Who is peer reviewed? Comparing publication patterns of peer-reviewed and non-peer-reviewed papers in Japanese political science

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Abstract

Until recently, some fields of social sciences and humanities have developed without peer-review (PR) systems. Since the introduction of the PR system, non-peer-reviewed studies have been widely published and different publication patterns have emerged between peer-reviewed (PRd) and non-peer-reviewed (NPRd) articles. This study examines the patterns of PRd and NPRd papers in political science journals in Japan. According to this study's analysis, PRd papers are mainly published by young researchers in their thirties. As researchers age, the proportion of PRd papers they publish decreases. The life cycle pattern of a researcher is structured regardless of the journals or the research methods. If the generalized norms and patterns of behavior related to PR are referred to as the PR culture, then there is the PR culture in this field that determines, "PR is a young person's game." Here, the PR system is expected not only to evaluate research content but also to assess newcomers in the field.

Introduction

Peer-review systems and a peer-review culture

The main purpose of peer-review (PR) is generally accepted to be the improvement of the quality of scientific papers. In the scientific world, one of the requirements for demonstrating correctness of knowledge is publication as a peer-reviewed (PRd) paper. However, in some countries, scholars have developed research fields without PR, at least until recent years. According to Tenopir (2004), only 21,000 of the 43,500 academic journals have PR system. In the humanities and social science, publication formats such as books and book chapters that are often non-peer-reviewed (NPRd) are still widely used (Hicks 2004; Kulczycki et al. 2018). There are two main paths to publication in these areas, and PR are

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only partly responsible for ensuring the correctness of knowledge, and the functions of PR seems to be more complicated.

Consequently, different publishing patterns are generated between PRd and NPRd papers. According to the analysis of this study, in Japanese political science, PRd papers are mainly published by young researchers in their thirties. Over a researcher's life cycle, the proportion of PRd articles published decreases with age.

The results provide the following interpretations of the actual functions of PR: Researchers in the early stages of their academic careers tend to choose PRd papers to gain an advantage in the job race. This is because PRd papers are highly regarded in university personnel evaluations. In contrast, older, tenured researchers tend to avoid PR. If the generalized norms and behavioral patterns of PR are referred to as the PR culture, then the PR culture in Japan is that "PR is a young person's game." The PR system is expected not only to evaluate research content but also to assess the research ability of newcomers in the field.

Hypothesis

This study examines papers published in six Japanese political science journals between 1950 and 2017. These journals are written in Japanese and their main readers are from Japan. Japanese political science journals were slower to introduce PR than those published in the United States of America. Even today, the share of PRd articles is lower than that of NPRd articles in Japanese political science journals. For this reason, Japanese political science is one of the typical fields where PR are not widespread.[1]

The purpose of this study is to explore the function of PR through the analysis of publication patterns in this area. This paper focuses on the relationship between the life cycle of researchers and PRd papers. This is because, in the history of political science in Japan, PR is said to have been introduced to enable young researchers to get published. It envisions a pattern in which young researchers write PRd papers and older researchers write NPRd papers. If so, the proportion of studies published in PRd literature will vary with the age of the author.

A simple model can express this concept as follows: The general idea of the PR system requires that all published articles go through PR. Therefore, under this proposition, researchers must write PRd articles regardless of age or other attributes. That is, the probability (p) of a researcher choosing a PRd paper as the publication form for his or her research is always constant ($p = 1$). Under this assumption, the PRd literature rate for researchers is constant for age (100%). The rate of PRd papers is the ratio of PRd papers to the number of papers published by a researcher.

In contrast, it is said that in Japanese political science, young researchers write PRd papers and, as they get older, choose to write increasingly more NPRd papers. Suppose that the probability (p_t) that a researcher of age (t) choosing a PRd article decreases with age ($p_{t+1} < p_t$), the average rate of the researcher's PRd articles should follow a trajectory with a negative slope relative to age. This trend will be a systematic pattern in the researcher's life cycle, regardless of the choice of journals or methods of research. This study tests this hypothesis.

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[1] There is no cross-sectoral survey in Japan on when the peer review system began. Sugihara (1997) is the only one to report that there is no nation-wide economics journal with a referee system in Japan.

If this hypothesis is correct, it means that the importance of PRd literature changes depending upon different stages of a political scientist's career life cycle. According to this study's analysis, the decline in the rate of PRd articles begins before a researcher's most productive age. The main avenue for publication is an NPRd article. If this is the case, then it suggests that PR play a role in screening young researchers, in other words, newcomers in the political science field.

This paper advances the discussion as follows. First, previous research in other fields is considered. Second, the way in which the PR system was introduced in the history of Japanese political science journals is outlined. Third, the relationship between PRd articles and author age is analyzed. Finally, an interpretation of this result is presented.

Review of previous research

Previous research

There have been many previous studies of PR in science. Examples include the historical origin of PR (Biagioli 2003), the correlation between PR evaluation and bibliometric indicators (Van Raan 2006; Opthof and Leydesdorff 2011; Waltman et al. 2011; Braun and Dióspatonyi 2005; Sugimoto and Larivière 2017; Jefferson et al. 2007), the mathematical model of the PR process (Bianchi et al. 2018), the author-reviewer network (Dondio et al. 2019), and gender bias in the PR process (Teele and Thelen 2017; Brown and Samuels 2018; Peterson 2018; Samuels 2018; König and Ropers 2018; Tudor and Yashar 2018; Nedal and Nexon 2018). However, few researchers have examined the pattern of the choice between PRd and NPRd articles.

