CHINESE MEDICAL DOCTORS' SCHOLARLY PUBLISHING PRACTICES: A MULTIPLE-CASE STUDY

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Chinese Medical Doctors' Scholarly Publishing Practices:

A Multiple-Case Study

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CERTIFICATE OF ORIGINALITY

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Abstract

With the prioritisation of English-medium publications for the production and dissemination of scientific knowledge, English-as-an-additional-language (EAL) researchers have been under pressure to publish in English-medium international journals. Medical doctors, or clinician-researchers, are no exception to such publication pressure, especially with the emergence of English as the lingua franca for medical research. Although there is a large body of research on EAL researchers' scholarly publishing experiences and practices, few studies have specifically focused on medical doctors' scholarly publishing in their professional context.

As an attempt to address this gap, the present study sought to explore eight Chinese medical doctors' scholarly publishing practices within their professional context. Specifically, it investigated the situated contexts and the motives of the major stakeholders (i.e., the university, its affiliated hospital, and medical doctors) for the medical doctors' scholarly publishing activities as well as the influences of the contextual factors and the motives on their scholarly publishing practices; pinpointed the challenges that they faced in their scholarly publishing activities; identified the strategies that they adopted to cope with the challenges in their scholarly publishing processes; examined how these strategies shaped their scholarly publishing practices.

Drawing upon Cultural-Historical Activity Theory (CHAT), this study employed a multiple-case study design and collected multiple types of data from the eight Chinese

medical doctors at a top-ranked hospital affiliated with a top research-intensive university in mainland China. The primary data were in-depth interviews, whereas complementary data comprised artefacts (e.g., the participants' manuscripts), documents (e.g., policy documents), and text-based interviews with the doctors. A thematic analysis and an activity systems analysis were conducted on the collected data, the results of which were presented in narratives accompanied by CHAT diagrams. Complementary to the narratives, the triangular CHAT diagrams schematically presented the constitutive components (i.e., *subject*, *object*, *rule*, *tool*, *community*, and *division of labour*) of the doctors' various activity systems (i.e., the activity systems of clinical work, research, and scholarly publishing) embedded within their professional work activity system and the mediational relations within and between the components, and between the activity systems. Specifically, in the scholarly publishing activity system, the subjects were the doctors; the objects were the carriers of the subjects' various motives for scholarly publishing; the rules included but were not limited to publication requirements and scholarly publishing norms and conventions; the community comprised the doctors, the institutional administrators, journal editors and reviewers, and fellow colleagues; the division of labour concerned both the horizonal division of work between the community members and the vertical division of power and status (e.g., the higher status that journal gatekeepers tend to have than authors). The concept of *contradiction* in CHAT offered a

useful analytical lens to illuminate the cause of the difficulties faced by the doctors and unravel the nature of the strategies adopted by them.

The findings show that the major stakeholders' shared and conflicting motives for scholarly publishing, their prioritisation of some motives over others, the complex and dynamically evolving activity settings for the doctors' scholarly publishing activity system, and their influences on the doctors' scholarly publishing practices. These findings reveal that the doctors' difficulties in scholarly publishing were rooted in the contradictions arising from the duality of the object and the subject of their scholarly publishing activity system. The primary contradiction inherent in the duality of the object (i.e., the object of developing doctors' clinical skills and scholarly publishing expertise to make knowledge contributions and the object of getting promoted timely by having their knowledge contributions published within an institutionally stipulated timeframe) was reflected in the secondary contradictions between the object and the rule (i.e., time pressure) and between the object and the division of labour (i.e., lack of institutional support). Another primary contradiction ingrained in the duality of the subject (i.e., junior doctors' dual role as fledgling clinician-researcher still developing their clinical skills and scholarly publishing expertise and as expert/full-fledged contributors of scientific knowledge) was manifested in the secondary contradiction between the subject and the tool (i.e., lack of conceptual tools and signs necessary for effective scholarly publishing). Their strategies for addressing the difficulties, or solving the contradictions, drew on their

agentive navigation of the rules (e.g., institutional publication requirements and scholarly publishing rules) and the tools (e.g., cultural artefacts and social others) that framed their scholarly publishing activities to facilitate their scholarly publishing endeavours.

The findings suggest that scholarly publishing within the doctors' professional work context is an artefact-mediated, socially distributed, and historically embedded activity. This study has made contributions by shedding light on promotion mechanism in China's health system and producing findings that can assist stakeholders (e.g., governmental and institutional policy makers) in reflecting on their policies and providing tailored support for Chinese medical doctors. The study has also contributed to the research on English for Research Publication Purposes (ERPP) by offering insights into medical practitioners' scholarly publishing practices in a professional context.

Publications arising from the thesis

This thesis contains material from one paper published in the following peer-reviewed journal in which I am listed as an author.

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Chapter 1 Introduction

This study set out to explore Chinese medical doctors' scholarly publishing practices and experiences within their professional context. This purpose was driven by the increasing visibility of Chinese medical doctors in the international academic community and the paucity of extant literature on Chinese medical doctors' scholarly publishing experiences and practices. Specifically, this study aimed to examine the contextual settings in which Chinese medical doctors' scholarly publishing activities occurred, the motives that these doctors had for their scholarly publishing activities, the challenges that they faced in their scholarly publishing activities, the strategies that they adopted to cope with these challenges, as well as the outcomes of these mediation strategies that affected their scholarly publishing activities. This chapter begins with an introductory overview of the background for the present study in order to establish the context of research. This is followed by a discussion on the objectives of the study and its significance.

1.1 Research Background

Scholarly publishing is becoming increasingly important, as research output has become a prominent and definitive indicator of an institution's quality, performance, rankings, and funding allocations (Curry & Lillis, 2017b; Flowerdew & Li, 2009a; Lillis & Curry, 2006a, 2010; McGrail et al., 2006). Moreover, English has become the dominant language of global scholarly publishing, serving as the lingua franca for the dissemination

of knowledge and academic communication (Altbach & Knight, 2007). Because of the prioritisation of English-medium publications, English-as-an-additional-language (EAL) researchers are increasingly pressured to publish in English-medium international journals (Belcher, 2009; Canagarajah, 2002; Lillis & Curry, 2010; Tardy, 2004). Against this backdrop, EAL researchers' experiences and practices of publishing in English have gained research attention over the past 20 years or so (Li & Hu, 2017; Lillis & Curry, 2013; Starfield, 2014). This body of research has investigated EAL researchers' publishing experiences and practices across different geolinguistic and geopolitical contexts, such as research on EAL researchers' perceptions, motives, challenges and strategies to deal with the difficulties that they have encountered in their publishing practices (e.g., Carli & Ammon, 2007; Flowerdew, 2013; Flowerdew & Wang, 2016b; Leki et al., 2008; Li & Hu, 2018; Tardy, 2006; Uzuner, 2008). Although there is a large body of research on EAL researchers' scholarly publishing experiences and practices in higher learning institutions (e.g., Lei & Hu, 2015, 2019), there is only a relatively small body of empirical research that has focused specifically on Chinese medical doctors' scholarly publishing practices and experiences. With English as the lingua franca for knowledge production and dissemination in the field of medicine, Chinese doctors, or "clinician-researchers" (Yanos & Ziedonis, 2006), are also under pressure to publish their research in English-medium journals, especially in SCI-indexed journals, to meet publication requirements and gain promotions (e.g., Li, 2013; Li, 2014a). According to a

news feature published in *Nature* in 2021, the number of English-language journal articles with authors from Chinese hospitals has drastically increased 50-fold over the past two decades (Else & Van Noorden, 2021). Despite the large quantity of English-medium journal articles published by Chinese doctors, these papers are not well received by the international academic community, as indicated by the relatively low Essential Science Indicators (ESI), an influential database that covers more than 12,000 journals included in the Web of Science (WoS) Core Collection and aims to reveal research trends as well as influential authors, publications and institutions. One possible reason behind this is these doctors' lack of scholarly writing skills, hence their failure to transform their research into high-quality publications (Zhang et al., 2020). Although research has shown that such barriers may pose additional challenges to EAL researchers, much remains unknown about specific difficulties that Chinese medical doctors may face in their scholarly publishing processes and the coping strategies employed by them to deal with these difficulties, especially when formal training in medical publishing is rarely given at medical schools (McNeill et al., 2007; Oyibo, 2017).

With the prevailing dominance of English as the language of scholarly publication, there has been increasing valorisation of various journal indexes, such as the Science Citation Index (SCI), especially in EAL countries (e.g., Canagarajah, 1996, 2002; Curry & Lillis, 2010; Flowerdew, 1999b; Flowerdew & Li, 2009a; Li, 2006a). In this regard, English plays a central role in the construction of such bibliometrics, and these codified

indicators essentially privilege and promote the use of Centre-based[1] English journals as evaluation criteria in knowledge production activities (Bardi & Muresan, 2014; Feng et al., 2013; Lillis & Curry, 2010). This dominance of English as the global academic lingua franca shapes academic knowledge production and institutional evaluation systems in significant ways (Canagarajah, 2002; Curry & Lillis, 2017a; Lillis & Curry, 2010, 2015). For instance, Chinese early-career researchers reported that "publishing in journals indexed in WoS" is "at the highest level of importance" (Xu et al., 2018, p. 332). Similarly, Chinese multilingual scholars also remarked that their publishing practices were greatly influenced by their university's adoption and valorisation of key indices (e.g., the SSCI and A&HCI) as the yardsticks to measure research output (Zheng & Guo, 2019). In her study of Chinese management academics' publishing practices, Li (2014c) argued that the motivation of academics to publish in English reveals the "performative function of journal ranking lists" (p. 49), and their publishing practices in turn reinforce and

[1] Centre and Periphery, concepts from World Systems (Galtung, 1971, 1980), have been used in studies on EAL researchers' scholarly publishing, with a focus on broad geolinguistic and geopolitical issues in scholarly publishing. Specifically, the two sociopolitical concepts have been employed in previous studies to highlight the issues related to power differentials and unequal accesses arising from different geographical locations in scholarly publishing (e.g., Lillis & Curry, 2010). In terms of Kachru's (1986) concentric circles that include the Inner Circle, the Outer Circle, and the Expanding Circle, the Centre corresponds to the Inner Circle, and the Periphery comprises the Outer and Expanding Circles. The Inner Circle includes five native English-speaking countries (i.e., Australia, Canada, New Zealand, the UK, and the US), the Outer Circle comprises former colonial countries that use English as a second or official language (e.g., India and Singapore), and the Expanding Circle represents countries that use English as a foreign language (e.g., mainland China) (e.g., Galtung, 1971, 1980; Curry & Lillis, 2004; Lillis & Curry, 2010).

perpetuate the practices of performativity in research assessment. Specifically, academic works published in Centre-based English journals can yield greater benefits and material rewards (Lillis & Curry, 2010). For instance, Lillis and Curry (2010) documented that EAL researchers from such European non-Anglophone countries as Hungary, Portugal, Slovakia, and Spain received higher points in a formal evaluation system, or higher financial rewards, when publishing in such journals.

Previous research (Li, 2013, 2014a, 2014b) has shown that Chinese medical doctors are motivated to publish for meeting publication requirements or expectations, securing promotion, and winning awards. However, the onslaught of the SCI-based promotion mechanism could contribute to the potential breakdown of the Hippocratic Oath, as some doctors tend to compromise on medical professionalism to pursue fame and wealth rather than to prioritise the health and wellbeing of patients (Zheng & Shi, 2016). Because of the tremendous pressure to publish for meeting institutional assessment requirements, some medical doctors even fabricated their data to get published, and paper-mill companies are growing rapidly, resulting in untrustworthy articles (Qiu, 2010; Ye & Liu, 2013). It is thus argued that such an evaluation regime that prioritises SCI articles sharply degrades China's scientific research capability and credibility (Qiu, 2010; Ye & Liu, 2013). Against this backdrop, some Chinese doctors contend that China's health-system reforms should dethrone the SCI article in the appraisal system (Yuan et al., 2013), but others see such an appeal as nonsensical (Yu et al., 2017). They argue that scientific

research should be a desideratum because China's large number of disease cases are invaluable for medical research, which can benefit not only China but also other countries worldwide (Chen et al., 2014). It can be seen that Chinese medical doctors hold starkly different, even opposing, attitudes towards scholarly publication in the form of SCI articles. There seems to be a zero-sum competition between clinical practice and academic research. Furthermore, tensions may arise between doctors' attitudes towards scholarly publishing and their scholarly publishing practices. Such conflicts are often shared in Chinese medical doctors' impressionistic accounts of scholarly publication. There has been, however, very little empirical research focusing on Chinese medical doctors' perceptions of, and attitudes towards, scholarly publishing. Moreover, few empirical studies have investigated the impact of contextual factors, such as the SCI-based promotion mechanism, on Chinese medical doctors' attitudes towards scholarly publishing as well as their scholarly publishing practices.

