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For the Sustainable Development of Universities: Exploring the External Factors Impacting Returned Early Career Academic's Research Performance in China

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Abstract: Early career academics are the key agents for the sustainable development of higher education institutions. In China, those who were educated overseas and have returned to Chinese universities to seek academic positions are becoming a fast-growing group. Good research performance is critical to survive in the increasingly competitive environment in academia. Improving research performance requires an understanding of the factors that facilitate or inhibit research performance. In the light of Bronfenbrenner's ecological systems theory, this study, using a mixed-method design (20 interviewees and 136 respondents), elaborates on a number of external factors affecting returned early career academics' research performance. Understanding these factors is helpful for the building of a favorable environment that can improve the research performance of the returned early career academics, and hence the sustainable development of universities.

Keywords: research performance; returned early career academics; ecological theory; higher education institutions; mixed method; sustainable development

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1. Introduction

1.1. Research and Higher Education Sustainability

Sustainability is a critical strategic idea for organizations [1], and universities are no exception. Innovative research achievements, such as new knowledge, theory, and patents are the strong foundation for the sustainable development of higher education. In this sense, the sustainability of universities can be promoted by means of research [2]. Skilled persons such as researchers, students, and academics have been viewed as the key component of sustainable development strategies by institutions and nations [3]. In the era of internationalization of higher education, academic mobility, which brings "diversity, global connectivity, new perspectives, and innovation" [4] (p. 10) improves teaching, public service, and more importantly research in higher education, thereby promoting the sustainable development of higher education.

In the field of higher education, being productive in research is significant for early career academics [5]. Performing well in research ensures these scholars' authenticity as researching academics [6]. At the individual level, improving research performance helps to survive in the "publish or perish" environment in many universities [7]. At the national level, early career academics' good research performance strengthens a nation's global competitiveness [8]. The early career academics are "important potential agents in the transformation of the academic field" [9] (p. 677), but they are in vulnerable positions [10]. The most significant challenge for early career academics is to enhance their research skills and be productive in research [8].

1.2. The Returned Talents

A growing number of Chinese graduates choose to return to their home country for work. According to the statics from the Ministry of Education China, the number of returnees kept increasing between 2010 and 2019 (Figure 1).

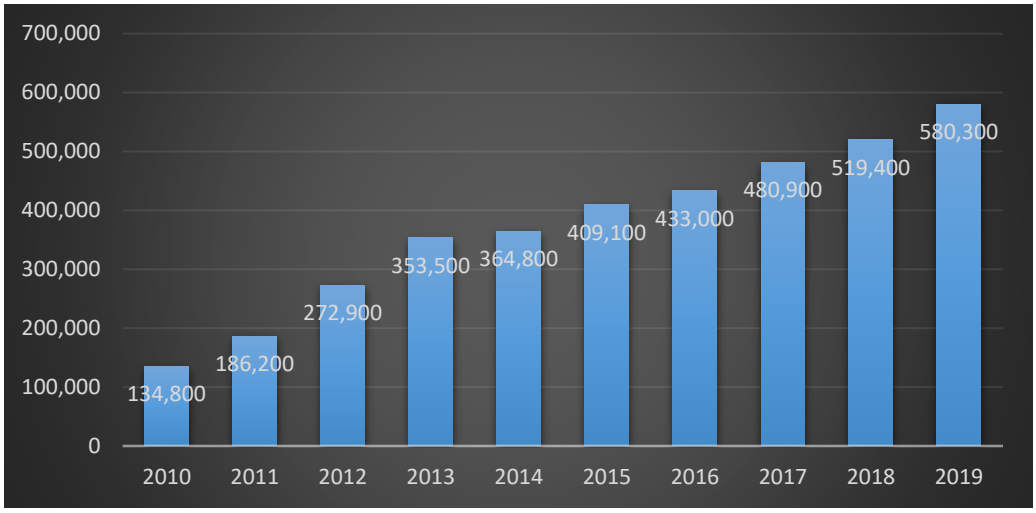


Figure 1. Number of returnees between 2010 and 2019.

The returned early career academics (RECAs), who returned to home countries for academic work following their completion of postgraduate research training in host countries [4], are a significant force of these returnees. Even though it is unrealistic to tell the exact number of RECAs due to lack of available data from the government, the overall growth trend could be speculated.

In China, the RECAs, who are assumed to "hold four basic superiorities—English proficiency, academic vision, technical skills, and ability to develop foreign relations" [11] (p. 230), play a key role in internationalizing Chinese universities and promoting world-class status [4]. This partly led to several influential policies that aim to attract talents from overseas. Examples include the Recruitment Program of Global Experts (Qianren Jihua) and Recruitment Program of Global Young Experts (Qingnian Qianren Jihua). With the implementation of these policies, the returned academics are now becoming a fast-growing group in Chinese higher education institutions (HEIs) [12].

However, there is a paucity of studies investigating the work and research experience of these RECAs. Improving the research performance of RECAs requires an understanding of the factors facilitating or inhibiting their research performance. Bazeley [13] contends that "research performance" could be divided into "research" which is the activities that are deemed to be research, and "performance" which is the output made visible and known to others. Research performance is defined as a construct comprising research activities and research output or productivity [13]. This study focuses on the factors which are external to the individual but affect individuals' research performance, such as others, institutions, regulations and policies, culture and conventions, etc. To be specific, this mixed-method study is intended to answer two questions: (1) what are the factors influencing Chinese RECAs' research performance? and (2) what is the prevalence of each factor? The RECAs in this research refers to the Chinese academics who are within six years (by 2019) of having obtained PhD degrees from universities not located in mainland China and having been appointed to academic positions in Chinese universities.

1.3. The Chinese Context

Since the 21st century, the academic system has undergone significant changes in China. An academic system that aims to stimulate the efficiency of academic output and

is linked to the quantity and benefit distribution of academic output takes the dominant position [14]. The Chinese academic system ties together the national goal, the organizational goal of universities, and the personal goal of academic staff to increase academic output [15], yet national and social needs are the key to winning research grants or getting papers published. In most Chinese universities, the evaluation of research is hosted by administrative departments. Thus, scientific research evaluation tends to emphasize the quantity rather than the quality of research output [16]. Similarly, the promotion of faculty members is dependent on the number of published articles and research grants. The new faculty employment system resembles the American tenure track, which uses the "up-or-out promotion for junior faculty followed by life-long tenure" [17] (p. 177). Many universities allow junior faculty several years to publish specified numbers of papers in both Chinese and English quality peer-reviewed journals and win high-level research grants. Successfully meeting this requirement, the faculty members would be promoted, otherwise they may be dismissed.

