Influencing Factors and Governance Strategies of Inappropriate Authorship in Scientific Journal Publications: A Bounded Rationality Perspective

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Abstract

[Objective] This study proposes a theoretical framework for the influencing factors of inappropriate authorship in scientific journal publications from the perspective of bounded rationality theory, providing reference for the construction of research integrity and academic norms. [Methods] Through questionnaire surveys and statistical data analysis, this study investigates the actual manifestations, causes, and influencing factors of inappropriate authorship in scientific journal papers. [Results] The influencing factor model for inappropriate authorship in scientific journal papers based on bounded rationality theory was validated. Results indicate that academic literacy and academic environment, as constraint conditions, exert significant influence on inappropriate authorship behavior. [Conclusion] The construction of domestic research integrity and academic norms requires continuous improvement. It is recommended that, in addition to strengthening academic ethics education, reforming the scientific research evaluation system, and clarifying the responsibilities of academic journals, emphasis should be placed on the refinement and proceduralization of authorship norms for papers published in scientific journals, exploring "supply-side" reforms for scientific journals to address inappropriate authorship behavior, and clarifying coping strategies for scientific journal editors regarding inappropriate authorship behavior.

Full Text

Research on Influencing Factors and Governance Strategies of Improper Authorship in Scientific Journal Publications from the Perspective of Bounded Rationality

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Abstract

Purpose: This study proposes a theoretical framework for the influencing factors of improper authorship in scientific journal publications from the perspective of bounded rationality theory, providing a reference for research integrity and academic norm construction. **Methods:** Through questionnaire surveys and statistical analysis, the study examines the manifestations, causes, and influencing factors of improper authorship in scientific journals. **Findings:** The model based on bounded rationality theory was verified, showing that academic literacy and academic environment, as constraint conditions, significantly influence improper authorship behavior. **Conclusions:** Research integrity and academic norm construction in China require continued improvement. In addition to strengthening academic ethics education, reforming research evaluation systems, and clarifying the responsibilities of academic journals, the study recommends emphasizing the refinement and proceduralization of authorship norms for scientific journal publications, exploring "supply-side" reforms for journals to address improper authorship, and clarifying editorial strategies for responding to such behavior.

Keywords: scientific journals; improper authorship; academic misconduct; academic norms; academic publishing

1. Introduction

Improper authorship has become a common yet frequently overlooked form of academic misconduct in scientific publications. With the increasing prevalence of multi-author papers, the National Survey Report on the Status of Scientific and Technical Personnel indicates that irregularities in author attribution and ordering are widespread phenomena. As the primary basis for research evaluation, academic papers carry significant weight in promotion, tenure, and funding

decisions, creating systemic pressures that contribute to improper authorship practices.

Academic misconduct generally refers to the malicious appropriation of others' academic achievements, including fabrication, falsification, and plagiarism. Improper authorship, however, represents a distinct category of misconduct related to social relationships beyond content-related violations. It manifests in various forms, including ghost authorship (shadow authors), gift authorship (honorary authors), and arbitrary changes to author lists or ordering. These practices undermine transparency regarding individual contributions and obscure accountability, damaging the academic ecosystem and impeding balanced development in scholarly communities.

In response, Chinese authorities have issued numerous policy documents. The Ministry of Education has required institutions to overcome the tendency to evaluate personnel based solely on paper counts in funding applications and performance reviews. The State Council and Ministry of Science and Technology have issued guidelines on reforming research evaluation mechanisms and removing adverse incentives in scientific assessment. The National Press and Publication Administration has promulgated the *Academic Publishing Norms: Definition of Academic Misconduct in Journals* (CY/T 174—2019), which defines improper authorship as attribution or ordering that does not correspond to actual contributions to the paper.

Despite these efforts, improper authorship persists, partly due to insufficient practical implementation of authorship normalization and partly because researchers lack understanding of authorship norms. Previous studies have primarily employed speculative methods to examine motivations for improper authorship. For instance, some scholars attribute the phenomenon to pressure from the research evaluation system and inadequate self-discipline among researchers. Others argue that honorary authorship stems from weak legal and ethical awareness, where individuals seek the prestige of authorship or succumb to external pressures. Using grounded theory, researchers have identified academic literacy, gatekeeping services, and academic environment as key influencing factors for faculty misconduct.

However, discussions on the interaction between motivations and influencing factors for improper authorship in scientific journals remain limited, and the direction and magnitude of different factors' impacts are unclear. This study applies bounded rationality theory to analyze researchers' decision-making processes regarding authorship. Bounded rationality, first proposed by Herbert Simon, posits that human behavior is rational within environmental limits. Decision-makers, constrained by incomplete information and limited cognitive capacity, typically consider only whether an option meets their minimum satisfaction threshold rather than exhaustively calculating all alternatives. In the context of academic publishing, researchers face external pressures and constraints, making authorship decisions based on a bounded rational calculation of costs and benefits to maximize their utility. This perspective frames improper authorship

as a rational choice made under constraints, where researchers weigh costs and benefits to maximize outcomes like publication counts, funding acquisition, and career advancement.