Furthermore, research has shown that EAL researchers face both discursive and non-discursive challenges in their endeavours to publish in English-medium international journals (Canagarajah, 2002; Carli & Ammon, 2007; Ferguson et al., 2011; Phillipson, 2008, 2009). These scholars may find their aspirations handicapped by their limited English proficiency and inadequate understanding of academic writing conventions (e.g.,Flowerdew, 2007; Flowerdew & Li, 2007a; Hanauer & Englander, 2011). Other challenges, such as material constraints (e.g., Canagarajah, 1996; Canagarajah, 2002;

Duszak & Lewkowicz, 2008; Salager-Meyer, 2008), indicate EAL researchers' peripherality in geopolitical locations and/or academic discourse communities. Studies have found that EAL researchers' linguistic handicaps are generally experienced most keenly when EAL researchers write up the introductions, literature reviews and discussions (Martín et al., 2014; Muresan & Pérez-Llantada, 2014), and further play out in the social dimension and impact on EAL researchers' abilities to communicate with reviewers and editors (Martín et al., 2014) and collaborate with other members in their scientific communities (McDowell & Liardét, 2019). Furthermore, due to the limited access to or the unavailability of resources, EAL researchers may also experience resource barriers to scholarly publishing (Curry & Lillis, 2010; Li, 2014b; Lillis & Curry, 2006a). For instance, EAL researchers may not be able to gain access to academic research networks, given their peripherality in geopolitical locations and/or academic discourse communities (Curry & Lillis, 2010; Lillis & Curry, 2006a). With China's rapid economic growth and great investment in research and development, some scholars tend to exclude China from the Periphery of international publication (e.g., Flowerdew, 2007; Shi et al., 2005; Zheng & Gao, 2016). However, research resources are distributed unevenly across different tiers of universities in different regions of China (Mu & Zhang, 2018), with a small elite pool of Chinese universities enjoying preferential allocations of resources. In this way, one fundamental challenge faced by a majority of Chinese scholars is lack of funding and resources (Mu & Zhang, 2018). For instance, Li's (2013) study on

Chinese medical doctors' academic publishing found that the participants had no free access to up-to-date full-text databases even at a Level 3-Grade A (i.e., the highest grade) hospital located in East China, a relatively affluent and developed region of China.

More specifically, research on the obstacles and challenges facing medical doctors, or clinical researchers, in their attempts to publish has revealed mainly two challenges inherent in their professional settings, namely a lack of time and resources and a tension between clinical practice and research (Li, 2014b). Many doctors who aspire to do research find themselves beset by an overburden of work with little time to spare for academic research (Chen et al., 2014). Therefore, conflicts and tensions arise between the demanding academic expectations held of doctors and the scarcity of research time resulting from structural exploitation (Ye & Liu, 2013). For instance, Li (2014a) reported that unlike the Anglo-American context where research time is an integral part of doctors' workload, the evaluation mechanism in her participants' university-affiliated hospital essentially communicated the message that they should "squeeze time" (p. 119) for research. Thus, the evaluation system in effect obliges doctors to invest *extra* time and effort in writing for scholarly publication and, consequently, instigates them to dilute their commitment and dedication to clinical practice, impairing the quality of patient treatment and affecting doctor-patient relationships (Ye & Liu, 2013). Although there is some literature that focuses on challenges or difficulties faced by Chinese EAL researchers,

more studies are needed to understand the specific challenges or difficulties faced by Chinese medical doctors writing for scholarly publication.

Extant research has suggested that the success of EAL researchers' scholarly publication depends to a large extent on whether they can mobilise resources at hand to overcome the challenges facing them (e.g., Cheung, 2010; Cho, 2004; Flowerdew, 2000; Li, 2007). Previous studies found that EAL researchers turned to cultural artefacts (e.g., published journal articles) and language or academic professionals for help when writing for scholarly publication (Canagarajah, 2018; Lillis & Curry, 2006a; Luo & Hyland, 2017, 2019). For instance, Luo and Hyland (2019) presented an interesting case study of a Chinese medical doctor's use of translation as a practical text mediation strategy. Given that the participant "can hardly write a complete sentence in English but regularly publishes in prestigious international journals" (Luo & Hyland, 2019, p. 19), the researchers viewed text mediation as a useful strategy for EAL academics and highlighted the importance of effectively mobilizing resources for English text production in addition to their individual competence. Furthermore, EAL researchers have to negotiate multiple demands on their time, effort, and resources to facilitate their scholarly publishing process (see Casanave, 1998; Curry & Lillis, 2004). In order to meet the assessment requirements within a tight timeframe, young Chinese scholars in Tian et al.'s (2016) study reported that they tended to conform to common practices of their field rather than adopt novel practices that would require considerable time and effort to produce original knowledge.

To sum up, although the extant literature has investigated EAL researchers' scholarly publishing experiences and practices, there are still several gaps in the literature that warrant further research. First, there is only a small body of research on medical doctors' scholarly publishing practices. Second, less attention has been paid to the relationships between medical doctors' attitudes towards, or their motives for, scholarly publishing and their scholarly publishing practices. Third, because research on Chinese medical doctors' scholarly publishing practices is scarce, much remains unknown about specific challenges that they may face and how such challenges affect their scholarly publishing practices. Fourth, even fewer studies have investigated how medical doctors cope with the challenges and how those strategies impact on their scholarly publishing activities. Furthermore, the growing emphasis on scholarly publishing policies at national and institutional levels in China also makes it meaningful to investigate how scholarly publishing is perceived and experienced by those who are intimately involved, especially by such high-stakes professionals as medical doctors.

1.2 Research Objectives and Research Questions

To address the research gaps identified above, the present study aims to examine Chinese medical doctors' scholarly publishing practices in their professional context. The objectives of the study are to explore the situated contexts and the motives of major stakeholders (i.e., the university, its affiliated hospital and medical doctors) for medical doctors' scholarly publishing activities; uncover the challenges that medical doctors face

in their scholarly publishing activities; identify their coping strategies as well as the outcomes of these mediation strategies that affect their scholarly publishing activities. Specifically, this study seeks to answer the following research questions:

1. What are the institutional contexts and motives for Chinese medical doctors' scholarly publishing activities? How do they impact on doctors' scholarly publishing practices?

2. What difficulties or challenges do Chinese medical doctors face in their scholarly publishing activities? How do they impinge on their publishing practices?

3. What strategies do they develop and employ to address those challenges? How do these strategies shape their scholarly publishing practices?

Conceived and designed to answer these research questions, this study adopted a multi-case study research design (see Chapter 4) informed by CHAT (see Chapter 3). The theoretical framework of CHAT illustrated the constitutive components (i.e., *subject*, *object*, *rule*, *tool*, *community*, and *division of labour*) of the doctors' various activity systems (e.g., the activity systems of clinical work, research, and scholarly publishing) embedded within their professional work activity system. This framework also captured the mediational relations within and between the components, and between the activity systems mentioned above. Moreover, the concept of *contradiction* in CHAT offered analytical lens to illuminate the cause of the difficulties faced by the doctors and unravel the nature of the strategies adopted by them. The research site was a top-tier hospital

affiliated with the Medical School of a top research-intensive university in mainland China, and multiple types of data were collected from Chinese medical doctors who worked in this hospital and engaged in scholarly publishing activities in their professional context. The collected data (i.e., interview transcripts, manuscripts and other related documents and artefacts) were analysed using thematic and activity systems analyses, the results of which were then synthesized and presented in narratives, along with CHAT diagrams, to describe each doctor's experience with scholarly publishing.

1.3 Significance of the Study

This study is expected to contribute to a more nuanced and contextualised understanding of Chinese medical doctors' scholarly publishing practices in their professional context, such as potentially competing demands/activities intersecting with their scholarly publishing activities, the challenges and difficulties encountered in the process, and useful strategies for coping with the demands and challenges. While previous studies focused mainly on academics' publishing practices, much less research attention has paid to such a specific professional group as medical doctors. This might be due to the fact that unlike academics, practitioners in professional settings may not be institutionally required to conduct research and publish research papers as a means to secure professional promotion (Li, 2014b). However, unlike their counterparts in other geographical settings who may not need to do research, Chinese doctors in public hospitals, especially those in the top-tier ones, are explicitly required by their

management to do so, and the determining factor in their professional promotion is the quantity and the quality of their research output. Given the above discussion, Chinese doctors' scholarly publishing practices, which is an important but relatively understudied area of research, may offer important and interesting insights into academic writing and publishing. More importantly, as noted above, because of China's large number of disease cases, Chinese medical doctors' scholarly publication as a way to disseminate medical knowledge can be beneficial not only to China but also to other regions and countries (Chen et al., 2014). Thus, this study is expected to illuminate how Chinese medical doctors view the contributions of their research and publication. Furthermore, this study is positioned to shed light on the promotion mechanism in China's health system for medical doctors and inform relevant stakeholders (e.g., policy makers) about their attempts to develop sound publication policies and support Chinese medical doctors' scholarly publishing.

Theoretically, the findings of this study could contribute to an ongoing effort to develop the emerging fourth generation of CHAT by exploring scholarly publishing in a professional context. Informed by CHAT, the study could highlight the complexity and multidimensionality of the scholarly publishing activity system in a professional context. By examining how Chinese medical doctors negotiate their competing activities to understand why they engage in those activities and adopt certain strategies, this study could make contributions to the development of CHAT by offering some corroborating,

complementary, and/or contradictory empirical evidence that could lead to the refining of CHAT.

Methodologically, the study adopted a multiple-case study of scholarly publishing, bringing together textual and contextual perspectives on academic writing. This could bridge the gap between linguistic and social perspectives on scholarly publishing activities and the contexts in which these activities occur, contributing to a growing understanding of the relations between them and a writer perspective on scholarly publishing.

Pedagogically, the findings of the study could help us better support and facilitate scholarly publishing in a professional context, such as providing support tailored to the needs of EAL researchers in specific institutional and disciplinary contexts and cultures, and inform the design and improvement of English for Research Publication Purposes (ERPP) courses and training programmes for EAL professionals.

1.4 Chapter Summary and Organisation of the Thesis

This opening chapter has presented the background of the present study, outlined its objectives and research questions, and discussed its significance. Chapter 2 provides a detailed and critical view of the relevant literature on scholarly publishing. Specifically, to contextualise the present study, the chapter first examines the extant literature on the dominance of English in international publishing and its impacts on EAL researchers. It then reviews the relevant literature on EAL researchers' scholarly publishing practices,

including studies on medical professionals' scholarly publishing experiences, and sets forth the specific research questions that the present study aims to address. Chapter 3 delineates CHAT, the theoretical framework that has informed the present study and guided its design. Next, Chapter 4 discusses the research methodology used in the present study to address the research questions. Specifically, it introduces the research design, describes the research site and the participants, and discusses my reflexivity and positionality as a qualitative researcher. It also details the methods of data collection and analysis used in this study. Following that, the chapter discusses ways to ensure the trustworthiness of this research as well as ethical considerations pertinent to the present study. Chapter 5 presents the findings on the activity settings for the doctors' scholarly publishing activity system and the motives of the major stakeholders (i.e., the university, the hospital, and the doctors) for scholarly publishing within the doctors' professional context. Chapters 6 and 7 are deliciated to the findings on the object- and subject- induced contradictions identified as difficulties faced by the doctors and the strategies adopted by them to address the contradictions, respectively. Finally, Chapter 8 concludes the thesis with a summary of its major findings, a discussion of its contributions and implications, and an outline of the limitations and directions for future research.

Chapter 2 Literature Review

This chapter reviews several strands of the extant research that are relevant to the context and the purpose of the present study, thereby drawing attention to the gaps this study attempts to address. The following sections review and discuss the extant empirical studies that investigated the motives, challenges, and strategies of EAL researchers in their scholarly publishing activities. This chapter concludes by summarising the gaps identified in the literature, posing the research questions guiding this study, and emphasising the importance of adopting appropriate theoretical frameworks to bridge these gaps.

2.1 English Dominance in International Scholarly Publishing

With the increasing prioritisation and dominance of English as a lingua franca in scholarly publishing, knowledge production and dissemination in the Centre have been increasingly privileged (Canagarajah, 2002; Curry & Lillis, 2019; Ferguson, 2007; Lillis & Curry, 2010, 2016; Tardy, 2004). This has led to "hegemonic Englishization" in international academic publishing (Korotkina, 2018; Muresan & Pérez-Llantada, 2014), which prioritises knowledge generated in research articles published in Centre-based English journals (Canagarajah, 2002; Ferguson, 2007; Lillis & Curry, 2010; Tardy, 2004). The rise of English as a lingual franca in academic publishing has had a profound impact on knowledge evaluation mechanisms pivoting on the commodification of academic knowledge production in knowledge-based global economy (Curry & Lillis, 2017b).

Such mechanisms are instantiated by the use of metrics of scholarly output to treat academic publications as a measurable commodity (Curry & Lillis, 2017b; Lillis & Curry, 2013). The adoption of quantity-based evaluation regimes thus transforms knowledge production into an economic activity such that scholars' accomplishments are largely reduced to the quantity of research articles published in prestigious journals, especially international English-medium journals (e.g., Curry & Lillis, 2017b; Englander & Smith, 2013; Lillis & Curry, 2013).