2. Literature and Theoretical Framework

2.1. The Challenges of RECAs' Research Performance

Undoubtedly, a scholar's individual characteristics or attributes such as motivation, research training experience, personal research orientation, publication habits, and activities [18,19] are significant predictors of research performance. Nonetheless, there are a number of external factors affecting the research performance of faculty members, including the RECAs, in terms of the amount of awarded grants, published research articles, authored or co-authored books, book chapters, and patents [20].

Academic cooperation and professional network are influential on research. Ductor et al. [21] contended that research collaboration encompasses communication of ideas and opinions stimulating the emergence of new ideas, which in turn promotes academics to be more productive. They further claimed that researchers "who are better connected and more central in their professional network may be more productive in the future" [21] (p. 936). New faculty members' network could be expanded through mentorship, thereby improving their research performance. Muschallik and Pull [22] (p. 211) deemed that mentoring provided new researchers with "access to the scientific community and its networks" and thus mentees could extend more professional collaborations. Institutional influence is an intensively researched area. For instance, the impact of tenure system on scholars' research has been proven to be significant [23]. Other scholars [24,25] find that insufficient time investment in research is owing to the mandatory teaching load required by departments or institutions. Other factors such as institution prestige, department size, departmental/faculty leadership or management style, incentives, research culture, available resources, recruitment, and selection have been found to correlate to research achievements [18,25–31]. Beyond the working context, family has also been proved to facilitate or inhibit scholars' research performance. Blackburn and Lawrence [32] coined "social contingencies" to denote the significant events that occur in an academic's daily life, which could affect their research performance. Cole and Zukerman [33] found that married researchers with children published as much as the unmarried did. Kylik [34] discovered that for Norwegian female researchers, having children under 10 years negatively affected their research productivity.

In addition to the institutional and familial contexts, the research performance of RECAs in China may also be affected by broad political, cultural, and social conditions. Preferential policies have been formulated to attract academics who are likely to have more international publications and cross-cultural collaborations [35], and may play an important role in expanding new research directions, linking Chinese and international academic communities and promoting higher education innovations [4,11]. These measures to some degree strengthened Chinese HEIs' competitiveness in teaching and research.

RECAs also face a number of challenges for integrating into the Chinese higher education system, which negatively affects their research performance. This is mostly

due to re-entry, which is essentially a re-acculturation process whereby people relearn, regain, and internalize the forgotten or disregarded cues embodied in the native culture after their time studying or working in a different cultural context [36]. Sojourners spent several years in acquainting, understanding, and using Western culture and knowledge [37] and internally formed a set of values, attitudes, and behaviors [38] during their stay in other countries. Upon return they might find that their newly acquired values, beliefs and behaviors are unacceptable in the home social and cultural context [39], and they are therefore expected to re-learn in order to "regain familiarity with a set of home-country norms and behaviors" [36] (p. 4). The re-integrating process could be particularly difficult for students from East Asian contexts [40], as the cultural distance [41] between the West and East is significant.

The academic culture in Chinese academia, according to Chen [42], can be described as hectic and frivolous, since government departments, administrative staff, and even scholars tend to stress economic interests and instant research success, a shallow treatment of research with emphasis only on economic relevance. Li et al. [11] contended that the quality culture in research was driven largely by quantified indicators in Chinese HEIs. Xu [43] also reported that returned graduates had to abide by domestic academic rules while applying for research grants. RECAs, therefore, had to experience a learning and familiarizing process to achieve acculturation. Zweig et al. [44] claimed that the favorable policies enjoyed by returned academics led to tensions between overseas-educated and domestic-educated scholars, which hampered the integration of RECAs into local institutions. Good interpersonal relationship is crucial in this sense and RECAs thus have to "develop *guanxi* and engage in activities that may not bring immediate results" [43] (p. 32). Guanxi "literally means interpersonal relationships or connections" [45] (p. 199). It is defined by Bian [46] (p. 312) as "a dyadic, particular and sentimental tie that has the potential of facilitating favour exchanges between the parties connected by the tie". Tam and Chen [47] (p. 72) claim that guanxi is a "Chinese variant of social capital". Having been internalized as a habitus for Chinese people [48], guanxi is a critical characteristic for Chinese society and culture. Rich guanxi represents extensive social connections and networks, which could be utilized to obtain benefits and assistance [49]. Facing these cultural and social challenges and a changing academic environment, many RECAs have to experience the process of academic identity (re)construction [50].

The existing research in the international literature on the factors influencing research output is dominated by a quantitative approach [51]. While studies on Chinese RECAs mainly use qualitative methods like interview and autoethnography, the sample size and generalization is often questioned. Additionally, studies on Chinese RECAs largely focus on their reintegration and re-adaptation experience. Research has not been singled out; rather, it serves as a sub-theme of the reintegration experience. This study uses a mixed-methods design due to its obvious advantage of combing the "strengths of qualitative and quantitative methods for the purposes of creating depth and breadth of understanding within a single study" [52] (p. 1168). Enlightened by Bronfenbrenner's ecological systems theory, it focuses on the external factors influencing returned academics' research performance. Understanding these factors is useful for building a favorable environment in which RECAs' research performance could be improved.

2.2. Bronfenbrenner's Ecological Systems Theory

Bronfenbrenner's ecological systems theory has been applied in this study to better understand the environmental or contextual factors influencing an academic's research performance. This is because this framework gives insights into the interactions between an individual and the environment, which perfectly fits the aim of this study. Bronfenbrenner [53] claims that individual development is influenced by the ecological environment composed of a set of interrelated and nested systems: the microsystem, exosystem, and macrosystem. The mesosystem and chronosystem have not been included because they are less relevant to the present study. Figure 2 shows the contextual factors influencing

individuals' research performance in light of the ecological system theory, which constitutes the theoretical framework of the present study.