One of the few exceptions is the study by Japanese sociologist Miwao Matsumoto. Matsumoto (2013) discovered that in the field of sociology in Japan, the publication medium preferred by researchers differed depending on the researchers' type of employment. It is said that sociology in Japan, like political science, is an area regarding which many NPRd studies are published. In his survey of members of Nihon Shakai Gakkai (The Japan Sociological Society, JSS), he asked, "What do you value as a medium for research publication?" The responses revealed that researchers on a fixed term placed more emphasis on publishing articles in PRd journal *Shakaigaku Hyōron* (the Japanese Sociological Review, *JSR*), published by the JSS than tenured researchers. This indicates that the scholar's type of employment influences the selection of the form of research presentation. In personnel evaluation, the more PRd papers, the higher the researcher's reputation. In other words, due to unstable employment, fixed-term researchers are forced to choose PRd papers in order to gain a competitive advantage. In contrast, tenured researchers avoid PRd papers.

Matsumoto's research provides important insight into the role of PR, but it has limitations. First, his method was a survey of attitudes, not of published articles. Second, there was no distinction between PRd and NPRd articles in the journal. *JSR* contains two types of papers, so the implications for the conclusion differ depending on the type of paper that was preferred. In this study, we analyze the publication patterns of two types of papers based on actual published papers.

Fig. 1 Number of the members of JPSA (Sakai 2017: 309)
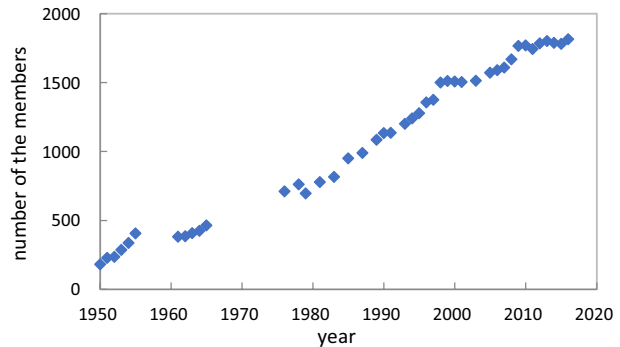
A brief history of political science in Japan

It was not until the 1980s that a PR system was introduced in Japanese political journals. It is believed that the main reason these journals partially adopted PR systems was in order to provide publishing opportunities for young people. Here is a brief description of the history of Japanese political journals.[2]

Modern political science in Japan is alleged to have been established under the influence of Germany around 1900. Nihon Seiji Gakkai (the Japanese Political Science Association, JPSA), the first nationwide political science organization, was founded in 1949. This association published the first political science journal, *Nenpō Seijigaku* (Annals of the Japanese Political Science Association, *AJPSA*), which continues to be published. The second journal, *Kokusai Seiji* (International Relations, *IR*), was launched in 1957 and publishes papers in the field of international politics.

For over 30 years, Japanese political science was supported by these major journals. However, there were no submission processes or PR systems. Typically, the editors of each journal set a special topic for each issue and nominated authors. Explaining the reasons for adopting this editorial policy, Masao Maruyama, a prominent Japanese political scientist, said that "[the Journal of the JPSA] is supported by subscriptions exceeding the membership number of academic societies" (Maruyama 1967). In other words, in order to increase the number of sales, it was necessary to have special issues by author nomination. The number of members of the JPSA has since increased, but at the time there were only 500 researchers who were members. In response to this remark, Yamakawa (1987) pointed out that the journal of the academic society was faced with a situation in which "general needs and trends must be taken into consideration." As a result, authorship was limited to some senior members. Young researchers lacked opportunities for presentation, and this led to increasing dissatisfaction among members (Yamakawa 1987: 245). This problem was also debated at the meeting of the academic society, but for a long time the policy did not change. The publications through which young scholars presented their work included university bulletins, foreign journals, or books. However, university bulletins and overseas journals did not receive many domestic readers. In addition, books often had to be written such that non-expert readers could understand them. Meanwhile, the number of political

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[2] There are other important journals besides these six, such as *Gyōsei Kenkyū Nenpō* (Annals of the Japanese Society for Public Administration), but they were omitted from this study.

Table 1 Six journals of political science in Japan

Journals	Inception	Peer review	Publication
AJPSA	1950	1994-	Semiannual (2005-)
IR	1957	1983-	Quarterly (1957-)
JJES	1986	1986-	Semiannual (2008-)
Lev	1987	1987-	Semiannual (1987-)
AJACP	1999	1999-	Annual (1999-)
JJPT	2000	2000-	Annual (2000-)

scientists continued to increase (Fig. 1), and existing academic journals could no longer meet the increasing publishing needs of young researchers.

From the 1980s, this situation changed. In response to the growing demand to open up journals, *IR* officially began inviting submitted papers in 1983 (called "independent papers" or "free submitted papers" as distinguished from featured articles). This system was introduced because it was common to invite submissions in the United States of America.[3] Anyone who was a member of an academic society was eligible to contribute.[4] It was clearly stipulated in the application guidelines that judges would review submitted manuscripts. Initially, however, the number of submissions was small, and only one article appeared in each issue. In the late 1980s, new journals were launched one after another. The third journal, *Senkyo Kenkyū* (the Japanese Journal of Electoral Studies, *JJES*), was launched in 1986, following the establishment of Nihon Senkyo Gakkai (the Japanese Association of Electoral Studies). It mainly covered voting behavior and the electoral system. The journal also had a PR system for submitted papers, but there were not many submissions.

A fourth journal, *Leviathan* (*Lev*), was launched in 1987. This academic journal was created by political scientists but was not an institutional journal of an academic society. The main field of study was contemporary Japanese politics. The journal set up a PR system and extended an open invitation for papers. *Lev* has published many refereed submissions, and its PR system has gained wide attention. Amid this change in circumstances, in 1994, the *AJPSA* finally introduced a PR system and started to invite submissions.