One key indicator of journals' relative prestige, especially in EAL countries, is the ranking of journals by various journal indexes that evaluate an academic journal's impact and quality in terms of citations, such as the Arts and Humanities Citation Index (A&HCI), the Engineering Index (EI), the Index to Scientific & Technical Proceedings (ISTP), the Science Citation Index (SCI), and the Social Science Citation Index (SSCI) (Canagarajah, 1996, 2002; Curry & Lillis, 2017a; Flowerdew, 1999b; Flowerdew & Li, 2009a; Li, 2006b; Li & Flowerdew, 2009; Lillis & Curry, 2010). A case in point is the journal impact factor (IF) in the Web of Science (WoS) indexes, one of the well-known and widely used journal indexing system. Its influential *Journal Citation Reports* include high-status citation indexes of journals that are overwhelmingly published in English (see Lillis & Curry, 2013). These citation reports feed into various formal and informal evaluation regimes for academic performance (see Bardi & Muresan, 2014; Curry & Lillis, 2014; Curry & Lillis, 2017b; Hyland, 2016; Lillis & Curry, 2010). However, such evaluation

mechanisms are not only biased against Periphery-based journals published in languages other than English but also EAL researchers, especially those outside of Anglophone nations in the Centre (Lillis & Curry, 2010). Thus, we can see that the dominance of English as *the* language of scholarly publication shapes academic knowledge production and evaluation in significant ways (Canagarajah, 2002; Lillis & Curry, 2010, 2015) and has serious implications for equity in global knowledge production (e.g., Belcher & Yang, 2020; Bocanegra-Valle, 2014; Ferguson et al., 2011; Flowerdew, 2015; Hyland, 2016; Tardy, 2004). For instance, with the increasing valorisation of the journal IF as an evaluation criterion, institutions only recognise and reward academic publications in journals included in the WoS citation indexes (Lee & Lee, 2013). Consequently, with the growing competition in international scholarly publishing, journals in languages other than English that are not listed in WoS indexes or other prestigious indexes become unacknowledged by and banished from governmental and institutional evaluation systems (Curry & Lillis, 2017b). Li and Flowerdew (2009) provided a more detailed description:

> These changes have a profound impact on the scholarly life of academics. The internationalisation of the higher education sector has often meant an increasingly policy-explicit and assessment-driven requirement/expectation for the academics in general to publish in English, as well as the privileging of center-based journal databases. (p. 280)

As an example, EAL researchers in the Arabian Gulf were found to consider the journal IF as a key indicator when deciding where to publish their research and hold the opinion that publishing in a journal with a low impact factor would evoke a sense of failed effort (Buckingham, 2014). Similarly, studies have shown that Chinese academics' motivations for scholarly publishing have been shaped by the institutional adoption and valorisation of key index lists (e.g., journals indexed in WoS) as the yardsticks to measure their research output (Li, 2014c; Xu et al., 2018; Zheng & Guo, 2019). These academics' scholarly publishing practices have in turn contributed to the reinforcement and perpetuation of the performative function of journal ranking lists (Li, 2014c).

As research output has become a key indicator of the rankings of institutions, bibliometric measures discussed above have been commonly adopted in governmental and institutional policies to evaluate academics' performance (Curry & Lillis, 2017a; Feng et al., 2013; Lillis & Curry, 2010). Within the global knowledge economy, academic knowledge production is seen as an economic activity that is instrumental in a nation's or region's development (Englander & Smith, 2013; Lillis & Curry, 2013; Man et al., 2003). Such knowledge production is embodied in the form of research that supports industrial innovations (Leydesdorff & Wagner, 2009), which in turn determine nations' standing in the international scientific arena (King, 2004). Concomitant to the economization of academic knowledge production is the prevalence of an accountability culture in academia that seeks to measure productivity in terms of academic publications (Hyland,

2016). Researchers that produce knowledge are seen as "deserving of rewards" and gain "greater rewards" when more knowledge is produced (Hyland, 2016, p. 58). In this way, metrics of knowledge production in terms of academic publications and citations to those publications have transformed academic publishing into a gigantic industry that controls individual scholars' careers and institutional funding (Bjork et al., 2009). This quantification of knowledge production and dissemination undergirds the "rankings" of both individual researchers and institutions in institutional and governmental assessment systems. English publications have been privileged in assessment and reward schemes in EAL contexts, such as non-Anglophone European states (e.g., Curry & Lillis, 2010; Duszak & Lewkowicz, 2008; Pérez-Llantada, 2012), Latin American and African countries (e.g., Beigel, 2014; Mweru, 2010), the Arabian Gulf (e.g., Buckingham, 2014), and Asian-pacific regions (e.g., Braine, 2005; Flowerdew & Li, 2009a; Lee & Lee, 2013; Li, 2006a, 2006b; Li & Flowerdew, 2009). Specifically, academic works published in Centre-based English journals can yield greater benefits and material rewards than those in Periphery-based non-English journals in such areas as tenure, professional promotion and/or contract renewal (Bocanegra-Valle, 2014; Buckingham, 2014; Canagarajah, 1996; Curry & Lillis, 2004; Englander & Smith, 2013; Feng et al., 2013; Flowerdew, 2015; Hyland, 2012, 2016; Lee & Lee, 2013; Li, 2014c; Man et al., 2003; Tietze & Dick, 2009; Yakhontova, 1997), grant application (Burgess et al., 2014; Curry & Lillis, 2004; Flowerdew, 2000; Huang, 2011; Lillis & Curry, 2010; Yakhontova, 1997), job hunting

(Belcher, 2007; Englander & Smith, 2013; Huang, 2011), and remuneration and/or bonus (Curry & Lillis, 2004, 2017a; Englander & Smith, 2013). For instance, Lillis and Curry (2010) documented that EAL researchers from such non-Anglophone European countries as Hungary, Portugal, Slovakia, and Spain received more points in a formal evaluation system or greater financial rewards for publishing in high-impact English journals.

2.2 Motives of EAL Researchers for Scholarly Publishing

The extant research has examined EAL researchers' motives for publishing in English and found that they may publish for the sake of meeting publication requirements or expectations, securing promotions, winning awards, gaining recognition, and contributing to knowledge. These motives reveal that publishing in English can yield prestige and material rewards (Lillis & Curry, 2010). As discussed above, the privileging of English publications plays a pivotal role in the construction and implementation of governmental and institutional reward systems across geolinguistic contexts. Correspondingly, EAL researchers' motivations for publishing in English can arise in response to the pressure to meet the demands of the assessment systems and the desire to reap the accompanying rewards (Curry & Lillis, 2004, 2017a; Englander & Smith, 2013). For instance, in Canagarajah's post "Pressure on Chinese scholars to publish" in his *Editor's Ponderings*, one of his former Chinese colleagues reported that academics in his former Chinese university received five times more reward points for a research paper

published in a Centre-based English journal than one published in a "national-level" domestic journal (see also Flowerdew, 2015).

Apart from assessment exercises and reward schemes, contributing to scientific knowledge, gaining recognition for their research, and exerting influence on the global academic community are also among EAL researchers' motives for publishing in English. Seen in this light, publishing has thus become an important form of "symbolic capital" (Curry & Lillis, 2004; Englander & Smith, 2013) and "the principal currency for academic recognition and promotion for researchers" (Man et al., 2003, p. 811). A crucial means of disseminating scientific knowledge is through publication of research articles in high-value Centre-based English-medium journals (Ammon, 2001; Bocanegra-Valle, 2014). Against this backdrop, EAL researchers publish or intend to publish in English to make their research visible and achieve international recognition (Duszak & Lewkowicz, 2008; Huang, 2011; Lee & Lee, 2013; Tardy, 2004), and they are attentive to "the potential quality of their research and how much and to what extent it can contribute to knowledge advancement" (Bocanegra-Valle, 2014, p. 69). For instance, Li (2014b) found that Chinese management academics in her study generally demonstrated a strong dedication to research, with some aspiring to publish "A-level papers" (in international English-medium journals) to establish reputation in the field (p. 46).

To sum up, previous studies demonstrated in a way or another that "powerful evaluation systems of academic knowledge production based in the Anglophone Centre

are both directly and indirectly supporting the privileging of English as the medium of academic texts for publication" (Lillis & Curry, 2010, p. 156), constituting and reproducing the "centripetal pull" that draws EAL researchers towards the dominant practices and ideologies in the Anglophone Centre (Lillis & Curry, 2010, p. 160). In this regard, the above motives held by EAL researchers to publish in Centre-based English journals directly and indirectly legitimate the hegemony of English in global scholarship and privilege the Anglophone-centred communities as the target of knowledge dissemination. For instance, Spanish multilingual scholars of medicine in Martín et al.'s (2014) study remarked that it has become "an established practice" in their field to publish exclusively in English-medium journals listed by prestigious citation indexes, and that this has inevitably led to "the almost total disappearance of the national journals" (p. 60).

Despite the dominance of English as the privileged medium of scholarly publication, many EAL researchers do publish for both English and L1 communities (Curry & Lillis, 2004, 2017a; Flowerdew & Li, 2009a; Lei & Jiang, 2019; Li & Flowerdew, 2009; Lillis & Curry, 2010). EAL scholars' motives for publishing in their L1 may also range from coping with assessment exercises, establishing local reputation and networks to contributing to the local community (e.g., Cho, 2010; Curry & Lillis, 2004; Duszak & Lewkowicz, 2008; Gentil, 2005; Gentil & Séror, 2014; Li, 2014c; Lillis & Curry, 2006a; Payant & Belcher, 2019; Salager-Meyer, 2008; Zheng & Guo, 2019).

Although publications in English trump those in other languages in assessment

regimes, there are also requirements in the regimes about both the quality and quantity of academic output (Casanave, 1998; Flowerdew & Li, 2009a; Li, 2014c; Tian et al., 2016). In addition to publishing in L1 to secure their jobs, EAL researchers may need to chalk up the numbers of their L1 publications to climb up the academic ladder, gain visibility, and/or establish a reputation in the local academic community (Buckingham, 2008; Casanave, 1998; Curry & Lillis, 2010; Duszak & Lewkowicz, 2008; Flowerdew & Li, 2009a). For instance, mainland Chinese academics in the humanities and social sciences who participated in Flowerdew and Li's (2009a) study reported that publishing in their L1 at the early stage of their career development could increase their visibility to establish a reputation and achieve a higher academic rank. Their participants from various disciplines, including younger academics who had overseas education experience, published in Chinese for regular assessment exercises, despite the institutional promotion of English publications (Flowerdew & Li, 2009a). In yet another study, Smirnova et al. (2021) reported that Russian scholars tended to publish in Russian-medium journals because of the shorter publication cycle, as compared with English-medium journals, so as to "[ensure] a closer chronological alignment between publication trajectories and the university's annual evaluation cycle" (p. 8). Thus, EAL researchers often need L1 publications to play the numbers game, as it requires more effort and time to publish in English-medium international journals. A similar situation was faced by overseas-trained, home-based multilingual Chinese academics from non-English language specialisations

in Zheng and Guo's (2019) study. The researchers found that their participants shifted their focus to writing for publication in Chinese because they were under pressure to meet their university's assessment requirements based on the Chinese Social Sciences Citation Index (CSSCI) (Zheng & Guo, 2019). In addition to meeting institutional requirements, Hong Kong-based Chinese academics in Li and Flowerde's (2009) study felt obliged to publish in top Chinese-medium journals to introduce advances to the local academic community, reach as wider a local readership as possible, have influence on policy-making and serve the Chinese communities.

It can be seen that the linguistic medium of publication is not a "free choice" but rather socio-politically negotiated and structurally shaped (Guardiano et al., 2007). When it comes to EAL researchers' efforts to publish in English, such complexity is well captured in two main "parameters of language choice" that tend to determine scholarly publishing practices (Haberland, 2005, p. 227; Muresan & Pérez-Llantada, 2014). One is national research evaluation regimes that place a high premium on English-medium publication, and the other is institutional policies incentivizing academic publications in high-IF English-medium journals (Muresan & Pérez-Llantada, 2014). It is revealed that such Centre-based assessment systems tend to reproduce and perpetuate the de facto language policy and practices prioritising English as the language of international publication (Curry & Lillis, 2017b; Li & Flowerdew, 2009; Martín et al., 2014; Shohamy, 2006; Zheng & Guo, 2019). Despite this global "Englishization" of academic publishing,

EAL researchers also intend to publish in both English and their L1 (Cho, 2010; Flowerdew & Li, 2009a; Li & Flowerdew, 2009; Lillis & Curry, 2010). The language choice for publication is locally negotiated and mediated by multiple layers of factors in national, institutional, and disciplinary contexts (Flowerdew & Li, 2009a; Lei & Jiang, 2019; Li & Flowerdew, 2009; Lillis & Curry, 2010). For instance, multilingual EAL researchers were reported to negotiate their scholarly publishing practices for interests, demands, and rewards (e.g., Curry & Lillis, 2004; Martín et al., 2014), and EAL researchers' choices of languages for publishing were mediated by their age, previous exposure to English, field of study or discourse communities (e.g., Duszak & Lewkowicz, 2008; Lei & Jiang, 2019; López-Navarro et al., 2015). As an example, scholars in the hard sciences seem more inclined to publish in English than their counterparts in the humanities and social sciences (see Burgess et al., 2014; Cargill & O'Connor, 2006; Ferguson, 2007; Fernández Polo & Cal Varela, 2009; Flowerdew, 2015; Flowerdew & Li, 2009a; Giannoni, 2008; Li & Flowerdew, 2007, 2009; López-Navarro et al., 2015; Martín et al., 2014; Moreno et al., 2012; Mu & Zhang, 2018; Swales, 2004; Zheng & Guo, 2019). Their personal and interpersonal perspectives and orientations towards academic biliteracy, which take shape through the interaction of multiple social structures in favour of a specific literacy, shape their professional identities and contribute to their negotiation of multicultural identities (Casanave, 1998; Cho, 2010; Curry & Lillis, 2004; Gentil, 2005).