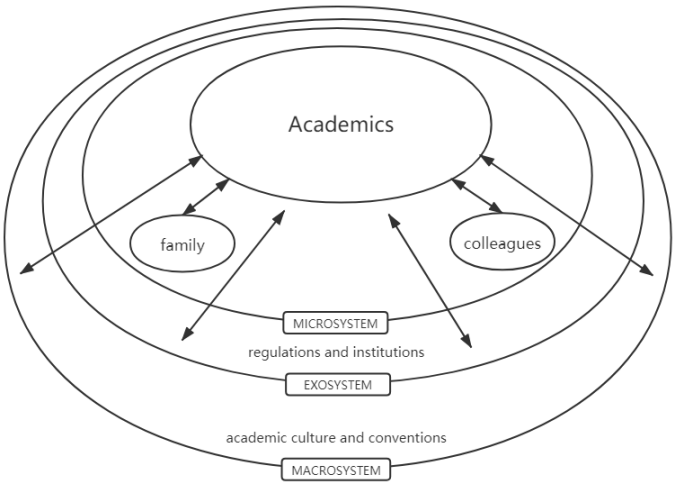


Figure 2. The factors influencing returned early career academics (RECAs)' research performance from the perspective of ecological systems theory.

The microsystem is a "pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics" [54] (p. 22). Within this system, the individual directly interacts with his/her surrounded people and settings. For this study, the microsystem is the innermost circle and factors within this system directly and closely interact with individual faculty members. The RECAs–colleagues and RECAs–family interactions constitute the microsystem.

The exosystem is a system in which an individual may not directly be involved, but events occurring in this system could affect the individual's immediate setting. In this study, the exosystem is manifested by various regulations and policies at the departmental and institutional levels. RECAs are not present when decisions are rendered, nor do they have the power to change decision making, yet their scientific research will be significantly impacted by these decisions. It is often the two systems overlap.

The macrosystem refers to "the overarching institutional patterns of the culture or subculture, such as the economic, social, educational, legal, and political systems, of which micro-, meso-, and exo-systems are the concrete manifestations" [55] (p. 515). Hence, laws, regulations, unprinted cultural values, customs, conventions, and norms are the key components of the macrosystem. The macrosystem in this research is manifested by research-related cultural values, customs, conventions, and norms. Although these elements may seem distant from individual academics, the potential impact they have on research should be noticed, especially when considering returned graduates who have complex cross-cultural experiences and have to readjust to their home culture.

3. Research Design

This study adopted a mixed-methods approach; more specifically, we followed an exploratory mixed-methods design [56]. The whole process was composed of two phases: in-depth individual interviews and a follow-up questionnaire survey. We identified emergent factors from the qualitative data and subsequently used the results to examine the prevalence and effects of these factors within a larger sample of RECAs in Chinese HEIs. As the research design was driven by a qualitative approach, greater emphasis was put on qualitative data [56]. This QUAL > quan design allows to fulfil the aims of the present study by exploring external factors in depth and then measuring their prevalence. Furthermore, according to Creswell and Plano Clark [56], researchers should consider this QUAL > quan design when instruments are unavailable or variables are unknown. To the best of our

knowledge, there is no specific scale that can be used to measure factors influencing RECAs' research performance.

3.1. Qualitative Study

The interviewees were purposively selected according to three criteria. Firstly, the informants should engage in research and teaching in HEIs in mainland China. Secondly, they should have obtained PhD degrees from universities located in other countries and regions. Thirdly, the participant's length of time working in Chinese HEIs should be no longer than six years (by 2019). We first interviewed our acquaintances who satisfied the standards, and by the end of the interview, we asked them to introduce volunteers who also met these criteria. We finally investigated 20 RECAs from 10 different Chinese universities. The participants' background information has been detailed in Table 1.

Table 1. Demographic profile of interviewees.

Pseuds	Gender	Age	Marital Status	Country/Region of Study	Date of Working Start	Academic Ranking
Sun	Female	34	Married [a]	Japan	2017	Lecturer
Ren	Male	35	Married [a]	Germany	2017	Asso Prof [b]
Jia	Female	36	Married [a]	Japan	2018	Lecturer
Pan	Female	31	Unmarried	UK	2016	Asso Prof
Xu	Female	37	Married	UK	2018	Asso Prof
Yu	Male	30	Married	UK	2018	Asso Prof
Zou	Male	35	Married [a]	Denmark	2013	Lecturer
Lin	Female	33	Married	UK	2017	Lecturer
Hu	Female	36	Unmarried	Netherlands	2015	Asso Prof
Yuan	Male	32	Unmarried	Hong Kong SAR	2016	Asso Prof
Quan	Male	33	Married [a]	Hong Kong SAR	2018	Lecturer
Na	Female	33	Married [a]	Hong Kong SAR	2016	Asso Prof
Liu	Male	34	Married	UK	2015	Asso Prof
Cheng	Female	30	Married	UK	2018	Lecturer
Wen	Female	38	Married [a]	Netherlands	2015	Lecturer
Wu	Female	36	Married [a]	Australia	2014	Asso Prof
Zeng	Female	34	Married [a]	UK	2015	Lecturer
Tong	Male	38	Married [a]	UK	2017	Lecturer
Mei	Female	37	Married [a]	US	2018	Lecturer
Han	Male	35	Married [a]	US	2018	Lecturer

Note: [a] means the participant has at least one child; [b] refers to associate professor.

The data were collected via semi-structured individual interviews. Pseudonyms were used to protect the interviewees' personal information. During the interviews, we invited participants to reflect on the factors that either improve or impede their research productivity. The factors were confined to extrinsic and environmental dimensions owing to the aim of this study. The participants were also required to further elaborate on those factors by providing examples and explaining the ways in which they were influenced.

Thematic analysis [57] was employed to analyze the interview data. Each digitally recorded interview was initially transcribed verbatim by the first author. Then, we read and re-read all the transcripts thoroughly several times to achieve familiarity [57]. The first two researchers independently coded transcripts and then compared the codes. When disparities occurred, we traced the source and reconciled the differences by negotiating with each other to reach a consensus. Next, we sorted and collated all the potentially relevant data into themes. This was followed by a refinement process, in which we reviewed "the coded data extracts for each theme to consider whether they appear to form a coherent pattern" [58] (p. 9). At the final stage, we distilled the essence of each theme and identified the different aspect each theme captured, so as to allow readers to understand what the themes represented in our research.

3.2. Quantitative Study

Based on the analysis of the interviews at the qualitative stage, we designed a questionnaire to facilitate objective quantification of the categorized factors. The questionnaire was reviewed by the second and third authors, who were experts in questionnaire development and tested through a pilot study among 20 RECAs, who were encouraged to comment on the draft questionnaire. The comments and suggestions resulted in the final scale of "factors influencing Chinese RECA research performance", consisting of 24 items. The scale comprised three factors, assessing the factors influencing RECA research performance in the microsystem (nine items, Cronbach's α = 0.88), exosystem (eight items, Cronbach's α = 0.88), and macrosystem (seven items, Cronbach's α = 0.80), respectively. All of these items were rated on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree".