A fifth journal, *Nihon Hikaku Seiji Gakkai Nenpō* (Annals of the Japan Association for Comparative Politics, *AJACP*) was launched in 1999, publishing papers in comparative politics. One of the purposes for which the Nihon Hikaku Seiji Gakkai (Japan Association for Comparative Politics) was founded was to provide young researchers with publication opportunities (Katayama 1999). *Seiji Shisō Kenkyū* (the Japanese Journal of Political Thought, *JJPT*) is the most recent journal, launched in 2000, and publishes PRd papers on the history of political thought and political theory.

As mentioned above, Japanese political science journals gradually adopted PR systems as one of the main ways to expand publishing opportunities for young scholars (Table 1).

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[3] *The American Political Science Review*, the leading journal of political science, was first published in 1906. Submissions continued to grow. By 1925, editor claimed to be accepting "not more than one article in four" (Sigelman 2006: 463). In 1966 at the latest, the committee announced that it would anonymously evaluate manuscripts submitted for publication.

[4] Since 1984, however, there have been provisions in *IR* stipulating "To ensure equal opportunity for all members" and that publications should be published no more than once every 2 years.

How, then, have the publication patterns of articles changed by the start of PR? The next section shows the data for articles in these journals.

Data

The sample for this survey comprises articles published in these six journals.[5] The target includes all published research papers in these journals since their inception, except for book reviews, essays, research notes, and others. The survey is also limited to papers written in Japanese.[6] In total, 3580 articles were included for analysis. We examined whether these were PRd or not, the age of the author, and the research method.[7]

PRd papers

The following criteria were used to determine whether an article was PRd. In other words, the term "PRd paper" used in this study refers to a paper that has passed review by reviewers after submission of a completed manuscript[8] in an institutional review process.[9] This was determined by the following four steps.

The first step was to verify the existence of any submission guidelines. If the guidelines specified a review procedure, it was assumed that the journal had a PR submission system.[10] The timing of the introduction of each journal is shown in Table 1.

The second step was to determine the thesis category. Five of the six journals, excluding *AJACP*, consisted of featured articles and other articles called independent articles. All the papers in *AJACP* were related to a special issue. The category of each paper was clearly indicated in the journal. In most cases, the featured article was written by a designated author and was not a PRd submission. Independent articles were entirely from submissions. Therefore, by examining the article category, it was possible to roughly determine whether each article had been PRd.

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[5] Except for *Lev*, the back numbers of the other five journals are open access. (https://www.jstage.jst.go.jp/).

[6] In these journals, there are occasionally papers written in foreign languages.

[7] In this study, we excluded the investigation of author affiliations. In most of the past literature, it was not common in Japanese political journals to describe the affiliations of authors. For example, it was not until 2006 that the *AJPSA* began to describe author affiliations. It is important to examine an author's home institution, but that will be a future task.

[8] At one point the *IR* was seeking authors. However, would-be authors did not submit completed manuscripts, rather only sent the title and outline of the subject to be written to the editor, who then nominated authors. These articles were not treated as PRd because they are essentially nominated authors.

[9] One journal claimed that the editorial department had conducted a "peer review" of a featured article written by an editor's designated author. This article may indeed have been included under the broader description of "peer review." However, because it had not gone through a submission and institutional review process, it was treated as a NPRd article in this study.

[10] It is now common for external reviewers to participate in PR. Therefore, this requirement should be added to the definition of PR. However, our investigation could not determine when reviews began to be conducted by external reviewers. This is because the guidelines (especially of the past) often do not explain whether the reviewers are external or internal. In addition, this study aims to clarify the structure of the scientific community by focusing on whether a paper is a submission or not. Therefore, external reviewers were removed from the definition of PR.

The third step was to check the editor's note and the newsletter of the academic society. In rare cases, submission papers were published as feature articles. In such instances, the articles were often listed in the editor's notes or newsletters. This check enabled us to determine which of the featured articles were PRd. In some cases, however, this decision could not be made due to incomplete notes and newsletters. For example, the term "two of the eight featured papers in this issue are contributed papers" is ambiguous.

In the fourth step, we looked at the editorial board members. If the author was one of its members, we assumed that the article was not a PRd submission.

Even after these steps, if there was still some ambiguity regarding whether the article had undergone a PR, it was treated as missing data. As a result of this estimation, the number of PRd papers was 661 (18.5%), NPRd papers were 2864 (80.0%) in all, and unidentified papers totaled 55 (1.5%). Also, there was no evidence that examinations other than the double-blind method had been conducted.

Age

The author age was calculated based on their birth information obtained from the web service "Webcat Plus,"[11] provided by the National Institute of Informatics. As a result, we obtained age information for 3139 (87.7%) of the first authors.

In the case of joint authorship, the age of authors other than the first author was excluded from this analysis. One reason for this is that the first author is assumed to have made the greatest contribution to the paper. In general, the first author is the most important contributor to a work, although this depends on the field of study and country. For example, in American political science, it is customary for author names to be arranged in alphabetical order (Teele and Thelen 2017). In Japanese political science, by contrast, the contribution of the first author is considered to be the largest. In addition, co-authored papers are rare in Japanese political science. Since these comprise only 157 (4.4%) of the total, even if the age of only the first author was determined, we assumed that there would be no major difference in the results.

Method

We assigned the method used in each paper to one of three types of data: Theory & Thought, Quantitative Data, and Historical Documents (cf. Teele and Thelen 2017; Goertz and Mahoney 2012). Theory & Thought is the work of former political theorists and thinkers. Quantitative Data includes government statistics, social surveys, experimentation, and mathematical models. Historical Documents is historical or current documentation.