The reviewed studies revealed that combinations and interactions of variables at the macro-sociolinguistic level (e.g., institutional constraints and communities/expectations), the individual level (e.g., skills/feelings/ideologies), and the micro-sociolinguistic level (e.g., language management/resources) mediate EAL researchers' choice of languages for scholarly publication (Curry & Lillis, 2004; Flowerdew & Li, 2009a; Hamid, 2006; Shi et al., 2005). Tensions may also arise when EAL researchers' respective motives for publishing in English and L1 differ from and compete with each other. This can be seen from the coexistence of EAL researchers' positive and negative attitudes toward their language choice for publication, even within the same discourse (López-Navarro et al., 2015). Moreover, although their participants (i.e., Spanish academics) showed a generally favourable attitude towards the use of English for research publication purposes, López-Navarro et al. (2015, p. 962) were uncertain whether their motivations to publish in English reflected their "resignation regarding the need to use EAL" or "a more willing acceptance of the use of EAL for publications purposes", especially when their scholarly publishing practices can be "strongly related to institutionally-mandated measures of scientific productivity, visibility, impact and quality of the research" (see also Ferguson et al., 2011; Muresan & Pérez-Llantada, 2014; Smirnova et al., 2021; Uysal, 2014).

Taken together, despite a fairly large number of studies dedicated to the relationships between EAL researchers' motives and their choice of languages for scholarly publication, these studies have shown scant attention to the dynamics between EAL researchers'

varied motives for their scholarly publishing, especially when conflicts may arise between these motives, and their impact on EAL researchers' specific practices of scholarly publishing. Furthermore, much remains unknown about the nature of evaluation regimes operating in local institutional contexts and their impact on EAL researchers' motives and their choice of languages for scholarly publication. Specifically, very little empirical research has focused on Chinese medical doctors' motives for scholarly publication in their local professional context, and the extent and ways in which their motives and their language choice are refracted through, and affected by, geopolitical instrumentalization of scholarly publishing in evaluation regimes in local institutional contexts.

2.3 Challenges in EAL Researchers' Scholarly Publishing Practices

EAL researchers in the Periphery are at a disadvantage vis-à-vis their native-English-speaking counterparts in the Centre, when they compete for international (English-medium) publication space (Flowerdew, 2008; Habibie & Hyland, 2018; Huang, 2010; Hyland, 2012, 2016; McDowell & Liardét, 2019). The challenges for Periphery-based EAL scholars to publish in English and the difficulties that they encounter in writing for international publication are increasingly documented (Casanave & Vandrick, 2003; Flowerdew, 1999b, 2000, 2007, 2008, 2013, 2015; Hyland, 2018; Lei & Hu, 2015, 2019; Li, 2012, 2013, 2014a, 2014b, 2014c; Li & Hu, 2017; Luo & Hyland, 2017). Specifically, previous research has shown that EAL researchers face both discursive and non-

discursive challenges while aspiring to publish in English-medium international journals (Belcher, 2007; Canagarajah, 2002; Carli & Ammon, 2007; Curry & Lillis, 2004; Duszak & Lewkowicz, 2008; Ferguson, 2007; Ferguson et al., 2011; Flowerdew, 1999b, 2008; Hanauer & Englander, 2011; Huang, 2010; Lei & Hu, 2019; Phillipson, 2008, 2009; Salager-Meyer, 2014).

To begin with, although some scholars (e.g., Canagarajah, 2012; Hyland, 2016) problematize the assumption of the native/non-native divide in academic publishing, research has shown that EAL researchers' lack of English proficiency can subject them to additional language difficulties and exacerbate their disadvantaged situation in international scholarly publishing compared with native English-speaking researchers (see Cho, 2009; Flowerdew & Li, 2009a; Huang, 2010; Hynninen & Kuteeva, 2017; Jiang et al., 2017; Martín et al., 2014; McDowell & Liardét, 2019; Muresan & Pérez-Llantada, 2014; Pérez-Llantada et al., 2011). Specific language-related difficulties perceived by EAL researchers themselves and reported by journal gatekeepers include impoverishment of expression (Braine, 2005; Flowerdew, 1999a; Muresan & Pérez-Llantada, 2014), problematic usage of vocabulary and syntax (Flowerdew, 2001; Hyland, 2016), surface errors (Hyland, 2016; Lei & Hu, 2019), inappropriate handling of textual prgamatics and the modality system (e.g., hedging) when making claims (Burrough-Boenisch, 2003; Flowerdew, 2001; Kerans, 2002; Kourilová, 1998), absence or inappropriate use of authorial voice (Burrough-Boenisch, 2003; Flowerdew, 1999a, 2001), oversimplified

writing (Braine, 2005; Flowerdew, 1999a) or inadequate academic writing skills, including insufficient command of cohension and coherence devices (Burrough-Boenisch, 2003; Gosden, 1995; Li, 2006a; Mišak et al., 2005) and rhetorical and argumentative skills (Li, 2005; Salager-Meyer, 2014). As Uzuner (2008) concluded from her review of previous studies, such problems may be attributed to differences between EAL researchers' ethnolinguistic values/practices and the academic conventions of the Centre-based English journals (see also Martín et al., 2014; Muresan & Pérez-Llantada, 2014).

In addition to perceived language incompetence and discourse-related difficulties, non-linguistic difficulties, such as content-related issues, may constrain EAL researchers' effort to produce high-quality reseach papers (Gosden, 2003; Huang, 2010; Mišak et al., 2005). Such non-linguistic difficulties relate more to the quality of "the research" than to the quality of "the language" (Pérez-Llantada et al., 2011, p. 25). These problems include methodological shortcomings (Lei & Hu, 2019), lack of orginality (Muresan & Pérez-Llantada, 2014), lack of procedural rigor (Mungra & Webber, 2010), incomplete introduction/literature review, unclear expression of contributions to the field (Lu, 2004; Martín et al., 2014; Mungra & Webber, 2010), invalid interpretions of empirical results and inappropriate conclusions (Mišak et al., 2005), lack of coherence between conclusions and objectives stated in the introduction (Martín et al., 2014), among others. Furthermore, these difficulties are generally experienced most keenly when EAL researchers write up the introductions, literature reviews and discussions, the most

rhetorically complex sections of a research paper. Although studies of EAL scholars' perceptions suggested that many of them attributed their difficulties to the fact that English is an additional language for them (e.g., Ferguson et al., 2011; Hanauer & Englander, 2011), a major but often neglected issue beyond language problems is their lack of rigorous conceptual frameworks which could enable them to write with strength, authority, and voice (Badenhorst et al., 2015).

In addition to the above-mentioned difficulties, EAL researchers may experience other challenges stemming from constrained material conditions (e.g., Belcher, 2007; Canagarajah, 1996, 2002; Duszak & Lewkowicz, 2008; Flowerdew, 2000; Salager-Meyer, 2008). Given their peripherality in geopolitical locations and/or academic discourse communities, concerns have been raised of the unavailability of material resources and limited access to networks when EAL researchers aspire to publish in English. On the one hand, there exists a resource asymmetry between the Centre and the Periphery (Lillis & Curry, 2010; Wallerstein, 1991). For instance, Li's (2013) study of Chinese medical doctors' academic publishing found that her participants had difficulty in gaining access to the latest research articles in major academic databases, even at a prestigious hospital located in a relatively developed area of China. On the other hand, Curry and Lillis (2010) argued that successful English-medium academic publication is more anchored to participation in academic research networks than individual linguistic and rhetorical competence alone. Such network participation in turn enables the mobilization of

resources that are essential for academic publication in Centre-based English-medium journals (Lillis & Curry, 2006a). Despite the fact that resources accessed through participation in academic research networks support researchers' scholarly publication in English, the access to and the availability of these resources, which often constitute a form of cultural and social capital, vary considerably across geopolitical contexts, most notably between the Centre and the Periphery (Curry & Lillis, 2010; Lillis & Curry, 2006a). In this regard, EAL researchers may experience resource barriers to scholarly publishing which constitute additional challenges and raise tensions in their publishing process.

When it comes to challenges arising from EAL researchers' publishing process, the discursive and non-discursive difficulties discussed above further play out in the social dimension and impact on EAL researchers' abilities to commuicate with reviewers and editors (Martín et al., 2014) and collaborate with other members in their scientific communities (McDowell & Liardét, 2019). For instance, interpretating and responding to reviewers' and editors' comments, which are very often imbued with evaluative language, requires a high level of rhetorical literacy on the part of EAL researchers, especially in the most face-threatening cases in which EAL researchers need to perform a delicate balancing act to justfy non-compliance with advice in the referee reports (Fortanet-Gómez, 2008; Gosden, 2003; Martín et al., 2014). The evaluative language in referee reports may pose major difficulties for EAL and novice researchers when "conflicting

signals" (Gosden, 2003, p. 100) give rise to uncertainty about whether the editors and/or reviewers refer to problems of language or content. Such perplexities very often result in EAL researchers' less than adequate responses to reviewers' concerns when they are unable to deconstruct and resolve the ambiguities (Fortanet-Gómez, 2008).

The reviewer/editor-related challenges may become particularly acute in EAL researchers' interactions with editors/reviewers when the former attempt to publish in English and perform the complex rhetorical task of persuading the latter of the value of their research (see Flowerdew, 1999a; Martín et al., 2014; Pérez-Llantada et al., 2011; Uzuner, 2008). On the one hand, EAL researchers may suffer from miscommunication when their responses to the comments from editors and reviewers are misinterpreted in this process of negotiating meaning (McDowell & Liardét, 2019). On the other hand, studies have shown that EAL researchers' submissions are often rejected for "parochialism" by reviewers for English-medium journals (Flowerdew, 2001; Martín et al., 2014; Muresan & Pérez-Llantada, 2014; Pérez-Llantada et al., 2011). For instance, Martín et al. (2014) found that due to stiff competitiveness to publish in medical English-medium journals, medical researchers who aimed to publish in English tried hard to convince reviewers of the relevance of their studies in their responses to the latter' comments, which they deemed an exceptionally daunting task. Clearly, a major challenge for these medical researchers was to "[justify] the significance of their research for an international readership" (Martín et al., 2014, p. 63). Such tensions and challenges may

arise from different expectations and norms regarding what constitutes relevant and significant knowledge (Canagarajah, 2002; Ferguson, 2007; Lillis & Curry, 2010). Failure to relate local research to the interests of the Centre-based disciplinary community would often lead to the rejection of local knowledge, reflecting the lack of a level playing field for EAL scholars from the Periphery to participate in international scholarly publication (Ammon, 2000, 2001; Casanave, 2002; Gosden, 2003; Martín et al., 2014; Mišak et al., 2005; Uzuner, 2008). For instance, Canagarajah (2002) commented that "[s]cholars who insist on communicating their alternative orientations to knowledge and invent newer conventions to represent their thinking may find their papers rejected by established journals" (p. 84). Canagarajah questioned the exigency for EAL researchers to situate their work in Centre scholarship when their research is conduced to address local and cultural concerns of the Periphery.

Notwithstanding the potential of reviewer comments to mentor EAL researchers, especially junior scholars (Cheung, 2010; McDowell & Liardét, 2019; Sasaki, 2001), Hyland and Jiang's (2020) study on harsh peer reviews revealed that the review practice very often falls short of expectation. Although reviews are written with good intentions in most cases, "the experience of authors can be closer to an ordeal by fire than progress through the zone of proximal development" (p. 11). As Hyland and Jiang (2020) pointed out, "the very act of evaluating another's work is a thinly disguised instructional relationship of authority; an inherently unequal interaction because the power to criticise

is non-reciprocal and lies exclusively with the reviewer" (p. 3). Similarly, Paltridge's (2017) analyses of reviews revealed that reviewers employed a substantial number of attitude markers and self-mentions to project authority. The unequal power relationship, exacerbated by the anonymity of reviewers, can be demoralizing and demotivating because reviewers are held less responsible but bestowed with more power to exert influence on writers' professional trajectories (Hyland & Jiang, 2020; Kwan, 2013; Tardy, 2019). In this regard, a chanllenge faced by researchers, espeacially novice EAL ones, when they write for publication and receive critical reviewer comments, is "emotional work", which burdens them with strong feelings of self-doubt, a palpable sense of anxiety, the continued erosion of confidence, and the debilitating fear of rejection (see Aitchison et al., 2012; Cameron et al., 2009; Hyland & Jiang, 2020; Oermann & Hays, 2015; Shirey, 2013).

Taken together, the existing literature indicates that language difficulties constitute an additional obstacle for EAL researchers in their attempts to publish in Centre-based English journals. Although there seems to be no consensus on whether and to what extent their language difficulties may determine the success of their publishing endeavours, studies (e.g., Coates et al., 2002; Ferguson, 2007) suggest that there is a clear correlation between inadequate linguistic skills and the likelihood that manuscripts are rejected. To make things worse, poor linguistic skills are very frequently found to be in close association with non-discursive factors, especially for some EAL researchers (Ferguson,

2007). With the decreasing editorial tolerance for less-than-perfect language and writing, the situation would thus become dire if EAL researchers fail to meet the standard that those international journals require, especially when "not all reviewers or editors will be skilled in unpacking the information from all variants" of rhetorical structures and styles in EAL researchers' academic writing or willing/able to provide extensive help with their scholarly writing (Shashok, 2008, p. 7). This constitutes a vicious circle that eventually leads to so-called "linguistic imperialism" that discriminates against EAL researchers (Phillipson, 2009). As Salager-Meyer (2008) observed, "the growing linguistic and rhetorical monopoly and monoculture … [are] even more strongly felt through the standardisation of (Anglo-American) academic rhetorical practices … to the detriment of other cultural norms and thought patterns" (p. 127). This issue has also been reflected in the hotly debated bias of Centre-based English journals for researchers from English-speaking countries and prestigious academic institutions (e.g., Braine, 2005; Canagarajah, 1996; Flowerdew, 2000, 2001; Jiang et al., 2017; Li, 2006a). Despite inconclusive empirical evidence of such a bias (Ferguson, 2007), there is a prevalent sense that EAL scholars in Periphery countries are disadvantaged, especially when the hegemonic gate-keeping practices of Centre-based English journals sustain and boost the dominance of Anglo-American discursive conventions and practices (Gibbs, 1995; Salager-Meyer, 2008, 2014).