Based on the three criteria mentioned earlier, we then searched appropriate RECAs online by browsing the webpages of faculty members in various universities, and then sent invitation emails containing the questionnaire website link. In total, 136 RECAs (return rate 71%) covering humanities, social sciences, and natural science from 23 provinces in mainland China participated in the survey. Of the sample, 64 (47.1%) were males and 72 (52.9%) were females. The participants' lengths of working time were various: 39 (28.7%) were in their first year, 25 (18.4%) were in their second year, 26 (19.1%) were in their third year, 16 (11.8%) were in their fourth year, 16 (11.8%) were in their fifth year, and 14 (10.3%) were in their sixth year. The professional ranks were composed of four levels, with 12 assistants (8.8%), 69 lecturers (50.7%), 51 associate professors (37.5%), and 4 professors (2.9%). In terms of age, most of them (n = 112, 82.3%) were between 30 and 40 years.

During the data collection, several measures were taken to address the non-response bias. First, after sending out the invitations, we sent two rounds of reminder to the respondents who were late in responding to the survey. Second, in the invitation letter, we declared that the research team also comprised of returned academics who shared similar background with the respondents. Third, we kept the questionnaire short enough to make sure the respondents could finish the survey within eight minutes. Finally, 136 out of 192 invited RECAs participated in the survey, resulting in a return rate higher than 70%.

Harman's single-factor test [59] was conducted to address the issue of common method bias. The results of exploratory analysis showed that the one-factor solution only explained 27.1% of the variance. In contrast, the expected three-factor solution explained 65.6% of the variance. These results showed that the common method bias was not serious to influence the interpretation of the results in this study.

Survey data was exported into SPSS 24 for analysis. Frequencies, percentages, means (M) and standard deviations (SD) were calculated where appropriate. The results for each item have been listed in Table 2.

Table 2. The quantitative results of the survey.

	No. of Respondents	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)	M	SD
Microsystem α = 0.88								
1. Academic communication with my colleagues has positively influenced my research performance.	125 [a]	1 (0.8)	4 (3.2)	23 (18.4)	74 (59.2)	23 (18.4)	3.91	0.75
2. Academic communication with foreign researchers (former supervisor or friends) has improved my academic English skills.	110 [b]	1 (0.9)	3 (2.7)	12 (10.9)	48 (43.6)	46 (41.8)	4.23	0.82
3. Academic communication with foreign researchers (former supervisors or friends) has extended my academic horizon.	110 [b]	1 (0.9)	0 (0)	6 (5.5)	48 (43.6)	55 (50)	4.42	0.68

Table 2. *Cont.*

	No. of Respondents	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)	M	SD
4. Experienced scholars have helped me a lot in article writing, amending, and publishing.	102 [c]	0 (0)	4 (3.9)	13 (12.7)	50 (49)	35 (34.3)	4.14	0.78
5. Experienced scholars have helped me a lot with grant applications.	102 [c]	0 (0)	3 (2.9)	16 (15.7)	55 (53.9)	28 (27.5)	4.06	0.74
6. Experienced scholars have expanded my academic network and enabled me to get access to more academic resources.	102 [c]	1 (1)	6 (5.9)	20 (19.6)	49 (48)	26 (25.5)	3.91	0.88
7. Distinguished researchers have recommended my research to others, which is good for my research.	102 [c]	1 (1)	6 (5.9)	21 (20.6)	50 (49)	24 (23.5)	3.88	0.87
8. The close contact with experienced researchers is beneficial for my research independence.	102 [c]	3 (2.9)	21 (20.6)	26 (25.5)	37 (36.3)	15 (14.7)	3.39	1.06
9. The significant events in my life have negatively impacted my research performance.	136	19 (14)	26 (19.1)	34 (25.0)	40 (29.4)	17 (12.5)	3.07	1.25
Exosystem α = 0.78								
10. The existing employment system is demanding in terms of productivity, which puts huge pressure on my research.	136	1 (0.7)	4 (2.9)	37 (27.2)	50 (36.8)	44 (32.4)	3.97	0.89
11. I have to put emphasis on the number of publications as a result of the existing evaluation system.	136	1 (0.7)	6 (4.4)	17 (12.5)	54 (39.7)	58 (42.6)	4.19	0.87
12. I cannot ensure the quality of my research output as a result of the existing evaluation system.	136	5 (3.7)	25 (18.4)	33 (24.3)	40 (29.4)	33 (24.3)	3.52	1.15
13. Most of my research output aims at utilitarian goals such as promotion and financial rewards.	136	12 (8.8)	24 (17.6)	38 (27.9)	32 (23.5)	30 (22.1)	3.32	1.25
14. My teaching load is so high that I almost have no time for research activities.	136	3 (2.2)	27 (19.9)	46 (33.8)	38 (27.9)	22 (16.2)	3.36	1.04
15. The content of teaching has nothing to do with my research activities.	136	4 (2.9)	31 (22.8)	40 (29.4)	43 (31.6)	18 (13.2)	3.29	1.05
16. I put more emphasis on teaching when dealing with the teaching-research discrepancy.	136	4 (2.9)	12 (8.8)	36 (26.5)	60 (44.1)	24 (17.6)	3.65	0.97
17. It is difficult to handle the teaching-research relationship well.	136	5 (3.7)	29 (21.3)	43 (31.6)	42 (30.9)	17 (12.5)	3.27	1.05
Macrosystem α = 0.80								
18. I can feel the discrepancy between domestic and foreign academic culture in my research.	136	0 (0)	4 (2.9)	25 (18.4)	53 (39)	54 (39.7)	4.15	0.82
19. If I do not understand the Chinese academic system and norms well, it would negatively affect my research activities.	136	0 (0)	2 (1.5)	17 (12.5)	59 (43.4)	58 (42.6)	4.27	0.74

Table 2. *Cont.*

	No. of Respondents	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)	M	SD
20. The academic atmosphere stressing short-term benefit in China is harmful for my research.	136	1 (0.7)	5 (3.7)	28 (20.6)	50 (36.8)	52 (38.2)	4.08	0.89
21. The overemphasis of pragmatism in China is harmful for my research output.	136	2 (1.5)	6 (4.4)	33 (24.3)	47 (34.6)	48 (35.3)	3.98	0.95
22. It is difficult for me to choose between national demand and personal academic interest.	136	9 (6.6)	30 (22.1)	39 (28.7)	44 (32.4)	14 (10.3)	3.18	1.09
23. It is difficult to adapt to the domestic academic culture and environment in research.	136	12 (8.8)	24 (17.6)	49 (36)	40 (29.4)	11 (8.1)	3.10	1.07
24. I can skillfully switch between foreign and domestic academic culture and conventions in research.	136	7 (5.1)	22 (16.2)	66 (48.5)	37 (27.2)	4 (2.9)	3.07	0.87

Note: [a] 125 respondents had academic communication with colleagues, therefore, they could answer to what extent they agreed that such communication positively influenced their research performance (item 1). [b] 110 respondents had academic communication with foreign researchers (former supervisor or friends), therefore, they could answer to what extent they agreed that such communication promoted academic English skills and extended academic horizon (items 2 to 3). [c] 102 respondents had been helped by experienced scholars in research, therefore, they could answer items 4 to 8.