2. Research Methods and Design

2.1 Research Hypotheses and Model Based on attribution theory, individual behavior can be categorized into internal attribution (motivation, ability) and external attribution (environmental factors). Academic literacy reflects researchers' internal qualities, encompassing academic ethics, knowledge of norms, and research capabilities. Academic pursuit represents researchers' intrinsic motivation and commitment to scholarship. Academic pressure and environment constitute external constraints that shape behavior.

Drawing on bounded rationality theory and existing research, this study proposes the following hypotheses:

- **H1:** Academic literacy negatively influences improper authorship behavior.
- **H2:** Academic pursuit negatively influences improper authorship behavior.
- **H3:** Academic pressure negatively influences improper authorship behavior.
- **H4:** Academic environment negatively influences improper authorship behavior.

The theoretical model posits that as bounded rational actors, researchers' improper authorship decisions are constrained by both internal factors (academic literacy, academic pursuit) and external factors (academic pressure, academic environment) in their pursuit of utility maximization.

[Figure 1: see original paper] Theoretical Model of Influencing Factors for Improper Authorship Behavior in Scientific Journal Publications

2.2 Data Collection and Sample Researchers and journal editors are the primary actors in scientific publication and direct stakeholders in authorship norms. This study surveyed university faculty and editorial staff using a stratified sampling approach based on the 2020 Chinese Science and Technology Core Journal Directory to ensure broad representation. Questionnaires were distributed both in groups and individually through WeChat and QQ author groups to ensure diversity and timely response.

A total of 513 questionnaires were distributed, with a 100% response rate. After screening, 506 valid questionnaires remained (98.65% validity). The sample comprised 57.3% female and 42.7% male researchers. Educational backgrounds were distributed as follows: master's degree (48.9%), doctoral degree (44.4%), and bachelor's degree or below (6.6%). Professional titles included intermediate (41.5%), junior (31.2%), and senior (24.6%). Most respondents had 1-5 years of

work experience (52.2%), followed by 5-10 years (24.0%). The majority worked in engineering and science disciplines (75.8%), with fewer from humanities and social sciences (24.2%). Institutional distribution included general universities (25.9%), vocational colleges (10.9%), independent colleges (16.6%), and key construction universities (46.6%).

2.3 Variable Measurement The study employed a five-point Likert scale to measure variables, with items adapted from established scales.

Academic Literacy was measured through three items assessing researchers' understanding of authorship norms, academic moral quality, and self-discipline in research (e.g., "Researchers have a comprehensive understanding of paper authorship norms").

Academic Pursuit was measured through three items reflecting non-utilitarian attitudes toward academic status and honors (e.g., "Researchers do not excessively pursue academic status").

Academic Pressure was measured through three items assessing capacity to withstand evaluation and competition pressures (e.g., "Researchers can withstand peer competition pressure").

Academic Environment was measured through three items evaluating the fairness and rigor of institutional evaluation systems and editorial policies (e.g., "The institution's research evaluation system is scientific and reasonable").

Improper Authorship Behavior was measured through five items based on real cases and existing literature, assessing behaviors such as adding authors based on collegial relationships, adding superiors for favor, adding funders or project leaders, adding peer reviewers, and altering authorship after acceptance (e.g., "Adding authors based on colleague or peer relationships during paper publication").

3. Results and Analysis

3.1 Reliability and Validity Tests Exploratory factor analysis of the improper authorship influencing factors scale yielded a KMO value of 0.824 and Bartlett's test significance of $p < 0.001$, indicating suitability for factor analysis. Principal component analysis extracted five factors with eigenvalues greater than 1, explaining 75.80% of total variance, consistent with the pre-designed dimensions. All items had factor loadings above 0.5 and communality values greater than 0.4, demonstrating good construct validity. Cronbach's alpha for the overall scale was 0.824, with subscale alphas ranging from 0.71 to 0.83, indicating good internal consistency.

Reliability Analysis Results of Improper Authorship Influencing Factors Scale
Validity Analysis Results of Improper Authorship Influencing Factors Scale

3.2 Descriptive Statistics The descriptive statistics revealed concerning patterns in authorship practices. Mean scores for improper authorship behavior items ranged from 3.03 to 3.34 (SD = 0.88-1.08), indicating that such behaviors occur with moderate frequency. For instance, "Adding authors based on colleague relationships" had a mean of 3.23 (SD = 1.00), while "Adding superiors for favor" had a mean of 3.34 (SD = 1.08), suggesting these are relatively common practices.