Apart from the challenges faced by EAL researchers in the writing and peer review

processes, the valorisation of English and Centre-based English journals creates additional difficulties for EAL researchers from countries on the Periphery, which may have a negative impact on their knowledge dissemination (Canagarajah, 2002; Duszak & Lewkowicz, 2008; Salager-Meyer, 2008, 2014). One barrier is the failure of the most widely used databases such as SCI and SSCI to index many non-English journals (see Lillis & Curry, 2013; Stolerman & Stenius, 2008). This means that if written in local languages other than English, publications in local journals may not disseminate seminal or important research findings widely (Pakir, 2005; Salager-Meyer, 2014). Thus, knowledge published on the Periphery may fail to reach a wide readership in the mainstream academic community and become invisible and "lost science" (Gibbs, 1995), especially when the overwhelming majority of scholars mainly turn to English-medium outlets when they search the literature (Marusic & Marusic, 2000; Phillipson, 2001; Stolerman & Stenius, 2008; Tardy, 2004).

As the discussion above makes clear, EAL scholars' academic publishing in English is a sociopolitical practice impregnated with tensions arising from unequal power relations based on the Center's dominion over status and access (i.e., social, economic and cultural capital). This has led to structural acquiescence in the denial and marginalization of knowledge produced by the Periphery, to the extent that it has entailed the de facto self-perpetuating academic imperialism. For instance, one challenge perceived by some Chinese scholars in the humanities and social sciences in Flowerdew

and Li's (2009a) study is, as one participant put it, "the centre's refusal to see 'the real China'" (p. 11). This reveals the complexities and intricacies of scholarly publishing practice when EAL researchers try to participate in international academic communities.

Challenges faced by EAL researchers go over and above obstacles to publishing in English when they attempt to publish in their L1 to be in tune with the local academic community. In this regard, EAL researchers publishing in both English and their L1 may face additional tensions and challenges in such areas as language, knowledge production and dissemination, and material conditions. "Publishing 'locally' may be as challenging as, if not more challenging than, publishing 'internationally'" Belcher and Yang (2020, p. 47). For instance, overseas-trained Chinese multilingual scholars in Zheng and Guo's (2019) study reported their "painstaking efforts to write and publish in Chinese" (p. 123) due to low academic proficiency in their Chinese L1, and that their manuscripts were criticised by reviewers for inappropriate discursive features and styles. To meet institutional requirements, these academics "were all forced to start a painful and slow process of self-training" (p. 123) in Chinese academic literacy due to the lack of language support. Likewise, Li's (2014c) study of Chinese management academics found that her participants were reluctant to publish in their L1 because publishing in Chinese would require "a prolonged learning process" (p. 46) to improve their Chinese academic literacy. Another challenge perceived by some of her participants was their unfamiliarity with "'the rule of the game' of publishing in Chinese journals" (Li, 2014c, p. 46), which is

replete with uncertainty and unpredictability. In yet another study, Payant and Belcher (2019) investigated the trajectory of a multilingual academic striving for scholarly publication in her L1 (i.e., French) and found that despite her publication success in French, there were two recurring challenges: lack of access to the local academic community and lack of engagement in L1 academic reading. Taken together, EAL researchers may face additional challenges and difficult decisions when they "uphold their commitment to academic biliteracy within English-dominant institutional and disciplinary contexts" (Gentil, 2005, p. 421). More often than not, these scholars are "juggling two sets of values and expectations" (Casanave, 1998, p. 175).

All these difficulties and challenges can create burdens for EAL researchers and strain relations between their scholarly publishing and other activities, given their limited time, effort, and resources. For instance, young Chinese scholars in Tian et al.'s (2016) study reported that they put most of their energies and time into writing in English at the expense of other academic activities (e.g., pedagogical training) and even family relations. As Martín et al. (2014) argued, the time-consuming nature of writing in English for EAL researchers requires too much effort, along with economic limitations resulting in increased costs for which funds are not available. For instance, Luo and Hyland (2016) observed that the lack of institutional funding could complicate the process of language mediation owing to the uncertainties of appropriate rewards for this kind of mediation work, which may affect cooperation between local English teachers (i.e., textual

mediators) and authors. Their study revealed the reluctance of colleagues to give free language support, adding challenges to EAL researchers with limited English academic literacy.

Such a predicament has also been experienced by EAL academics in other studies, such as the Chinese PhD candidate in medicine in Luo and Hyland's (2021) study and the Iranian medical scholars in Zeinolabedini and Gholami's (2016) and Gholami and Zeinolabedini's (2017) studies. Similarly, previous studies on challenges faced by Chinese medical doctors in their publishing efforts revealed a lack of time and resources as well as a tension between their research activities and clinical activities in their professional context (Li, 2014b). Although these findings support the general perception that EAL scholars are at a disadvantage, little is known about the specific difficulties that Chinese medical doctors may face in their scholarly publishing processes, since formal training in medical publishing is rare at medical schools (McNeill et al., 2007; Oyibo, 2017). Specifically, much remains unknown about how Chinese medical doctors manage their resources (e.g., time and energies) to engage in both English and L1 scholarly writing activities and how they cope with the challenges of being double agents that are inherent in their dual identities as clinician-researchers and scholarly writers in their professional context.

2.4 Strategies Used by EAL Researchers

As illustrated above, EAL researchers may face a plethora of challenges in their

endeavours to publish in English, including language/content-related difficulties, perceived parochialism of local knowledge, and material constraints. Research has shown that the success of EAL researchers' scholarly publication depends to a large extent on whether they can mobilize resources at hand to overcome the challenges facing them (Cheung, 2010; Cho, 2004; Flowerdew, 2000; Li, 2007; Luo & Hyland, 2019, 2021). Studies have revealed that the discursive and non-discursive resources that EAL researchers resort to can be material (e.g., cultural artefacts), financial (e.g., paying for the services of language professionals) and social (e.g., enlisting the help of colleagues) (see Lillis & Curry, 2010).

To begin with, EAL researchers can draw on various cultural artefacts to facilitate their writing process for scholarly publication. Previous studies found that when confronted with language difficulties, EAL researchers may seek "textual mentorship", that is, turning to published English journal articles as resources to assist their scholarly writing (Buckingham, 2014; Burgess et al., 2014; Flowerdew & Li, 2007a; Kubota, 2001; Li, 2005, 2007, 2015). To overcome challenges in constructing an academic text involves a mastery of unfamiliar linguistic expressions, rhetorical strategies and academic conventions for specific journals (see Casanave & Vandrick, 2003; Li, 2005, 2007). Furthermore, some EAL researchers may model their manuscripts on journal articles in their fields, from which they borrow chunks of text and reuse words to overcome language barriers in their own scholarly writing. Such textual practices may raise

concerns about plagiarism, although it is a common practice among both L1 and L2 novice writers (see Flowerdew & Li, 2007a, 2007b; Flowerdew & Wang, 2016b). Some EAL researchers make great efforts to steer clear of transgressive intertextuality (see Chandrasoma et al., 2004; Hu, 2015). For instance, Li (2015) investigated the source-based writing practices of a Chinese professor of biochemistry and found his extensive use of recontextualisation strategies to incorporate source text materials into his own writing and repeated revisions of source-based text segments and citations in line with his rhetorical intentions.

In addition, EAL researchers' prior knowledge and experience may serve as a mediating tool for addressing their challenges in English scholarly writing. The resources that they may draw on include their L1 knowledge, L1 writing conventions and practices, and local knowledge and perspectives. EAL writers may use their L1, although in varying degrees, to facilitate their scholarly writing process (see Burgess et al., 2014; Duszak & Lewkowicz, 2008; Friedlander, 1990; Gosden, 1996; Li, 2005; Li, 2007; Rymer, 1988; Shaw, 1991; St. John, 1987). For instance, the graduate student in Li's (2007) study wrote the outline for a section in Chinese first to allow his ideas to take shape. Likewise, some Japanese doctoral students in Gosden's (1996) study either wrote a full article in their L1 and then translated it to English or wrote an outline of main ideas in Japanese before translating it into English. Although EAL researchers' use of L1 may help them construct meaning and organise ideas, overreliance on L1 may inhibit the development of their L2

writing expertise and, more importantly, constrain their academic socialization into the international discourse community (see Gosden, 1996).

Apart from conforming to Centre writing conventions and practices, EAL researchers may strategically bring local resources into play and conceptualise local issues in terms of Centre-based theories and frameworks. As explicated in the previous section, local knowledge and perspectives may be ostracised from Centre disciplinary communities due to their gatekeepers' biases, but when strategically mobilized, they can also offer affordances for scholarly publishing (see Canagarajah, 2002; Flowerdew, 2001; Lillis & Curry, 2010). For instance, some Hong Kong scholars of humanities and social sciences in Li and Flowerdew's (2009) study adopted such strategies as "researching issues in mainland China, adopting Centre-based frameworks for framing issues, and aiming to enrich Centre theories" (p. 284) in their scholarly publishing endeavours. Furthermore, Belcher and Yang (2020) pointed out the importance of scholars' consideration of the intended audience for their writing. Such audience considerations, which are influenced by their own experiences and contexts, may in turn foster or undermine their sense of the differences between local and international reader preferences (Belcher & Yang, 2020). Therefore, a finely honed sense of audience could assist EAL researchers and "guide navigation of diverse readerships" (Belcher & Yang, 2020, p. 46). To address this issue in a more concrete way, Duszak and Lewkowicz (2008) suggest that when writing for English-medium publications, scholars need to

contextualise research of a local nature "to be understood by a wider, 'external' audience" (p. 115). However, as explicated in the previous section, such practices in the interest of the Centre-based academic community reproduce and reinforce the epistemic hegemony of the Centre-based values and knowledge that straitjacket local knowledge and perspectives (see Canagarajah, 2002, 2003; Noda, 2020). In this regard, some Chinese scholars in Flowerdew and Li's (2009a) study confided that such contextualisation would instigate "self-colonialism" if they played along with the publication rules that favour the Centre's preference for "an orientalist discourse" (p. 11), a discourse that satisfies the Centre's ethnocentric imagination and otherization of a peripheral culture (see Said, 2003).

EAL researchers also seek support from various mediators, including their supervisors, colleagues, language professionals, specialists, journal editors and referees, among others, to negotiate their academic text production (Burrough-Boenisch, 2003; Flowerdew, 2000; Li, 2014b; Lillis & Curry, 2006a, 2010; Luo & Hyland, 2016, 2017, 2019, 2021). These people are what Lillis and Curry (2006a) refer to as "literacy brokers", who can be involved in "all the different kinds of direct intervention … in the production of texts" (Lillis & Curry, 2010, p. 88) and play an instrumental role in mediating EAL scholars' successful English-medium academic text production. In this way, academic writing by EAL researchers is conceptualised as more of a networked activity than an individual competence, which goes beyond linguistic and rhetorical dimensions but

entails the researchers' strategic mobilization of relevant social and material resources (Canagarajah, 2018; Lillis & Curry, 2006a, 2010). Seen in this light, the textual mediations by those literacy brokers not merely constitute contextual resources that EAL researchers can leverage in their knowledge production but are integrated into and constitutive of their writing (Canagarajah, 2018). Such mediations of EAL researchers' scholarly publishing activities are not confined to their discursive practices but may also concern non-discursive aspects. Previous studies found that when faced with language barriers and rhetorical difficulties, EAL researchers sought discursive support from literacy brokers, or textual mediators, in their writing process for scholarly publication (Burgess et al., 2014; Cargill et al., 2012; Li, 2007, 2014c; Lillis & Curry, 2006a; Luo & Hyland, 2016, 2017, 2019, 2021; McDowell & Liardét, 2019; Mišak et al., 2005; Payant & Belcher, 2019; Pérez-Llantada et al., 2011). In a study of Chinese scientists' endeavours to publish in English, Luo and Hyland (2021) noted that when writing up and editing their manuscripts, all participants sought assistance from their colleagues and most of them also turned to their overseas contacts, professional text mediators, and English language teachers for help. In particular, some of these Chinese scientists reported that their international collaborators' mediation efforts (e.g., editing and rewriting) substantially improved the quality of their manuscripts. This was corroborated by textual analyses of the pre- and post-intervention versions of the participants' manuscripts. Luo and Hyland (2021) thus argued that collegial resources, especially senior Anglophone scholars, can

potentially best support EAL researchers' publishing success. Similarly, Li and Flowerdew (2007) found that Chinese novice scientists turned to their supervisors, peers, and language professionals for discursive support. Such mediators, or shapers, had their respective strengths and weaknesses in mediating EAL-authored manuscripts. For instance, Luo and Hyland (2019) presented an interesting case study of a Chinese medical doctor's use of language professionals' translation as a practical text mediation strategy. Given the fact that the participant "can hardly write a complete sentence in English but regularly publishes in prestigious international journals" (Luo & Hyland, 2019, p. 19), they argued that manuscript translation service was a useful resource for EAL researchers' international scholarly publication (see also Burgess et al., 2014; McDowell & Liardét, 2019; Mur Dueñas, 2007; Pérez-Llantada et al., 2011).