4. Research Findings

In this section, the findings are organized to demonstrate how elements within each ecological system influenced RECAs' research performance and how prevalent these factors were within the investigated sample. To facilitate a clearer and more structured presentation, results from the interviews and survey responses are integrated.

4.1. Microsystem

4.1.1. Colleagues

The communication between colleagues was beneficial for RECAs' study. These interactions facilitated the exchange of ideas and might result in collaborative research projects. Cheng said that "face-to-face communication is crucial because lots of ideas and inquiries are the result of informal discussions". About 125 participants (91.9%) confirmed that they had academic communication with their colleagues, and most (n = 97, 77.6%) agreed and strongly agreed that such communication was beneficial.

Zou retained a close academic relationship with his Danish colleagues. Not only did he maintain high-level academic English, but he kept an eye on international academia to understand his research from a global perspective.

> *I have been keeping in touch with my Danish colleagues and our collaboration has been continuing until now. I wrote several book chapters jointly with them and I think this is a good collaboration. This is helpful for improving my written English, knowing international academic trends, and understanding international readers' concerns. (Zou)*

Our survey data showed that 110 participants (80.9%) confirmed that they had academic communication with their non-Chinese supervisors or friends. Approximately 94 participants (85.4%) agreed that such cross-cultural interflow in research enhanced their academic English and expanded their international academic horizon (n = 103, 93.6%).

Senior and distinguished colleagues were found to play a helpful role in RECAs' research. The quantitative data indicated that 102 participants (75%) had been helped by experienced scholars. Associating and collaborating with experienced colleagues and obtaining guidance and feedback was helpful for research. Tong described how "a distinguished scholar in my department helped me a lot when I revised my draft paper and applied for a research grant". Survey data indicated that 85 young researchers (83.3%)

had been helped by established scholars in writing, revising and publishing papers, and research project application (n = 83, 81.4%).

Additionally, RECAs' networks could be expanded because of distinguished colleagues' recommendations and interpersonal relationships.

> *My research capabilities have caught a distinguished professor's attention. We became good academic partners and he introduced me to his friends and research collaborators at many academic conferences. So, my research network has been expanded to a great extent. (Liu)*

Survey data revealed that 75 (73.5%) early career researchers' academic networks had been extended by experienced scholars and thus they could access more academic resources. About 74 respondents (72.5%) claimed that established academics had recommended their research to others.

Nonetheless, certain interviewees were also aware of the negative aspects of close relationships with established scholars. To exemplify, Zou expressed his worry that: "You may acquire useful resources and information if you have a close relationship with distinguished scholars, but you could also lose your independence". The quantitative data showed, however, that only 24 respondents (23.5%) agreed with Zou. About half of the participants (n = 52, 51%) still believed that close contact with established scholars was beneficial for their research.

4.1.2. Family

We found that all the participants were more or less troubled by family issues. Bringing up children was an issue of significant concern for females, which was echoed by quantitative results. About 94 (69.1%) participants were married and 71 (52.2%) had children. More than half of the participants with children (n = 40, 56.3%) acknowledged that children rearing negatively affected their research performance.

Significant changes to family structure were found to have a notable impact on scholars' research. Wu's experience illustrated this.

> *I gave birth to my child when I began to work in my university. I had no time for writing and publishing because I asked for maternity leave. Then my mother passed away from cancer. So, these critical familial events cost me a lot of time and energy. (Wu)*

The dramatic changes for Wu meant a new family member coming into the world and an old one passing away. Both critical events were milestones in Wu's life, and she had to adjust her psychological state before continuing study. While 57 (41.9%) participants acknowledged the impact of those events, there were also 45 (33.1%) respondents who disagreed, and 34 (25%) who selected "neutral".

4.2. Exosystem

4.2.1. Tenure and Promotion

A prominent theme that emerged in the interviews was the pressure caused by the tenure and promotion policy, more specifically, the principle of "publish or perish". Many of them acknowledged that they never had a clear academic career plan and published out of pragmatic reasons to survive rather than their personal academic interests. The key standard for evaluation was the quantity rather than quality of the published papers.

> *The way of evaluating in our university is publish or perish. This brings huge pressure for me and makes me feel very worried. When facing this anxiety and stress, I cannot plan for my career like future research orientation or interest. After all, I will be evaluated by the institution, so I publish out of the pressure to survive, rather than my research interest. (Wu)*

> *During the first employment period of 3 years, I have to publish 5 articles in CSSCI-indexed journals and win a national research project. If I fail to meet this standard, the university might allow me another 3 years to publish more papers. If I succeed, I will be*

qualified to join the competition to be promoted. The more papers you publish, the better position you will be in. (Ren)

Quantitative data suggested that 69.2% participants experienced huge pressure on their research, and 82.3% respondents placed emphasis on the number of publications. About 73 (53.7%) expressed that they could not guarantee the quality of their research output. The utilitarian reasons were also a primary concern for many respondents (n = 62, 45.6%). However, 36 (26.4%) participants denied that utilitarian goals were behind their pursuit of publication.

4.2.2. Teaching Load

The RECAs were also novice teachers who claimed that it was not easy to find a balance between teaching and research. Ding stated that it was the institutional regulation that they should lecture at least three courses and the required accumulative hours of teaching should be at least 160 h in one academic year, a high demand for teaching in Chinese universities, particularly for novice teachers. This made it difficult to allocate time for research. However, the survey data did not echo this qualitative finding. Although 60 respondents (44.1%) agreed the teaching load was high, quite a number of teachers selecting "neutral" (33.8%) and "disagree" (22.1%).