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[11] http://webcatplus.nii.ac.jp/.

Fig. 2 Number of papers per
year by journal (5-year moving
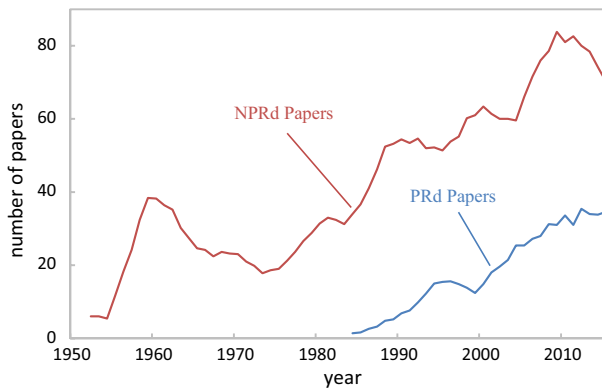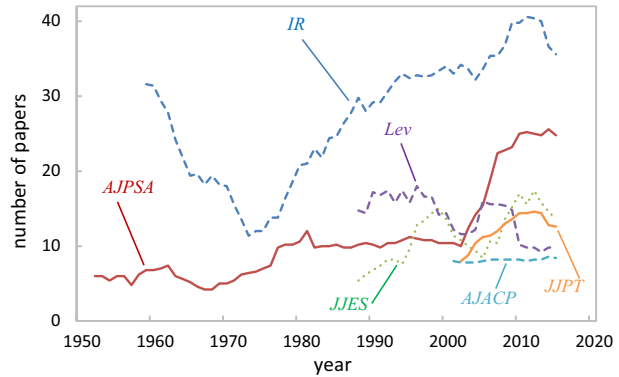average)

Fig. 3 Total number of papers per year by peer review (5-year moving average)

Analysis

Overview

First, we present an overview of the data. Figure 2 shows the transition in the number of articles published in each journal. There is a big difference in the number of papers by journal. Since each journal covers approximately each sub-discipline of political science, the difference in the number of papers per journal is roughly the difference in the number of researchers in each sub-discipline.

Although the number of papers in the quarterly *IR* stands out, it has decreased since the number of issues went down in the 1970s. In addition, although *AJPSA* was originally annual, it became semiannual in 2004, and the number of papers has doubled.

Figure 3 shows the sum of PRd and NPRd articles from six journals. New journals were launched in the late 1980s and around 2000, greatly increasing the total number of articles published. Interestingly, the number of NPRd articles has continued to increase after the introduction of the PR system. Since the 1980s, new journals have been launched one after another, partially introducing PR systems; however, this appears to have been coupled with an increase in the number of NPRd articles. As a result, the
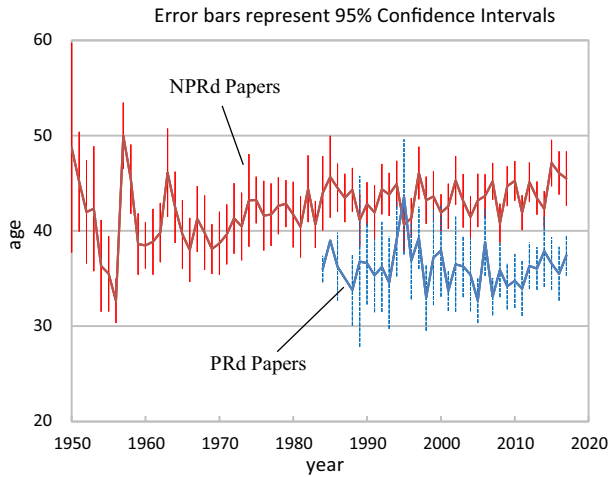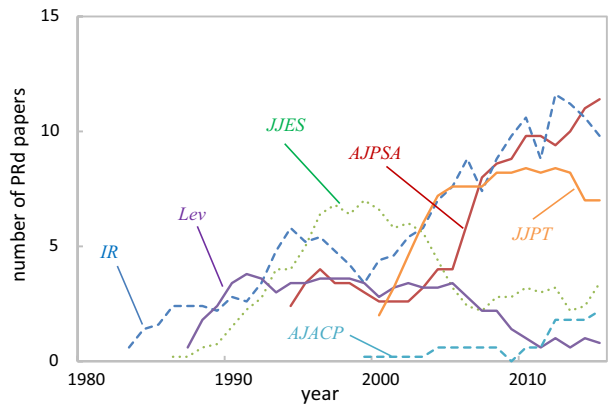
Fig. 4 Average of author's age

Fig. 5 Number of PRd papers by journal (5-year moving average)

share of PRd papers is increasing in terms of the total count, but the presence of NPRd papers remains high. The percentage of PRd articles by journal will be discussed later.

Figure 4 shows the average author age. The error bars indicate the 95% confidence intervals. There are some notable trends to be seen.

First, the peak of the number of achievements is in people who are in their 30s to 40s, and the number of papers decreases after age 50. This trend is stable throughout the period of study. The average until the 1970s was 41.5 years (SD = 9.5). Since the 1980s, the average age of authors of NPRd articles has been 43.5 years (SD = 9.1), and the average age of authors of PRd articles has been 36.3 years (SD = 8.1). This endorses the earlier finding that "science is a young person's game" (Stephan 2010; Stephan and Levin 1992; Benjamin and Bruce 2011).

Second, for most of the time, the 95% confidence intervals for PRd and NPRd articles do not overlap. The authors of PRd papers are mainly in their 30s, and are on average 7.2 years younger than the authors of NPRd papers. This appears to suggest, "PR is a young person's game".