In addition to language problems, academic literacy brokers have also been found to focus on the content when editing EAL scholars' manuscripts (Lillis & Curry, 2006a). More importantly, academic brokers can, explicitly or implicitly, guide EAL researchers to unravel the beliefs, values, and ideologies of English scholarly publishing, thereby creating unique learning opportunities for EAL researchers (e.g., Benfield & Feak, 2006; Berkenkotter & Huckin, 2016; Ferguson et al., 2011; Flowerdew, 2000; Li, 2006a; Moreno et al., 2012). From a social practice view of academic literacy, power dynamics permeates the scholarly publishing process, and, as pointed out by Li (2006a), EAL authors thus need to learn to deal with inevitable power inequality, for instance, the

unequal relationships between authors and gatekeepers. In this regard, “literacy brokers [therefore may] occupy a powerful position straddling boundaries and peripheries between communities and groupings” (Lillis & Curry, 2010, p. 88), and, in particular, “senior academics can, and should, play [the role] in mentoring junior colleagues and in socialising them into academic communities and their discourses” (Pérez-Llantada et al., 2011, p. 28). For instance, Lei and Hu (2015) found that doctoral supervisors in China played an instrumental role in helping their supervisees develop publishing plans and guiding them through the publishing process (see also Ho, 2017; Pérez-Llantada et al., 2011).

More specifically, critical comments from these mediators on EAL researchers’ English manuscripts can potentially habituate EAL authors to the discursive and non-discursive practices of English scholarly publishing and have an impact on their development of identities as English academic writers. For instance, studies (Cho, 2004; Flowerdew, 2000; Mungra & Webber, 2010; Mur Dueñas, 2012) found that critical comments on the non-nativeness of EAL authors’ rhetorical and writing styles are frequently included in reviews, which appear to communicate reservations about their legitimacy of participating in scholarly publishing activities. These comments may nevertheless have stemmed from journal editors’ and reviewers’ inclination to help EAL authors with discourse-related problems on the one hand (see Flowerdew, 2000; Gosden, 1992) and co-construct the authors’ identities through the revising and rewriting process

on the other hand (see Englander, 2009). Such co-construction is conducive to EAL scholars' mastery of the skills needed to negotiate the publishing process by responding well to editors' and reviewers' comments. EAL or novice scholars may benefit greatly from the editors' and reviewers' comments (Cheung, 2010; McDowell & Liardét, 2019; Sasaki, 2001), which are not only concerned with the correction of language errors but may constitute a form of knowledge production (Rigby et al., 2018). As Mertkan (2016) points out, such critical comments are organic to the quality control mechanism in the publication process and part of scholars' learning to negotiate the process of making meaning. Belcher (2007), for instance, found that her participant's successful responses to a reviewer's comments "exhibit a confident sense of authority, a willingness to accommodate and compromise with, but also flatly reject, various reviewer recommendations" (p. 13). Taken together, guidance from brokers of various types (e.g., academic and language brokers) helps scaffold EAL authors' academic literacy and supports their scholarly publishing activities at various stages.

Although the previous studies pointed to the usefulness of these mediators, there were also some limitations. For instance, Luo and Hyland (2021) found that their participants' current and/or former supervisors "failed to live up to their supervisees' expectations as manuscript editors and publishing masters" (p. 11) and tended to offer advice on content (i.e., ideas) only (see also Lei & Hu, 2015; Li & Flowerdew, 2007). Studies have also found that the effectiveness of language professionals' mediation may

be very much reduced if they lack relevant disciplinary knowledge (Burrough-Boenisch, 2003; Cho, 2004; Flowerdew, 2000; Li & Flowerdew, 2007; Luo & Hyland, 2021; Mišak et al., 2005; Muresan & Pérez-Llantada, 2014; Willey & Tanimoto, 2015). As the European scholars in Lillis and Curry's (2010) study rightly pointed out, "it is very difficult to find a translator who is sufficiently familiar with their subfield specialism to produce meaningful texts" (p. 95). Although these fee-for-service language professionals (e.g., translators and authors' editors) are increasingly available, their services can be way too expensive for scholars who lack institutional funding (Burgess et al., 2014; Cargill et al., 2012). Although research (Koyalan & Mumford, 2011; Luo & Hyland, 2016, 2017; Van Naerssen & Eastwood, 2001; Willey & Tanimoto, 2012, 2015) has shown that one plausible solution to the problem lies in EAL researchers' collaboration with English language teachers, these English-teachers-as-mediators may still face difficulties in dealing effectively with the specific language/discourse features and specialist knowledge in the authors' fields. For instance, English teachers in Willey and Tanimoto's (2015, p. 63) study related that they were like "drifting into strange territories" when editing abstracts in the health care field.

Despite these limitations of language professionals, previous studies (e.g., Flowerdew & Wang, 2016b; Luo & Hyland, 2016; Luo & Hyland, 2019) suggested that such a conundrum could be solved by close interactions between EAL authors and language professionals to complement each other's strengths. For instance, Luo and

Hyland (2017) highlighted the potentially important role that English language teachers can play in EAL researchers' scholarly publishing processes, although doubt has been cast upon the effectiveness of their editing of EAL authors' manuscripts and a premium has been placed on commercial solutions such as paying for the services of language professionals. Luo and Hyland (2017) argued that:

> the personal relations constructed around the co-construction of a text is likely to be more productive than the commercial relations underpinning for-profit mediation. To dismiss the more readily available and potentially more valuable resource of language teachers as mediators could be a very false step. (pp. 435-436)

The above discussions indicate that EAL researchers' English scholarly publishing is a locally negotiated, heavily mediated process in which power dynamics emerge and come into play. The socio-politically situated nature of EAL researchers' scholarly publishing practices highlights the social relationships constructed and shaped by specific contexts that give rises to power differentials. Furthermore, the discussions also indicate that although EAL researchers' scholarly publishing necessarily involves power differences, they can also enact agency individually and collectively with their literacy brokers.

Other strategies employed by EAL researchers are related to their negotiation efforts in response to multiple demands on their time, effort, and resources when they are engaged in scholarly publishing (Casanave, 1998; Curry & Lillis, 2004). To secure tenure

promotion within a tight timeframe, the young Chinese scholars in Tian et al.'s (2016) study chose to stick to existing disciplinary norms in their publications to increase productivity instead of investing time and efforts to produce original knowledge. Another strategy adopted by young Chinese scholars in Jiang et al.'s (2017) study was to manage their journal submissions by targeting journals at different tiers. For instance, some participants wrote for different journals at the same time, while others adapted the same paper for different journals until it was finally accepted by one. To cope with limited resources, the Chinese medical doctors in Li's (2013) study compensated for their disadvantaged situation through personal connections (i.e., supervisees and students).

To address challenges that arise from publishing in English and L1 at the same time, research has shown that EAL researchers employed various strategies (Casanave, 1998; Leki et al., 2008; Shi, 2002, 2003). To begin with, EAL researchers may resort to academic writing and rhetorical conventions in English to facilitate their L1 writing process for scholarly publication (Shi, 2002, 2003). Useful as it may seem, L1 scholarly writing conforming to English academic writing norms may not be appreciated by the gatekeepers (i.e., editors and reviewers) of L1 journals, and the adoption of norms and values of English scholarly writing could also perpetuate the hegemony of English as *the* academic language (Canagarajah, 2002; Shi et al., 2005). Apart from the adoption of English academic writing norms, previous studies (e.g., Benfield & Feak, 2006; Gentil & Séror, 2014; Payant & Belcher, 2019; Shi, 2003) have found that scholars' access to an

extended network in both English and their L1 communities contributes to their development of bilingual academic literacies. For instance, in their analysis of an emerging researcher's scholarly publishing in her mother tongue (i.e., French), Payant and Belcher (2019) found that the participant's success was attributable to her access to both non-professional language brokers and professional academic brokers due to her geographical and geopolitical locations. This is, however, not always the case for many EAL scholars on the Periphery. Since limited access to and lack of support from literacy brokers can persist throughout EAL researchers' career in a non-dominant language community, reading publications can be a useful strategy to support EAL researchers' acquisition of advanced academic literacy (Lillis & Curry, 2016; Payant & Belcher, 2019; Swales & Feak, 2004).

The above review of various strategies adopted by EAL researchers reveals that researchers' agency plays a central role in their scholarly writing process. According to Ahearn (2001), *agency* refers to an individual's "socioculturally mediated capacity to act" (p. 112) to initiate developmental changes and enable learning opportunities. Within socio-cultural theory, the *agent*'s individuality "rests on, and is derived from, social relationships, culturally organised activities, and use of artefacts" (Lantolf, 2013, p. 19). With regard to academic writing and scholarly publishing practices, agency is actively exerted by individuals to "control over their own acts related to writing and writing development" (Shapiro et al., 2016, p. 33). It can be seen from the above review that

researchers' deployment of certain strategies is a socially mediated action which has the potential to afford and/or hinder their development as scholar writers. Thus, different levels of agency, as indicated by EAL writers' employment of various strategies, may reflect and affect the extent to which they make efforts to create learning opportunities for scholarly writing, and agency may also influence how they create a sense of community by adopting different strategies to negotiate with social others, especially those in power (e.g., disciplinary experts and journal gatekeepers), in their target discourse community (Ho, 2017; Li, 2007). Therefore, EAL researchers' writing-related agency is influenced and mediated by "the multiple relationships, resources, practices and experiences available to them" (Botelho de Magalhães et al., 2019, p. 7). By investigating the various strategies adopted by the participants, this study could further reveal how their varying levels of agency and sociocultural contexts, or activity settings, may impact their scholarly practices and writer development.

The above review of previous studies shows that although increased attention has been paid to EAL researchers' scholarly publishing practices, little is known about how and why Chinese medical doctors cope with the difficulties/challenges facing them in their scholarly publishing activities in their professional context. Specifically, we still know relatively little about what specific strategies they adopt, why they employ these strategies, and to what extent and how these strategies shape their scholarly publishing practices. Furthermore, little is known about what factors shape their use of certain

strategies.

These gaps might have resulted from the theoretical frameworks and concepts that previous studies drew on to focus on specific aspects of EAL researchers' scholarly publishing practices. Previous research on ERPP have mainly drawn on social constructivist theory, the concept of network, and a sociopolitical practice view. First, social constructivist theory, with its emphasis on legitimate peripheral participation (Lave & Wenger, 1991) and discourse community (Swales, 1990), assumes that learning is socially situated and constructed through interactions. Previous studies (e.g., Basturkmen et al., 2014; Belcher, 1994; Flowerdew, 2000; Flowerdew & Li, 2007a; Lei & Hu, 2015; Li, 2007; Zhang & Hyland, 2021) adopted this theoretical perspective to explore the challenges faced by EAL researchers, especially novice ones, and the interactions between novices and experts. However, this line of inquiry focused mainly on the interactions within the same community, that is, the vertical dimension of learning (i.e., the movement or the development of novice to master), and failed to capture the horizontal dimension of learning (i.e., the movement from one community of practice to another) that could operate across community boundaries (Akkerman & Bakker, 2011; Edwards, 2005; Wenger, 1999). Second, conceptualising scholarly publishing as a networked activity and competence instead of a component of individual competence, the concept of networks (Curry & Lillis, 2010; Lillis & Curry, 2006b, 2010) offers explanatory potential for scholarly publishing practices. Although this concept

emphasises the role of key actors in constructing and maintaining networks to facilitate scholarly publishing activities, it does not acknowledge the importance of others whose roles may be no less crucial, even though they are not involved in the network (e.g., language editors). Additionally, previous research (e.g., Flowerdew & Li, 2007a; Li & Casanave, 2012) also found that EAL researchers resorted to cultural artefacts, such as published journal articles, for textual mentorship, which, however, is not granted attention in the networks perspective. Third, the sociopolitical view of scholarly publishing, which draws on Kachru's (1986) concentric circles and Galtung's (1971; 1980) World-systems theory, focuses on broad geolinguistic and geopolitical issues that bear on equality, equity, power, status, and access in EAL researchers' scholarly publishing. Specifically, these issues are related to their motives for scholarly publishing and challenges/difficulties faced by them. However, such a sociopolitical view pays little attention to within-context variations and the specific local contextual factors which may impinge on scholarly publishing activities (Lei, 2019).

Given the limitations discussed above, the aforementioned theoretical constructs, which have been employed in previous research to explore EAL researchers' scholarly publishing practices, do not fit the purpose of the present study well. Therefore, there is a need for a theoretical framework that can contribute to both a holistic and situated understanding of EAL researchers' scholarly publishing experiences and practices, as well as offer the potential to provide new insights into ERPP research. As will be

explicated in Chapter 3, CHAT is well equipped to fit the purpose of the present study.