Teaching interrupts RECAs' research if the content had little relationship to their research interests. The survey results suggested that 44.8% (n = 61) teachers found the content had nothing to do with research interest. We found two opposing strategies to deal with this issue.

I have many courses and I spend much time in course preparation, but the course content is irrelevant to my research orientation. My research interest is European Union Studies, but I lecture Public English in order to survive. I have to continue my study on the EU after work in my spare time. (Wen)

Wen felt she should be responsible for her teaching and thus treated it seriously. Although research was also a necessity, she could only do it when she was free. Having published several SSCI articles, Yu, however, deliberately placed much emphasis on his studies at the cost of teaching. He explained that:

Research is my top priority, as I need to publish several SSCI articles in order to keep my job and get promoted. This costs me much time and energy. As for teaching, I treat it much less seriously. (Yu)

Survey data showed that although 43.4% (n = 59) agreed that balancing the teaching-research relation was difficult, quite a number of academics selected "neutral" (n = 43, 31.6%) and even "disagree" (n = 34, 25%). Many interviewees complained about the excessive teaching burden, which was also confirmed by 60 participants (44.1%). Nonetheless, 30 respondents (22.1%) disagreed and 46 (33.8%) were uncertain about this issue.

4.3. Macrosystem

Cultural Re-Adaptation

Most RECAs were found to experience a cultural re-adaptation process. Quite often the interviewees made comparisons between host and home cultures. Zou's comments compared the research culture in China and Denmark.

Chinese and Danish scholars have different understandings of what research means. A significant feature of social sciences research in China lies in practicability or usefulness. By contrast, in Denmark, or Western academia as a whole, research aims at better understanding and clear, original, and in-depth arguments and analyses. (Zou)

Survey data indicated that 107 RECAs (78.7%) noticed the differences. Quantitative results further suggested that Chinese academic culture might not be friendly for research performance. Approximately 102 (75%) respondents recognized that the academic atmo-

sphere stressing short-term benefit and usefulness was harmful. The undue importance attached to pragmatism was also deemed to be detrimental by 95 (69.9%) participants.

Many (n = 117, 85%) agreed that understanding Chinese academic institutions and norms well was critical for research. However, the RECAs found it difficult to adapt to the Chinese way of academic research. National demands for economic and social development were stressed in China, whereas personal interests play a more important role in Western academia. Implicit in this is the contradiction between practice and academic orientation. The returned young academics encountered serious problems in choosing between the two, as Tong said:

> *I feel bewildered when determining which is more important, personal research interest or national demand. If I choose the former, it may not be the government's concern and maybe I will fail to obtain a funding opportunity. If I choose the latter, it might not be my expertise. (Tong)*

Survey data, however, indicated that this dilemma mattered for less than half RECAs (n = 58, 42.7%). Interestingly, Wu managed to find a third, more flexible pathway: "Now for a particular research topic, I can prepare two distinct perspectives, one following the Chinese research conventions, the other following Western style". In our survey we also designed a question based on Wu's response (item No. 24). The participants selecting "agree" and "disagree" were 30.1% and 21.3% respectively. Surprisingly, most others (n = 66, 48.5%) chose "neutral", which might imply that they performed neither well nor badly in switching between foreign and domestic academic research culture and conventions. This might also mean that the use of such skills has not been tested because RECAs exclusively concentrated on domestic concerns and publication.

4.4. Regional Differences

The geographical locations of the participants' universities are generally divided into eastern, central, and western regions [60]. Figure 3 detailed the number of respondents in each province; more specifically, the eastern region includes 11 provinces and municipalities such as Beijing and Shanghai; the central region includes three provinces, namely Hunan, Hubei, and Jiangxi; the western region includes the four provinces of Chongqing, Sichuan, Gansu, and Guangxi. We used one-way ANOVA to analyze the regional differences in the respondents' perception of external factors.

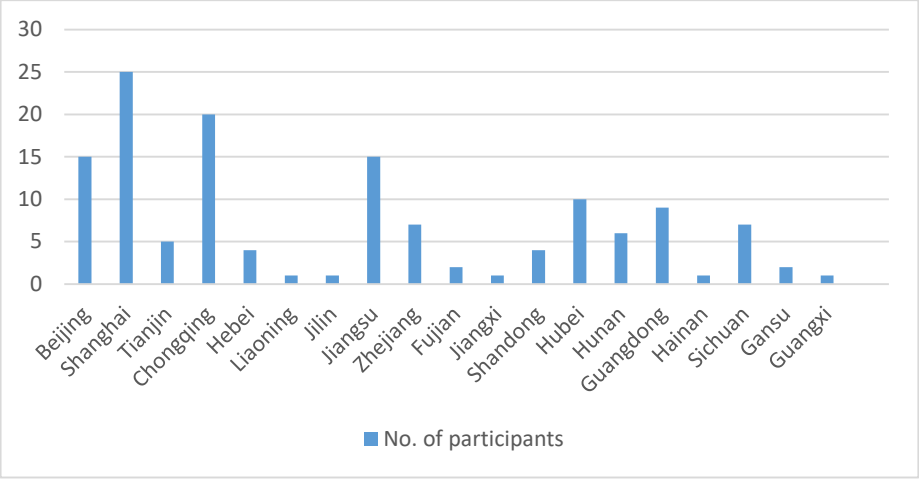


Figure 3. Geographical locations of the participants' universities.

In general, we could observe some differences of the faculty's perceptions of external environment in the microsystem, exosystem, and macrosystem among the eastern, central, and western regions (Table 3). Nonetheless, these differences of the average value were too slight to be viewed as statistical significance. This quantitative find was also verified by

our qualitative data. The participants from diverse regions similarly mentioned universal influencing factors embodied in different systems.

Table 3. Means of systems by regions.

Region	Microsystem		Exosystem		Macrosystem	
	Mean	SD	Mean	SD	Mean	SD
East	2.07	0.46	3.62	0.64	3.70	0.58
Center	2.03	0.38	3.53	0.70	3.68	0.82
West	2.11	0.46	3.64	0.58	3.84	0.57

5. Discussion

Adopting a mixed-methods design, this study revealed a number of factors influencing RECAs' research performance in Chinese HEIs in the light of the framework following Bronfenbrenner's ecological systems theory. The present study adds to our knowledge about the factors influencing RECAs' research performance. It has a clear theoretical framework of Bronfenbrenner's ecological systems theory, which is different from existing research. Moreover, the use of a mixed-method design allows both the depth and breadth of understanding of the factors. Combining the qualitative and quantitative results, this section elaborates on the influencing factors in the micro-, exo- and macro-systems.