3.3 Correlation Analysis Pearson correlation analysis revealed significant negative relationships between improper authorship behavior and academic literacy (r = -0.561, $p < 0.01$), academic pursuit (r = -0.239, $p < 0.01$), and academic environment (r = -0.429, $p < 0.01$). Academic pressure showed a weaker but still significant negative correlation (r = -0.218, $p < 0.01$). Academic literacy and academic environment showed the strongest intercorrelation ($r = 0.428$, $p < 0.01$), indicating they mutually influence each other.

Correlation Analysis Results

3.4 Multiple Linear Regression Analysis Regression analysis examined the relative impact of factors on improper authorship behavior. Model 1, including only control variables, showed an adjusted R^2 of 0.036 ($F = 4.204$, $p < 0.001$), with education level having a significant positive effect ($\beta = 0.192$, $p < 0.001$). Model 2, adding the four predictors, demonstrated substantially improved fit (adjusted $R^2 = 0.365$, $F = 30.423$, $p < 0.001$), explaining 36.5% of variance.

Multicollinearity diagnostics showed all VIF values below 2.5, indicating no severe collinearity. The results supported H1 and H4: academic literacy significantly negatively predicted improper authorship behavior (β = -0.432, $p < 0.001$), as did academic environment (β = -0.229, $p < 0.001$). The effect of academic literacy was nearly twice that of academic environment ($|0.432| > |0.229|$). However, H2 and H3 were not supported: academic pursuit (β = -0.072, $p > 0.05$) and academic pressure (β = -0.057, $p > 0.05$) did not show significant direct effects.

Regression Analysis Results of Improper Authorship Influencing Factors

4. Discussion and Conclusions

The findings reveal that academic literacy and academic environment significantly constrain improper authorship behavior, while academic pursuit and pressure, though correlated, do not exert direct significant effects. This suggests that researchers' bounded rational decisions are primarily shaped by their internalized ethical standards and the external normative environment rather than by personal ambitions or perceived pressures alone.

Academic Literacy as a Core Constraint: Low academic literacy and insufficient knowledge of authorship norms are primary causes of improper au-

thorship. When researchers lack strong self-discipline and a commitment to truth-seeking, they may rationalize misconduct as a "satisficing" solution under constraints. Academic ethics must be internalized as behavioral standards to achieve self-regulation.

Academic Environment as an External Enabler: A poor academic environment exacerbates improper authorship. The academic accountability system constitutes a major source of pressure for university researchers. Despite ongoing reforms in China's evaluation systems, papers remain crucial carriers of research output. Administrative intervention, evaluation systems tied to personal networks, and rigid quantitative targets intensify pressures, leading some researchers to engage in improper authorship to quickly boost publication counts. The "supply-side" of journals—uneven enforcement of authorship policies, lack of transparency in penalties, and inconsistent standards—creates an environment where misconduct can flourish.

Policy Implications: The study offers several governance strategies:

1. **Refine Authorship Norms:** Journals should implement precise, proceduralized authorship standards. Editorial guidelines should explicitly define contributions of first authors, corresponding authors, and co-authors, adopting frameworks like CRediT (Contributor Roles Taxonomy) to quantify contributions. Manuscript submission systems should prohibit mid-process authorship changes and require detailed contribution statements.

2. **Strengthen Editorial Gatekeeping:** Journals must improve peer review and editorial processes to detect improper authorship. Establishing dedicated reporting channels, publishing regular transparency reports on authorship violations, and maintaining public records of retractions can deter misconduct.

3. **Reform Evaluation Systems:** Research management departments should establish classification-based evaluation mechanisms that combine qualitative and quantitative methods, set reasonable assessment cycles, and correctly position papers within broader research evaluation frameworks. This reduces the "publish or perish" pressure that drives improper authorship.

4. **Enhance Academic Literacy:** Institutions should strengthen academic ethics education, establish supervisory bodies to monitor research conduct, and prioritize integrity reviews during promotion decisions. Publicizing 典型案例 (typical cases) of misconduct can raise awareness and create a culture of integrity.

5. **Improve Penalty Mechanisms:** Clear, consistent penalties for improper authorship must be established. Current practices of handling misconduct "behind closed doors" reduce deterrence. Transparent, standardized disciplinary procedures are essential.

5. Limitations and Future Directions

This study provides empirical evidence for the bounded rationality perspective on improper authorship, demonstrating that academic literacy and environment are critical leverage points for governance. However, limitations remain. The measurement of latent variables may suffer from extraction deficiencies, and the non-significant direct effects of academic pursuit and pressure warrant deeper investigation into their mediating roles. Future research should explore longitudinal designs and qualitative methods to better understand the decision-making mechanisms underlying improper authorship.

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Note: Figure translations are in progress. See original paper for figures.