2.5 Chapter Summary

To sum up, although the extant literature has investigated EAL researchers' scholarly publishing experiences and practices, there are still several gaps in the literature that warrant future research. First, there is only a small body of research that specifically focuses on Chinese medical doctors' scholarly publishing experiences and practices (Li, 2013, 2014a, 2014b; Luo & Hyland, 2019). As reviewed above, previous studies on EAL researchers' scholarly publishing have mainly focused on the broad geolinguistic and geopolitical issues but little direct attention has been paid to within-context dynamics and variations of the scholarly publishing activity *per se*. This paucity of research on Chinese medical doctors' scholarly publishing might be partly due to the tendency for extant scholarship on EAL researchers' scholarly publishing practices to focus on Chinese scientists as a group in the broad geolinguistic and geopolitical context of China, with relatively little attention paid to specific subgroups of Chinese scholars in their local, social, cultural, and institutional contexts. In recent years, Chinese medical doctors have gained increasing visibility in international academia but their academic publications are not well received by the international community judging from indicators of the quality/impact of their publications (e.g., ESI) (Else & Van Noorden, 2021; Zhang et al., 2020). This situation raises questions about potential causes of such a dilemma, which warrants more research attention. As the above review suggests, scholarly publishing is

a high-stakes activity for EAL researchers, Chinese medical doctors included. However, some Chinese doctors were reported to have disputes over the legitimacy of scholarly publishing in their professional context, which has not been empirically investigated. In summary, Chinese medical doctors' perceptions concerning their scholarly publishing experiences, such as the legitimacy of scholarly publishing in their professional context and the quality of their scholarly publications, remain largely unexamined, accentuating the need for more research to develop a contextualised understanding of their experiences and practices.

Second, although previous research has examined the relationships between EAL researchers' motives for scholarly publishing and their language choice for academic publication, less attention has been paid to the relationships between Chinese medical doctors' motives for and their practices of scholarly publishing. Specifically, much remains unknown about how their coexisting motives are brought into play in their scholarly publishing practices. Moreover, we know little about how their various motives shape their scholarly publishing practices and are shaped by disciplinary, professional, institutional, and individual factors. These factors may cause tensions between their motives and their scholarly publishing practices, which can pose challenges to their scholarly publishing and mediate the strategies that they develop to deal with such challenges.

Third, because research on Chinese medical doctors' scholarly publishing in their

specific context is scarce, much remains unknown about specific challenges or difficulties that they may face in their scholarly publishing and how they may address the challenges. More specifically, little is known about how they negotiate their scholarly publishing endeavours against the competing demands of various activities in their professional context.

Fourth, as noted above, extant scholarship frames EAL researchers' scholarly publishing as a socio-politically situated, heavily mediated practice and focuses largely on EAL researchers' individual engagement in their scholarly publishing practice. What seems missing in this line of research, however, is why EAL researchers, or Chinese medical doctors in this case, take certain actions or adopt particular strategies and how interpersonal power dynamics, or mutual engagement, play out in their scholarly publishing practices. Based on the review of relevant literature, addressing these research gaps would require an investigation of the complexity of the contextual, interpersonal, and textual dynamics of Chinese medical doctors' scholarly publishing practices. Therefore, the theoretical framework of CHAT (Engeström, 2015), which focuses on both individual actions and collective activities as well as the dynamics between individual subjects and their community, is considered appropriate for guiding the present study. In the next chapter, I will introduce this theoretical framework and further discuss why it is well suited for the research purpose of the present study.

Chapter 3 Theoretical Framework

The previous chapter reviewed the relevant literature within which the present study is situated. In this chapter, I provide a detailed introduction to Cultural-Historical Activity Theory (CHAT) as the theoretical framework for this study, including the key theoretical constructs of CHAT such as boundary crossing and contradictions, and then explicate how CHAT is well equipped to address the research questions that this study aims to answer.

3.1 Cultural-Historical Activity Theory

Cultural-Historical Activity Theory (CHAT) is rooted in Karl Marx's historical dialectical materialism that explicates the theoretical and methodological core of the concept of activity and presents the point of departure for activity theory (Engeström & Miettinen, 1999). In Marx's works, the concept of activity transcends the dichotomy between mechanical materialism and idealism, and opens up a new way to understand change in any human practice. Other philosophical works by German philosophers Hegel and Kant, Russian cultural psychologists Vygotsky, Lurija, and Leont'ye, and American educational reformer Dewey have also influenced the development of CHAT (Engeström, 2001; Engeström & Miettinen, 1999; van Oers et al., 2008). These philosophical thoughts have shaped the conceptualisation of "the social mind" in CHAT, that is, the human mind as a contextualised phenomenon (Rogoff, 2003; Valsiner et al., 2000; van Oers et al., 2008; Wertsch, 1985). This social conception of mind transcends the dualism of the human mind

and the material world, and emphasises the cultural nature of human development. More specifically, culture influences the content and course of development and learning, and human development depends on and varies with cultural-historical settings (Bronfenbrenner, 1979; Engeström et al., 1999; Rogoff, 1990, 2003; Roth & Lee, 2007; van Oers et al., 2008). Such dialectics between an individual subject and objective societal circumstances opens up a space for a set of sociocultural theories of development and learning that are oriented to the cultural-historical tradition and differ fundamentally from those theories of learning grounded in behaviourism and cognitivism that overlook the social, cultural, and historical processes of learning (De Corte, 2010).

Among the sociocultural theories of learning and development, CHAT, grounded in Vygotsky's conceptualisation of mediation, emphasises the social and contextualised nature of human cognition and action (Barab et al., 2014; Cole, 2007; Cole & Engeström, 1993; Engeström et al., 1999; Roth & Lee, 2007; Valsiner & Van der Veer, 1988). As will be explicated in this chapter, the unit of analysis in CHAT - activity system or network of activity systems - is well equipped to examine the local, social, cultural, and institutional contexts of Chinese medical doctors' scholarly publishing practices. Moreover, the analytical constructs in CHAT, such as polycontextuality and contradiction, offer insights into the dynamics between Chinese medical doctors' scholarly publishing activity system and other activity systems. CHAT has evolved through four generations of research (see Cole & Engeström, 1993; Engeström, 2001, 2015, 2016; Engeström et al., 1995;

Engeström et al., 1999; Engeström et al., 2020; Engeström & Sannino, 2020; Roth & Lee, 2007). In what follows, I will outline each generation of CHAT in turn.

3.1.1 First-Generation CHAT

Initiated by Lev Vygotsky (1978b) in the 1920s and early 1930s, the first-generation CHAT centred around the idea of mediation introduced by Vygotsky (1978b) in his triangular model. In this model, the unmediated relationship between a stimulus and a response in behaviourism was replaced with an indirect or mediated act. Vygotsky's (1978b) conception of mediation of actions is typically represented as the triad of subject, object, and mediating artefact (a tool or sign). In his view, a distinctive feature of human consciousness is its association with the use of tools, especially "psychological tools" or "signs" (Vygotsky, 1978b). As Vygotsky (1981) notes, "[b]y being included in the process of behaviour, the psychological tool [i.e., sign] alters the entire flow and structure of mental functions" (p. 137). As Wertsch (2007) explicates, humans' mental functioning is "sociohistorically situated" (p. 178) as they internalise various forms of mediation offered at various levels of cultural, historical, and institutional forces. This process is the inclusion of tool and signs, or cultural artefacts, into human cognition, and action transcends the Cartesian dualism of mind and matter or subject and object. As Engeström (2001) further explicates, objects thus transform into "cultural entities" and the object-orientedness of action is fundamental to understanding human mind and cognition. What underlies Vygotsky's reasoning about the relationship between sign and behaviour is that

such a relationship undergoes fundamental change, and he emphasises the importance of using a developmental method to understand human mental functioning (Roth, 2007; Wertsch, 2007). Moreover, from a Vygotskian perspective, the process of mastering a semiotic tool is grounded in the cultural formation of higher mental functions, though it is open to individuals' diverse developmental trajectories (Vygotsky, 1978b).

According to Vygotsky's (1991) general genetic law of cultural development, the development of higher mental functioning is first on the "interpsychological" and then on the "intrapsychological" plane (Vygotsky, 1978b, p. 57); that is, the development of individual thinking starts in a social environment and through the internalisation of new cultural tools available in social interactions. In Vygotsky's (1978b) own words, "[a]ll the higher functions originate as actual relations between human individuals" (p. 57). Related to Vygotsky's (1978a) genetic-cultural theory of higher functions is the concept of the zone of proximal development (ZPD):

> [ZPD] is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. (p. 86)

When encountering a new cultural tool, individuals' higher mental functions develop through social interaction and negotiation between experts and novices or among novices, and through the social processes, the cultural tool becomes available for use by

individuals (Wertsch, 2007). The individual is exposed to an area/space of the ZPD in a cultural system that affords scaffolding by granting individuals access to functions new to them and placed within their reach by culture and society (Elkonin, 1994; Wertsch, 1985, 2007). Vygotsky's ZPD thus "acquire[s] cultural, social, and political implications, apart from educational ones" (Del Rìo & Alvarez, 2007, p. 280). Simply put, from Vygotsky's perspective, individuals cannot develop without mediation. The ZPD as a zone of human development provides a conceptual tool which can shed light on the process of cognitive development (Vygotsky, 1978b). It can establish the link "between the situated-embodied mind and the cognitive mind, the individual mind and the social mind, the development already attained and the development to be attained" (Del Rìo & Alvarez, 2007, p. 301).

Taken together, Vygotsky's ideas are deeply rooted in Marxist dialectical materialism, and the underlying tenets of CHAT can only be understood from the dialectical nature of consciousness (Davydov & Radzikhovskii, 1985; Elhammoumi, 2002; Roth & Lee, 2007). As Glassman (2000) notes, dialectics is "possibly the most appropriate frame of reference for the study of human development, and indeed was actually developed as an explanation for human development" (p. 2). Such a dialectical orientation to explain human development is manifested in two aspects of dialectical categories, or mutual presuppositions: First, the mutual presupposition of the functions of the individual components and the functions of these components as a whole; second, the mutual

presupposition of opposites, or dialectical categories, that is, the coexistence of mutually exclusive elements (see Roth & Lee, 2007; Roth et al., 2016). Such an approach leads to dialectical categories that encompass built-in contradictions (see Section 3.2) (Roth & Lee, 2007). The concept of contradictions is a powerful construct and is crucial to understanding CHAT and human development (see Section 3.3).

In the first-generation CHAT, although Vygotsky stressed the external origin, or the social nature, of human activity, the unit of analysis is individually focused (see Engeström, 2001, 2015; Engeström & Miettinen, 1999; Engeström & Sannino, 2020). Such a focus "does not account for the historical continuity and longevity of human life" (Sannino et al., 2009, p. 3). In particular, Wertsch (1993) points out that Vygotsky "did little to spell out how specific historical, cultural, and institutional settings are tied to various forms of mediated action" (p. 46). As Del Rìo and Alvarez (2007, p. 282) note, Vygotsky's simplified conceptions of external and internal planes of human development and his idealistic modelling of the developmental genetic cultural approach overlook the fact that certain higher functions in all subjects "[remain] for the entire life more or less partially external and distributed" (Del Rìo, 2002, p. 253). Additionally, higher functions are new forms of mental activity mediated by activity systems and cultural settings, and evolve and change cumulatively within the history of both the individual and the collective (Del Rìo & Alvarez, 2007). Thus, the analytical units should be more

cognitively distributed than those traditionally conceived in the Vygotskian tradition (Cobb, 1998; Del Rìo & Alvarez, 2007; Kozulin, 1986).

3.1.2 Second-Generation CHAT

In the second-generation CHAT, A.N. Leont've (1981), a colleague of Vygotsky, theoretically addressed the insufficiency of an individual tool-mediated action as a unit of analysis in the Vygotskian tradition, and made "historically evolving object-practical activity the fundamental unit of analysis" (Roth & Lee, 2007, p. 189). In his illustration of a beater's participation in "a primaeval collective hunt" (Leont've, 1981, p. 210), Leont've distinguished an individual action and a collective activity by situating individuals' relations with the other members of their group and the outcome as part of the product of the collective labour (Engeström, 2001, 2015, 2016; Engeström & Sannino, 2020; Roth, 2014; Roth & Lee, 2007). Leont've (1981) pointed out that the connection between the motive and the object of an action is more grounded in social connections and relationships.

Such a distinction is achieved through Leont've's reconstruction of the division of labour and has become the basis of his three-level model of activity (Engeström & Miettinen, 1999). With division of labour, the levels in human functioning represented by individual and collective actions are embedded in a collective activity system (Engeström, 2001). This distinction is illustrated in Leont've's three-level model of activity, a theoretical expansion of Vygotsky's original model:

> The uppermost level of collective activity is driven by an object-related motive; the middle level of individual (or group) action is driven by a goal; and the bottom level of automatic operations is driven by the conditions and tools of action at hand. (Engeström & Miettinen, 1999, p. 4)

As Engeström (2001) notes, the concept of activity made the focus shift to the complex and dynamic interrelations between the individual subject and the community. Thus, the second-generation CHAT developed by A. N. Leont'ye, together with Aleksandr Luria, from the work of Vygotsky integrates the social, cultural, and historical dimensions into the understanding of human cognitive/mental workings, and its principle, which governs the origin, structure, and contents of human mind, has explanatory power (Roth & Lee, 2007).