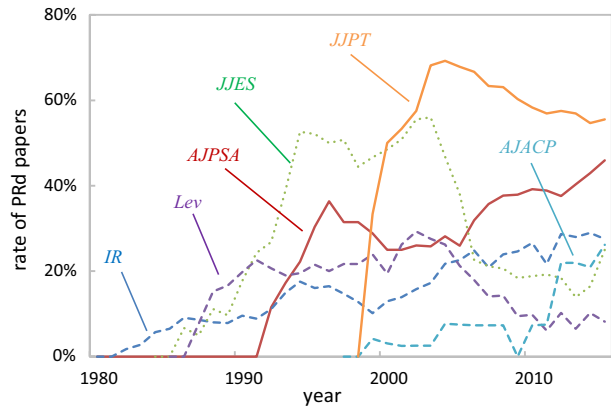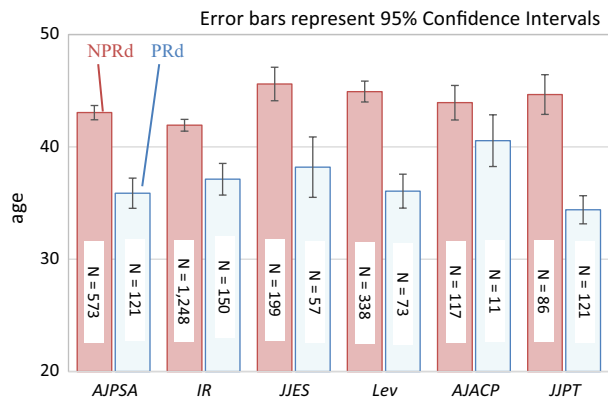**Fig. 6** Rate of PRd papers by journal (5-year moving average)

Fig. 7 Average of author's age by journals

Third, the average age of PRd articles has declined slightly, and that of NPRd papers has risen slightly. Although not shown in Fig. 4, since 1980, the slope of the regression line for PRd and NPRd articles were -0.062 ($R^2 = 0.004$) and 0.049 ($R^2 = 0.003$) respectively, when the regression line for author age was drawn by OLS (ordinary least squares). [The slope before 1980 was -0.036 ($R^2 = 0.001$).] This indicates that the age groups of PRd and NPRd authors tend to be segregated.

By journal

Figure 4 appears to show a clear difference between the ages of authors of PRd and NPRd papers. In the next two sections, we examine whether this difference exists even if we control the journal and method type as variables.

Figure 5 shows the number of PRd articles published per journal per year. Figure 6 shows the percentage of PRd papers. The trend varies from journal to journal. Although the introduction of a PR system in *Lev* attracted considerable attention, *JJES* had a higher number and percentage of PRd articles in the 1990s. In terms of the number of PRd papers, *IR, AJPSA* and *JJPT* were the most common among the quarterly, semiannual and annual journals respectively. While some journals (*AJPSA, IR* and *AJACP*) displayed

Table 2 Number of papers by method

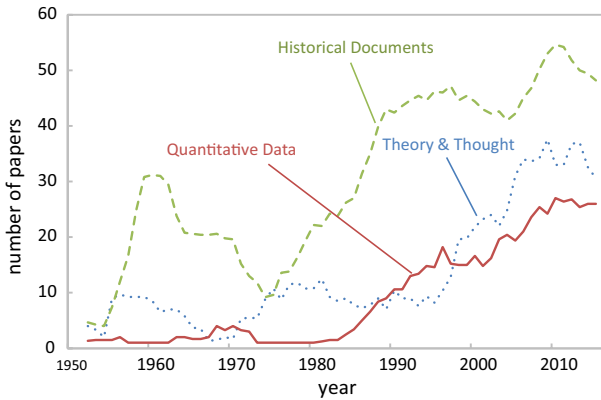| Journals	Theory & thought	Quantitative data	Historical documents	Total
AJPSA	249	120	384	753
IR	286	68	1328	1682
JJES	44	212	99	355
Lev	69	196	159	424
AJACP	25	21	109	155
JJPT	211	0	0	211
Total	884	617	2079	3580

Fig. 8 Number of papers by method (5-year moving average)

a nearly consistent upward trend in percentages, others (*JJES*, *Lev* and *JJPT*) showed a convex parabola. Factors that may change the number of PRd papers include an increase or decrease in the number of submissions, an increase or decrease in the quality of submissions, and a tightening or relaxing of review criteria. However, these factors cannot be examined in this paper because of the lack of data. Figure 6 also shows that *JJPT,* and at one point *JJES,* were the only journals where PRd papers exceeded 50%.

However, there was little difference in age trends among journals. Figure 7 shows the average ages of PRd and NPRd authors by journal. In all journals, NPRd authors average in their 40s and PRd authors average in their 30s. In five journals, all except *AJACP*, the 95% confidence intervals for NPRd and PRd articles were significantly different. There was also a significant difference in *AJACP t* test results ($p = 0.032$). Therefore, there were significant differences in the mean ages of PRd and NPRd authors in all the journals.

As mentioned above, each journal covers a different branch of political science. Thus, the trend in the age of PRd authors was similar in all fields, despite the large differences in the number and proportion of PRd articles.