5.1. Influencing Factors in the Microsystem

We have revealed a number of factors influencing RECAs' research performance in the microsystem. Among all the RECAs investigated, Cheng's case evidently demonstrates the importance of colleague communication for research performance. This is in line with Price and Beaver's [61] early study in the US, which concluded that many productive researchers also tended to be highly collaborative. A more recent study by Miramontes and Gonzalez-Brambila [62] with 2150 Mexican engineers also generated similar findings. Miramontes and Gonzalez-Brambila [62] claimed that a close relationship with colleagues enabled researchers to acquire and disseminate information in a more efficient way, which led to the generation of new knowledge, more publications, and citations. Academic collaboration may also be achieved between Chinese and overseas scholars, as suggested by Zou's statement and 110 respondents (80.9%) in the survey. Such an international collaborative research has also been found in other countries. AlRyalat and Malkawi [63], for example, investigated Jordanian publications between 2008 and 2017 and discovered a dramatic increase from 38% to 53.3% in terms of internationally co-authored publications, which covered more than 150 countries. Although we cannot infer that researchers with international collaborators are more productive than others, as Quimbo and Sulabo's [25] study concludes, such transnational cooperation does open up a new and linguistically different way of publishing.

The assistance and guidance that RECAs need from their senior and established colleagues represents the significance of mentoring. Mentoring is a sort of developmental support offered by senior and experienced staff to help junior employees in a certain organization [64]. In a way, the mentor-mentee relationship resembles faculty-student interaction and the mentorship could be viewed as a socialization process [65]. Fuentes et al. [65] (p. 290) contended that mentoring relationship could "help socialize students to academic norms and to the institution". Similarly, in our study mentoring helps to familiarize returned graduates with their new working environment during the process of cross-cultural adaptation. Upon their return, most RECAs must acclimatize to the working environment, in particular the academic norms and culture in Chinese academia. This cross-cultural adaptation would be facilitated if experienced mentors are in place to provide tacit knowledge [22] about academic community, publication, and research grants in the Chinese context. Additionally, mentors also facilitate RECAs' professional and social networks, as Quan's response illustrates. As Muschallik and Pull [22] claim,

the expansion of networks is a process of enriching one's social capital, which could enhance academic collaboration and further research performance. This finding supports Richie-Zavaleta and Warmsley's [66] observation that mentoring relationship may help to facilitate the establishment of networks within academia. The concern Zou raises points to a potential negative aspect of mentoring, that if junior returned researchers join a team and are "protected" by distinguished professors, they may run the risk of losing the freedom to focus on personal research interests. Similar findings can also be seen in Chen [42]. Although only 24 participants (23.5%) support Zou's concern, it is an issue that is worthy of reflection. As Pfund et al. [67] argue, the relationship between mentor and mentee should be collaborative. Despite the mentor's important role, mentees are not simply passive receivers who always follow the mentor's advice indiscriminately.

According to Blackburn and Lawrence [32], the "social contingencies" or significant events occurred in an academic's daily life affect their research performance. Social contingencies are definitely involved in a change in family structure like Wu experienced. Based on Wu's description, it is easy to understand how these social contingencies have an impact on her research performance. Asking for maternity leave resulted in a failure to publish her doctoral thesis, meanwhile losing her mother led to time-consuming psychological and emotional recovery. Both significant events interrupt her research performance. This corresponds with Lertputtarak [68], who also discovered that family member's health condition and pregnancy affected Thai faculty members. Another issue emerged from the findings is childrearing. Our quantitative result shows that 40 respondents (56.3%) perceive that bringing up children affects research. Fox [69] (p. 131) found that "women with preschool children have higher productivity than women without children or with school-age children". By contrast, our qualitative and quantitative findings demonstrate that the presence of children could negatively affect research performance. These results are in line with Hargens et al.'s [70] and Kyvik's [34] findings. Of the RECAs in our study who have children, most are at pre-school age, thereby requiring greater care and attention from their parents. In the Chinese context, traditionally women are expected to take more familial responsibilities, in particular childrearing. Survey data shows that 25 female participants (67.6%) agree that childrearing interrupts their research, whereas the percentage for male RECAs is 36.5 (19 respondents). Hence, this means female academics are less involved in research activities than their male counterparts.

5.2. Influencing Factors in the Exosystem

The tenure system is becoming increasingly prevalent among Chinese HEIs and has been improving research performance management [71]. Indeed, the promotion of professional rank has a motivating effect on academics' research behaviors [72]. The downsides of tenure, however, are also evident. Firstly, research motivation tends to focus on external factors. As Wu says, the motivation to publish is not intrinsic interest, but to meet the promotion indicators and to survive as an academic. This is in line with Chen et al.'s results [23]. Their survey with 320 American scholars in 10 universities demonstrated that untenured academics were more likely to be motivated by extrinsic rewards such as tenure and promotion. Secondly, the quantity of publications is unduly stressed. Some interviewees like Ren often informs us of how many peer-reviewed articles he has to publish, whereas nothing about quality and citation is mentioned. Similarly, our survey data indicates that 82.3% respondents stress the number of publications due to the existing evaluation system and 53.7% participants could not guarantee the quality of their research output. This is because, as Creamer [73] notes, it is not possible for the untenured to be promoted without the required quantity of peer-reviewed publications.

Numerous studies have shown that time allocation is the root of conflict between research and teaching, which is also evident in the present study. The Philippine authors Quimbo and Sulabo [25] (p. 1957) claim that "the strong demand on their [faculty members'] time for teaching, however, leaves little time for research". This point is also apparent in our investigation. Quimbo and Sulabo's [25] survey with 377 faculty members in five

state universities in the Philippines revealed that Philippine scholars spent much less time in research than teaching, which resulted in low research productivity. In the US, Marsh and Hattie [74] similarly found what they described as the antagonistic relation between research and teaching, since time spent on the two activities was negatively correlated. In this study, we also find that more productive RECAs enjoy more time in research, as Yu's case shows. Further, we find that the content of teaching may also impact academics' personal study. Wen's case, for instance, is an example that teaching is unhelpful for and may even impede research if what is taught is irrelevant to his/her scholarly interest. In this sense, the relationship between research and teaching seems to be competitive rather than complementary. This could echo Marsh and Hattie's [74] claim that teaching and research mutually support each other might be a conventional wisdom with limited empirical evidence.

