscript'. When C-Au are the S-Au, M-Au and L-Au, whose most frequent contribution is 'Design Experiment'. Secondly, the PoC of C-Au declines by their byline order. The average PoCs are 0.606, 0.530, 0.495 and 0.456 when C-Au are the F-Au, S-Au, M-Au and L-Au respectively (X^2=16199.083, p<0.001, Kolmogorov-Smirnov (K-S) test). Fig. 1-B shows the percent of C-Au quantity in each PoC value. For instance, the percent of C-Au quantity whose byline order is F-Au is lower in low PoC than in high PoC.

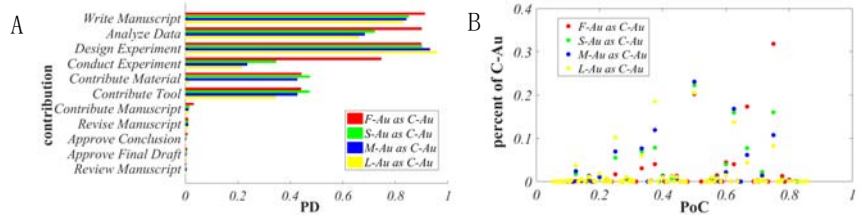

Fig. 1. Contributions with top 11 PD values of C-Au (A) and scatter of PoC value and ratio of C-Au (B) by byline order.

3.2 The impact of byline order of C-Au on other authors contribution

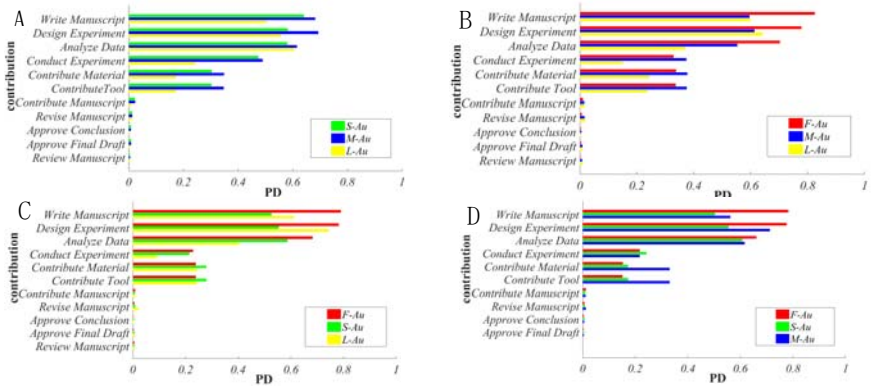

Fig. 2. Contributions with top 11 PD values when C-Au are the F-Au (A), S-Au (B), M-Au (C) and L-Au (D).

The PD of contribution of other authors is changing among various byline orders of C-Au. In Fig.2, we find that the contribution whose PD is biggest of F-Au and M-Au is 'Write Manuscript' and 'Design Experiment', despite the byline order of C-Au. But the contribution whose PD is largest of S-Au and L-Au is different. For instance, the most frequency contributions of S-Au are "Write Manuscript" and "Analyze Data" when the F-Au and M-Au are assigned to be C-Au.

Table 2. Values of PoC of all authors with different byline order of C-Au

M± SD		C-Au			Val.		
		F-Au	**S-Au**	**M-Au**	**L-Au**	**X2**	**Sig.**
All authors	**F-Au**		0.453±0.183	0.407±0.173	0.367±0.165	1,601.57	.000
	S-Au	0.402±0.190		0.336±0.175	0.303±0.165	4,237.07	.000
	M-Au	0.441±0.187	0.400±0.190		0.373±0.181	2,190.69	.000
	L-Au	0.303±0.165	0.306±0.167	0.319±0.167		13.31	.001
Val.	**X2**	8,391.97	733.85	1,923.06	3,348.31	3,348.31	
	Sig.	.000	.000	.000	.000		

*M is abbreviation of mean value, SD is abbreviation of standard deviation

Authors' contributions are influenced by the byline order of C-Au. In Table 2, the vertical line represents other authors in different byline orders with C-Au in same byline order, the horizontal line represent other authors in same byline order with C-Au in different byline order. From vertical, the PoC of authors in different byline order is significant different with the same C-Au. For instance, when S-Au is assigned to be C-Au, F-Au has the biggest value while L-Au has the lowest value. From horizontal, the PoC of a specific author is significant different among different byline order of C-Au. For instance, S-Au has the lowest value when L-Au is assigned to be C-Au, which confirm the result of [3] that when the last was C-Au, the prestige of the second author was substantially diminished.

Conclusion and Future Works

This poster aims to analyze the impact of the byline order of C-Au on authors contribution pattern. We have found that with the decline of byline order, the contribution of C-Au decreases. Besides, other authors contribution pattern is changing significantly with the byline order of C-Au. In the next step, we will divide the dataset into various discipline and introduce more indexes to quantity the contribution.

Reference

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