By method

Next, we controlled how the paper was studied. Table 2 shows the number of papers by method. Obviously, there were big differences among the journals. *IR* studies were

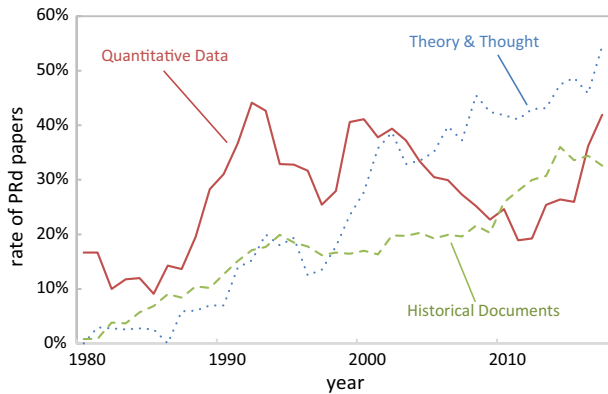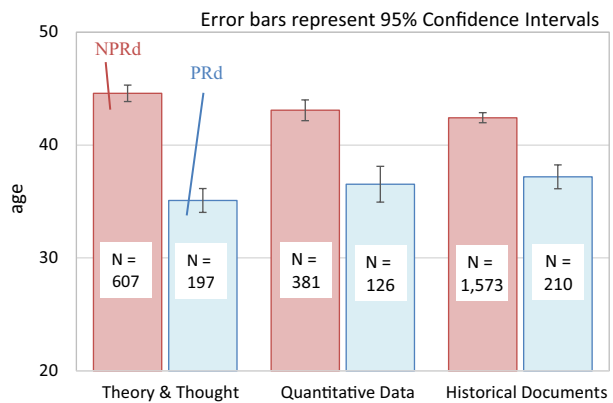**Fig. 9** Rate of PRd papers by method (5-year moving average)

Fig. 10 Average of author's age by method

overwhelmingly based on Historical Documents, while *JJES* studies were based on quantitative analysis. All *JJPT* papers used Theory & Thought. The fact that journals have such "color" suggests that appropriate research methods may differ depending on the subject.

Figure 8 shows the transition in the number of papers by method. The large number of historical documents is related to the large number of *IR* papers. Figure 9 shows the percentage of PRd papers by method. The increase in the percentage of Quantitative Data in the 1990s appears to be linked to the increase in the number of *JJES* papers. The increase in the rate of Theory & Thought since 2000 may be related to the launch of *JJPT*. Overall, however, the rate of Quantitative Data is high, while Historical Documents is low, with different trends for different research methods.[12]

However, there was little difference in the ages of authors between methods. Figure 10 shows the average ages of PRd and NPRd authors by method. In three methods, NPRd authors were in their 30s on average, and PRd authors were in their 40s on average, and the 95% confidence intervals were significantly different. There were significant differences in

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[12] Sugawara (2010) refers to the bias of the PR system and argues that papers using quantitative analysis are more likely to pass PR. In order to test his claims, we have to look at publication rates (publication/submission) by method. At least in the 1990 s, however, the proportion of PRd research was high.

the mean ages of PRd and NPRd authors in all three approaches. In other words, although the number and proportion of PRd articles varied widely by method, the trend in the age of authors was similar.

Life cycle of the researcher

The above analysis found that the authors of PRd papers were young, regardless of field or method. This appears to indicate that during the life cycle of a researcher, he or she will publish PRd articles when he or she is young and will publish NPRd articles as he or she ages. To further verify this, we examined the PRd literature rates for each researcher.

The method we used was as follows: First, we examined the rate of PRd papers for each researcher for every year between the ages of 25 till the present (2017). The rate of PRd articles here is the percentage of PRd articles published before (PRd papers/total papers published before). The years during which no previous paper was published were treated as missing values. Next, to control the cohort effect, the researchers were divided into ten groups of 5-year age categories (year of birth: 1940–1944, 1945–1949, … 1985–1989). Finally, the average PRd literature rate for the group was calculated.

Figure 11 shows the results. Groups 1, 2, and 3 are researchers with low rates of PRd articles over their lifetimes. For these researchers, PRs began in their late 30s and 40s. There is a high probability that at that time, many people in this group were already tenured researchers. These people rarely wrote PRd works throughout the period.

Groups 4, 5, and 6 are researchers from the transitional phase when PR systems were being introduced. For these researchers, the system started in their 20s and early 30s. Their average PRd rates reach about 50% by age 30 and then stagnate between 20 and 30%. However, for most of these periods, the 95% confidence intervals overlap and no statistically significant difference can be seen.

Groups 7, 8, 9, and 10 are the youngest researchers in the study. PR systems were already a component of the research environment at the beginning of their academic lives. Their PR rates are higher than researchers of the past, with more than 60% articles their 20s. However, in Groups 7 and 8, the rate declines with age, falling to below 50% by age 40. In particular, the downward slope in Group 8, which is the lower generation, is steeper. The 95% confidence intervals do not overlap in this reduction.

Groups 9 and 10 both have high rates of PRd articles. However, the error bar is long, and there is no significant difference. In the future, it is necessary to examine whether this group will maintain a high rate or reduce the rate.

This general pattern can also be observed in each journal. When we divided authors and plotted Fig. 11 for each journal,[13] we found patterns similar to original Fig. 11 in all cohorts and journals. In exceptional cases, the average PRd literature increased with age (JJPT Group 4), but the sample size was small and the differences were not significant.