5.3. Influencing Factors in the Macrosystem

The problems encountered within the returned individual-macrosystem interaction exemplify symptoms of re-entry. In the course of re-acculturation, returnees have to relearn and internalize the forgotten or disregarded cues embodied in the native culture [36]. The embarrassment shown at the macrosystem level reflects the contradiction between the host and home social and cultural contexts.

A significant reason for the stress and dilemma of re-entry/re-acculturation is that in most cases, RECAs have no choice but to change the fundamental value structures they formed while abroad [75]. Nevertheless, as Szkudlarek [36] (p. 4) deemed, the previously learned norms and behaviors in their home country are "forgotten and replaced by the host-country equivalents". These newly gained things may not be accepted upon return [39], RECAs are thus required to re-learn in the home context [36]. The changing process could be very hard for students from East Asian contexts [40]. In this study, Tong's and 58 respondents' (42.7%) dilemma between personal research interest and national demand represents different scientific research cultures and conventions. It may be an acceptable norm in another academic setting that one should follow their personal research interests. Nonetheless, national needs are stressed as the top priority and scientific studies are expected to bring about benefits to the nation's social and economic development in China. The change and transition may become even more difficult if a researcher commends the host country and despises their home country. Zou's comments demonstrate that he is very critical of Chinese academia, which places undue emphasis on research that can bring immediate solution, usage, and benefit, as was also criticized by a large number of participants in our survey.

Even though some researchers attempted to explicate that re-entry shock was not unavoidable [76] and there must be a positive aspect of re-entry [39] via empirical studies, our findings seem to be consistent with most literature demonstrating the dilemmas, challenges, and difficulties faced by returnees in various countries and cultural contexts. People with diverse nationalities encounter re-entry, readjustment, and reverse culture shock problem as uncovered in this study among the Chinese RECAs. For example, Alandejani's [77] narrative study demonstrated that all the participated Saudi repatriate scholars went through reverse culture shock. Dettweiler et al.'s [78] recent survey with 128 German students showed that all the participants displayed symptoms of expedition reverse culture shock and thus required pedagogical intervention. Butcher [79] described the grief East Asian students encountered during their re-entry, especially the changed worldview and challenging expectation. New perspectives learned could also lead to constant comparison between host and home countries and more critical attitudes toward home reality. Surveying 669 college students in the USA, Wielkiewicz and Turkowski [80] discovered that those who had studied abroad were more skeptical toward American culture than other students without studying abroad experience. Such a finding corresponds well with Zou's comments in our study.

According to Adler [81], individuals' responses during the re-acculturation process can be grouped into four categories, namely proactive, re-socialized, alienated, and rebellious modes. In this study, we only identified some of these coping styles. Tong tends to adopt the re-socialized mode, in that he seems to have no alternatives but to make compromises and disregard their experience abroad in order to "fit back in" [82] (p. 422). Now that these researchers are working in Chinese HEIs, they should (or are obliged to) follow the rules and conventions of Chinese academia, particularly in applying for government funding. Survey data indicates that 51 RECAs (37.5%) considered that it is difficult to adapt to the domestic academic culture and environment. Wu seems to implement the proactive coping mode. Being clearly aware of the differences between Chinese and Australian cultures, she is able to view problems from different perspectives and switch between the two academic styles. Thus, she integrates both home and host cultures and experiences [81] to figure out new strategies [82]. The quantitative results, nevertheless, demonstrate that there are 41 RECAs (30.1%) adopting such a proactive coping strategy.

5.4. Discrepancies between Qualitative and Quantitative Findings

The mix of interview and questionnaire survey has accordingly brought about the integration of two sets of results, which enriches the evidence and ensures the depth of the study [83]. Although the present study reveals certain level of convergence in terms of results, the discrepancy, i.e., findings that appear to contradict each other, is also noticeable. During the interview, Zou worries that intimate connections with established scholars might affect personal independence in research. Yet, this anxiety has hardly been supported by the quantitative data. Although significant events are reported to affect research performance significantly by interviewees, there were also 45 respondents (33.1%) who disagreed, and 34 (25%) were neutral. While the teaching workload appears to be high for RECAs according to the qualitative interviews, not many participants (n = 60, 44.1%) in the survey expressed the same concern, and a number of respondents choose "neutral" (33.8%) or even "disagree" (22.1%). The individual research interest-national demand dilemma faced by Tong and Quan does not trouble too many respondents (n = 58, 42.7%) in the survey.

Such inter-method discrepancy, as O'Cathiain et al. [84] argue, does not question the quality or design of a study. By contrast, it might provide a better and more complete way to understand the research question. These results therefore justify the value of mixed-methods research compared with pure quantitative or qualitative studies [85]. The QUAL > quan design used in this study facilitates a deeper and broader understanding of the phenomenon of influencing factors than studies that solely utilize a quantitative or qualitative approach. Furthermore, the integration of both qualitative and quantitative results gives readers more confidence about the credibility of findings and conclusions [84]. The divergences between the two phases provide cues for future research.

6. Conclusions and Implications

This mixed-method study has identified several external factors that affect RECA's research performance. Bronfenbrenner [53] divides the environment into five different levels: the microsystem, mesosystem, exosystem, macrosystem, and chronosystem. The qualitative data collected in our study, however, correspond well with the micro-, exo-, and macro-systems. We therefore discarded the meso- and chrono-systems to tailor Bronfenbrenner's theory to this research. Comparisons have been made between qualitative and quantitative results to facilitate an in-depth and broad understanding.

As Tran et al. [86] contend, concentrating on research could be beneficial for the sustainable development of a university. Bringing RECA's research capacities into full play to help with the sustainability of universities requires a better building of an appropriate external environment. These returned faculty members' experiences in their early years may influence their career as a whole [87]. Therefore, how to create a favorable environment that can enhance RECAs' research performance is a critical issue. Understanding these

external factors is expected to help university leaders to improve their teacher preparation and development programs (e.g., the establishment and improvement of mentorship). Policy makers may learn from the results of the study to facilitate the adjustment and formulation of pertinent policies and regulations at the macro (national) level.

Although the study uses empirical findings from the Chinese context, the core issue it concerns is universal and significant in numerous higher education systems across the increasingly inter-connected world. Researchers in other countries, especially in the developing nations, may consider the applicability of the factors this study reveals. Owing to funding and time constraints, the number of interviewees and respondents was limited, which is the major limitation of this study. We also expect that further studies may explore internal factors affecting research. In addition, a similar method could be used to explore the factors impacting returned middle-age or senior academics' research performance in China, and to explore if the impacted factors are same among these different age groups.

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