Thus, the model in this study applies precisely to cases in groups 7 and 8. However, other groups can be interpreted in a manner consistent with the model. The young age of groups 1–4 is the period without, or at the beginning of, PR systems. This cohort effect may have reduced the rate of PRd articles at an early age. Groups 5 and 6 are in transition to new generation. Groups 9 and 10 have the highest rates, but because there are no data in middle age, it is not clear whether age-related declines will occur. At least in the dataset of

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[13] Authors who had written for several journals were assigned to several groups.
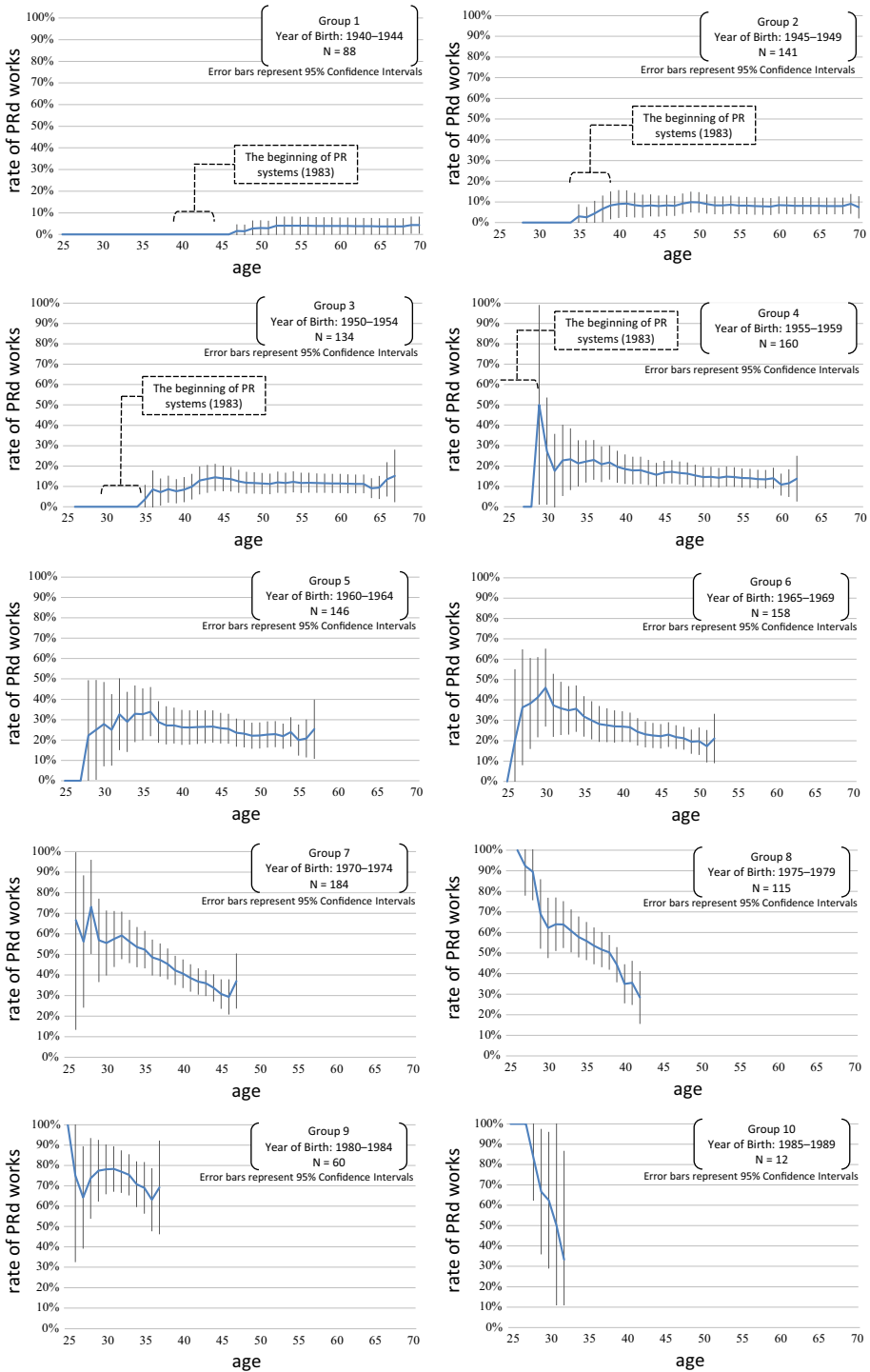
Fig. 11 Average rate of PRd works by author's age

this study, it is concluded that the life cycle pattern of researchers postulated by this study can be found in Japanese political science.

Conclusion

The findings of this paper can be summarized as follows. First, since the introduction of PR in Japanese political science in the 1980s, the number and proportion of PRd papers has increased, but the share of NPRd papers remains large. Second, the younger the population, the higher the rate of PRd articles. In the older generation, PRd articles were less than 50% throughout the entire period. Third, the rate of PRd articles decreased with age, and none of the cohorts exceeded 50% at age 40. In other words, in Japanese political science, young researchers often write PRd papers and shift to writing NPRd papers as they get older. It was confirmed that this model of the life cycle of a researcher is a systematic pattern regardless of the field of study or research method.

The results provide the following interpretation of the actual functions of PR: researchers in the early stages of their academic careers are likely to choose PRd papers to gain an advantage in the job market. This is probably because PRd articles are highly valued in university personnel evaluations. For this reason, PRd papers are often referred to in Japanese as *Tōryū mon* (the gateway to success). In contrast, older, tenured researchers tend to avoid PR. The main avenue for research publication is a NPRd article, and PRd works are an exceptional form of publication. If the generalized norms and behavioral patterns of PR are referred to as the PR culture, there is the PR culture that reiterates that "PR is a young person's game" in this area. The PR system performs the function of research evaluation only for a part of the research, and is expected to evaluate the research ability of young researchers or newcomers in the field. In short, although PR systems have been introduced, a unique PR culture is pervasive.

Will these norms and patterns of behavior persist? The rate of PRd papers among the younger generation is increasing, and researchers' attitudes seems to be changing. In the future, the proportion of PRd papers may be greater than that of NPRd papers. Then, the research evaluation function of PR systems will become more important, and the opportunity to publish journal articles will become fair. When that happens, the PR culture in this area will have changed.

Compliance with ethical standards

Conflict of interest The author is a member of the JPSA.

References

Benjamin F. J., & Bruce A. W. (2011). Age dynamics in scientific creativity. *Proceedings of the National Academy of Sciences, 108*(47), 18910–18914.

Biagioli, M. (2003). Peer review. In J. L. Heilbron (Ed.), *The Oxford companion to the history of modern science* (pp. 624–625). Oxford: Oxford University Press.

Bianchi, F., Grimaldo, F., Bravo, G., & Squazzoni, F. (2018). The peer review game: An agent-based model of scientists facing resource constraints and institutional pressures. *Scientometrics, 116*(3), 1401–1420.

Braun, T., & Dióspatonyi, I. (2005). The journal gatekeepers of major publishing houses of core science journals. *Scientometrics, 64*(2), 113–120.

Brown, N. E., & Samuels, D. (2018). Gender in the journals, continued: Evidence from five political science journals. *PS: Political Science & Politics, 51*(4), 847–848.

Dondio, P., Casnici, N., Grimaldo, F., Gilbert, N., & Squazzoni, F. (2019). The "invisible hand" of peer review: The implications of author-referee networks on peer review in a scholarly journal. *Journal of Informetrics, 13*(2), 708–716.

Goertz, G., & Mahoney, J. (2012). *A tale of two cultures: Qualitative and quantitative research in the social science*. Princeton: Princeton University Press.

Hicks, D. M. (2004). The four literatures of social science. In H. Moed, et al. (Eds.), *Handbook of quantitative science and technology research* (pp. 473–496). Dordrecht: Springer.

Jefferson, T., Rudin, M., Brodney Folse, S., & Davidoff, F. (2007). Editorial peer review for improving the quality of reports of biomedical studies. *Cochrane Database of Systematic Reviews, 18*(2), MR000016.

Katayama, H. (1999). Nihon Hikaku Seiji Gakkai no sousetsu (Establishment of Japan association for comparative politics). *Ajia Keizai, 40*(1), 81–85.

König, T., & Ropers, G. (2018). Gender and editorial outcomes at the American Political Science Review. *PS: Political Science & Politics, 51*(4), 849–853.

Kulczycki, E., Engels, T. C. E., Pölönen, J., Bruun, K., Dušková, M., Guns, R., et al. (2018). Publication patterns in the social sciences and humanities: Evidence from eight European countries. *Scientometrics, 116*(1), 463–486.

Maruyama, M. (1967). Atogaki (Afterword). *Nenpō Seijigaku, 18,* 203–205.

Matsumoto, M. (2013). Chi no bundanka to daigaku no yakuwari (The division of knowledge and the role of the university). In T. Hirota, et al. (Eds.), *Gurobarizeshon, shakai hendou to daigaku (Globalization, social change and universities)* (pp. 73–110). Tokyo: Iwnami Shoten.

Nedal, D. K., & Nexon, D. H. (2018). Gender in the international studies quarterly review process. *PS: Political Science & Politics, 51*(4), 859–865.

Opthof, T., & Leydesdorff, L. (2011). A comment to the paper by Waltman et al., *Scientometrics, 87*, 467–481, 2011. *Scientometrics, 88*(3), 1011–1016.

Peterson, D. A. M. (2018). Author gender and editorial outcomes at Political Behavior. *PS: Political Science & Politics, 51*(4), 866–869.

Sakai, D. (2017). Nihon seiji gakushi no futatsu no tenkan (Two transitions in Japanese political science history: A citation analysis of political science textbooks). *Nenpō Seijigaku, 2017*(2), 295–317.

Samuels, D. (2018). Gender and editorial outcomes at Comparative Political Studies. *PS: Political Science & Politics, 51*(4), 854–858.

Sigelman, L. (2006). The coevolution of American political science and the "American Political Science Review". *American Political Science Review, 100*(49), 463–478.

Stephan, P. (2010). The economics of science. In B. H. Hall & N. Rosenberg (Eds.), *Handbook of the economics of innovation*. Dordrecht: Elsevier.

Stephan, P., & Levin, S. (1992). *Striking the mother lode in science: The importance of age, place, and time*. Oxford: Oxford University Press.

Sugawara, T. (2010). "Amerika ka" suru nihon no seijigaku ("Americanizing" Japanese political science). *Shisō Chizu, 5,* 381–405.

Sugihara, S. (1997). *Zoku Nihon no Keizai Zasshi (The economic journals in Japan, continued)*. Tokyo: Nihon Keizai Hyōron Sha.

Sugimoto, C. R., & Larivière, V. (2017). *Measuring research: What everyone needs to know*. Oxford: Oxford University Press.

Teele, D., & Thelen, K. (2017). Gender in the journals: Publication patterns in political science. *PS: Political Science & Politics, 50*(2), 433–447.

Tenopir, C. (2004). Online scholarly journals: How many? *Library Journal, 129*(2), 32.

Tudor, C. L., & Yashar, D. J. (2018). Gender and the editorial process: World politics, 2007–2017. *PS: Political Science & Politics, 51*(4), 870–880.

Van Raan, A. F. J. (2006). Comparison of the Hirsch-index with standard bibliometric indicators and with peer judgment for 147 chemistry research groups. *Scientometrics, 67*(3), 491–502.

Waltman, L., van Eck, N. J., van Leeuwen, T. N., Visser, S. M., & van Raan, A. F. J. (2011). On the correlation between bibliometric indicators and peer review: Reply to Opthof and Leydesdorff. *Scientometrics, 88,* 1017–1022.

Yamakawa, K. (1987). Nihon no seijigaku (Political science in Japan). *Kansai Daigaku Hougaku Ronshū, 37*(2–3), 477–499.