Leont'ye (1981) distinguished between activities and actions, emphasising that "[h]uman activity does not exist except in the form of action or a chain of actions" (Leont'ye, 1978, p. 64). Notably, according to Leont'ye (1981), activity is "not an additive process", and actions are "not the special 'parts'" that constitute activity (pp. 60-61). Specifically, activities are realized through goal-directed actions, and actions would be "senseless and unjustified" (Leont'ye, 1981, p. 213) without reference to the overall collective activity (Engeström, 2015). For instance, reading relevant literature, conducting experiments, and collecting data are goal-direction actions that realize the scholarly publishing activity. Moreover, according to Leont'ye (1978), operations refer

to the methods by which actions are carried out and accomplished in variable concrete circumstances, and the conditions directly determine the attainment of concrete goals (Engeström, 2015; Leont'ye, 1978) Correspondingly, Leont'ye (1978) established a model for the analysis of human activity, and the three-level scheme of *activity*, *action*, and *operation* corresponds, respectively, to that of *motive*, *goal* and *instrumental conditions*. As Kozulin (1998) explains, activities match their motives, actions are guided by specific goals, and operations are under the influence of conditions. Furthermore, according to Leont'ye (1981), it is the object that distinguishes one activity from another and gives an activity a specific direction; and the real motive of an activity is its object. The concept of action is inextricably linked to the concept of motive, and the actions that realize activity are energised by its motive, but are directed toward a goal (Leont'ye, 1981). Additionally, the same action may function in various activities and thus has the potential to accomplish multiple activities; one motive can manifest itself in a variety of goals and actions (Engeström, 2015).

Another important point made by Leont'ye is that "in human society the relationship between the individual and the object is not immediate but is mediated by collective experience and division of labour" (Kozulin, 1998, p. 28). In other words, individuals take part in activities in an indirect way under the conditions of division of labour without being completely conscious of the primary object and motive of an activity. For instance, the doctors in the study also reported that they took actions (e.g., conducting experiments)

to participate in their colleagues' research, but did not engage in other actions in their colleagues' scholarly publishing activity and did not notice their colleagues main motive/s. Moreover, instead of the individual consciously and actively manipulating the activity, the activity seems to have the individual under control (Engeström, 2015). In this sense, there is a process of development from activity to actions as a result of division of labour. For instance, given the highly collaborative nature of scholarly publishing, different members of community involved only took certain actions, rather than a chain of actions, according to division of labour.

For Leont'ye, there is also the opposite direction of such development, that is, an activity can emerge from a series of actions (Engeström, 2015). On the one hand, individuals do not develop activity-orienting objects on their own but, because these are specific to society, these are an integral part of what is appropriated in societal relations with others (Engeström, 2015; Engeström & Sannino, 2020; Roth, 2014). On the other hand, agency in the second-generation CHAT, as Engeström and Sannino (2020) argue, is "mainly an implicit notion" (p. 8). Such individual agency emerges from the isolated individual subjects' active engagement with their specific actions and wider activity as well as their conscious orientation as the collective subject toward the transformation of the activity purposefully driven by a generalized, collective (societal) need (Engeström & Sannino, 2020; Roth, 2014). The category of activity is thus "a dialectical unit that

mediates individual and society, which come to stand in an irreducible, part-whole relation" (Roth, 2014, pp. 9-10).

Leont've also placed emphasis on instrument-mediated activity, a systemic formation in constant internal movement, which reveals the psychological core of activity and emphasises a vertical dimension of development toward higher psychological/mental functions (Engeström, 2001). Despite his contribution to the development of activity theory, Leont've's work, as Kozulin (1998) points out, largely draws on the psychological paradigm for the analysis of actions and operations, and does not expound on the sociocultural influence of labour on cognition, thereby failing to capture social dimension of *activity* and learning through mediation. What seems neglected in Leont've's model is the stratum of culture within the Vygotskian approach that could link individual action and the societal environment that ascribes meaning to it (Kozulin, 1998). This means that the emphasis placed on the level of actions could contribute to goal attainment and problem solving but renders it rather difficult to analyse the influences of sociocultural and motivational factors on goal formation and problem finding (Engeström, 2005; Tikhomirov, 1988).

Although Leont've's work on activity theory has also been criticised for rejecting semiotic mediation (e.g., Kozulin, 1986; Kozulin, 1998) and neglecting communicative actions (e.g., Otte, 1980), Engeström (1999) argues that sign mediation and subject-subject relations do play an important role in Leont've's activity theory. Specifically,

according to Engeström (1999), Leont'ev emphasised the social interactions when it comes to the emergence of language. Notably, the concept of activity has thus been increasingly employed as a way to conceptualise the mediation between the social cultural and linguistic fields (Engeström, 1999). Additionally, the key principle of historicity rooted in the theorising of Vygotsky (1978b) and Leont'ev (1981) has mostly been neglected in empirical studies drawing on activity theory (Luria, 1976). This leads to the reduction of the complexity and multiplicity of sociocultural manifestations of life to a one-dimensional scale (Cole, 1988; Engeström, 1999). As pointed out by Engeström (1999), the differences in cognition across domains are grounded in the historical development that causes those differences. According to Engeström (1999), the neglect of mediation and historicity may be largely due to the underdevelopment of models of the structure of a collective activity system. Drawing on Vygotsky's model of mediated action and Leont'ev's triangular model of action as discussed earlier, Engeström (1999, 2015) expanded the classical triadic model (see Figure 3.1). Engeström (2001) depicted his model as follows:

> The uppermost sub-triangle … may be seen as the 'tip of the iceberg' representing individual and group actions embedded in a collective activity system. The object is depicted with the help of an oval indicating that object-oriented actions are always, explicitly or implicitly, characterised by ambiguity, surprise, interpretation, sense making, and potential for change. (p. 134)

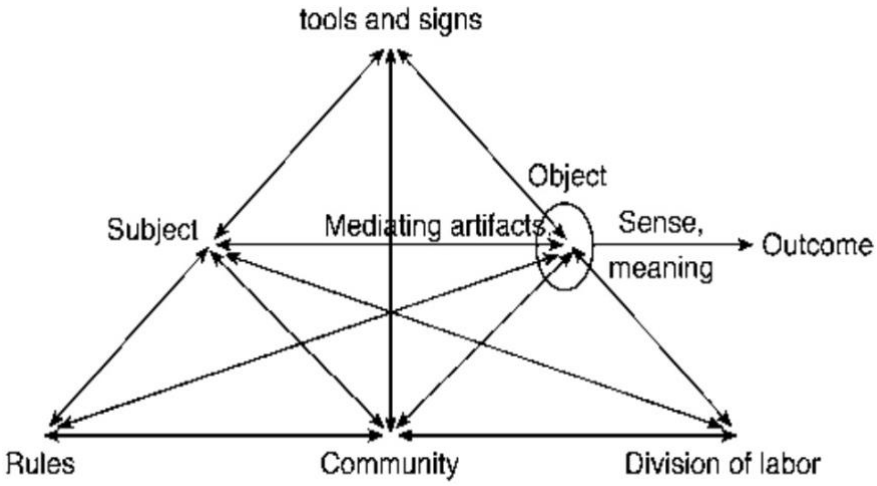

Figure 3. 1 The Structure of a Human Activity System (Engeström, 1987, p. 78)

This model, representing the concrete realization of an activity system, includes all the essential components that I will introduce in Section 3.2, that is, subject, object, outcome, mediating artefacts (i.e., tools or signs), division of labour, community, and rules. It highlights the mediated nature within and between the components. As Roth and Lee (2007) note, this triangular representation is better to be considered as a useful heuristic, and more importantly, the term *activity* associated with the triangle heuristic refers to "an evolving, complex structure of mediated and collective human agency" (p. 198).

Another crucial aspect of the second-generation CHAT is an analysis of the historically formed contradictions in the activity, and correspondingly, the unit of analysis is expanded to encompass the entire collective activity system (Engeström, 2001; Engeström & Sannino, 2020). As Cole (1996) explicates activity systems are considered as contexts, and the subsystem exists as such only when it is associated with the other

elements of the system. It is therefore important to note that an activity system transcends the additive process of its components, and that the context of an activity is dynamic constructed (Engeström & Sannino, 2020). As emphasised by Engeström (2001), activity systems can only become understandable when situated in the background of entire activity systems. Moreover, inner contradictions in the second-generation CHAT are conceptualised as the sources of dynamics and development in human activity (Engeström, 2015; Engeström, 2020; Il'yenkov, 1977), which I will explicate in Section 3.3.

3.1.3 Third-Generation CHAT

Informed by the theoretical concept of polycontextuality, Engeström et al. (1995) note that polycontextuality at the level of activity systems means that individuals are not only engaged in various tasks at the same time within one activity, but are also involved in multiple activity systems. Drawing on the second-generation CHAT, the third-generation CHAT thus expands the unit of analysis from a single activity system to multiple, minimally two, interacting activity systems to "understand dialogue, multiple perspectives, and networks of interacting activity systems" (Engeström, 2001, p. 135; see also Engeström et al., 1999; Engeström & Sannino, 2020) (see Figure 3.2). In addition to the vertical dimension of expert cognition and learning, Engeström et al. (1995) have proposed a broader, multi-dimensional view that includes a horizontal dimension of learning, which means that individuals "operate in and move between multiple parallel

activity contexts" (p. 319). According to Engeström et al. (1995), as these various contexts are constituted by "different, complementary but also conflicting cognitive tools, rules, and patterns of social interaction" (p. 319), individuals may face the challenge of negotiating and amalgamating elements from different context to achieve hybrid solutions. Since such solutions require that various, or at least two, contexts be iteratively connected, individuals become "boundary crossers" (Engeström et al., 1995).

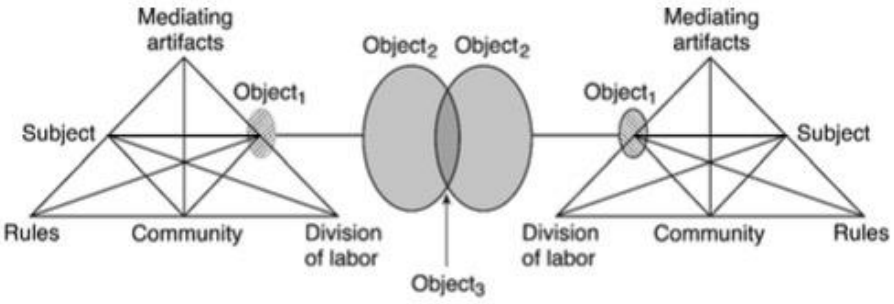

Figure 3. 2 Two Interacting Activity Systems (Engeström, 2001, p. 136)

The concepts of boundary crossing and boundary objects have been employed as theoretical lenses and analytical tools within activity theory (Akkerman & Bakker, 2011; Engeström, 2001). Akkerman and Bakker (2011) explicate that:

> The boundary in the middle of two activity systems thus represents the cultural difference and the potential difficulty of action and interaction across these systems but also represents the potential value of establishing communication and collaboration. (p. 139)

Moreover, individual boundary crossers "not only act as bridge between worlds but also simultaneously represent the very division of related worlds" (Akkerman & Bakker,

2011, p. 140). For example, medical doctors are situated between their clinical practice and research/scholarly publishing practices, which may constitute a space of "the ambiguity of boundaries" (Akkerman & Bakker, 2011). The doctors may feel a conflict in their role as clinician-researchers in their scholarly publishing practices, and thus run the risk of being seen as being at the periphery and not being accepted at institutional, departmental or disciplinary level. Such conflicts that arise from individuals' ambiguous position at the boundary reveal the need for individuals' "boundary-crossing competence", which refers to the "ability to manage and integrate multiple, divergent discourses and practices across social boundaries" (Walker & Nocon, 2007, p. 181; see also Akkerman & Bakker, 2011; Fortuin & Bush, 2010). Furthermore, Engeström et al. (1995) note that boundary crossing can be conceptualised as a broad category of cognitive processes that require significant cognitive retooling to overcome obstacles preventing boundary crossing, such as various forms of cognitive inertia and compartmentalization. These arguments accentuate a need for horizontal expertise, which requires individuals to cross boundaries to seek assistance and find tools wherever available (Akkerman & Bakker, 2011; Engeström et al., 1995). As activity networks require dialogical, collaborative problem-solving approaches, such expertise is characterised as boundary crossing between activity systems (Engeström et al., 1995). This involves the developmental transfer of information, knowledge and practices from one activity system to another (Konkola et al., 2007). Engeström et al. (1995) employed the term "boundary object"

(Star, 1989) as a way of identifying mediating artefacts that may facilitate boundary crossing. Thus, types of boundary object are not confined to the shared material representation of a problem or domain but also refer to the shared cognitive artefacts (Engeström et al., 1995, p. 322). From such a mediational viewpoint, the concept of boundary object refers to "artifacts that articulate meaning and address multiple perspectives" and indicates the way that such artefacts connect interacting practices (Akkerman & Bakker, 2011, p. 140; see also Star & Griesemer, 1989). For instance, the potential success of doctors' scholarly publishing depends in part on a series of boundary objects such as medical records as research data (Li, 2014a). Taken together, not only individuals but also objects can be an influential factor in crossing boundaries (Akkerman & Bakker, 2011).

As regards activity networks in the third-generation CHAT (see Figure 3.2), object 1 moves from "an initial state of unreflected, situationally given 'raw material'" to "a collectively meaningful object [i.e., object 2] constructed by the activity system", and then "to a potentially shared or jointly constructed object [i.e., object 3]" (Engeström, 2001, p. 136). Specifically, object 3 refers to "something that emerge over time from the interaction between different communities" (Tuomi-Gröhn et al., 2003, p. 5). For instance, a jointly constructed object (e.g., object 3 in Figure 3.2) can emerge from the interaction of medical doctors' activity systems as a minimal constellation and unit of analysis. Specifically, the object of the clinical activity system would be "to treat patients with

various problems successfully"; the object of the research activity system would be "to explore new ways to treat patients with various problems successfully" (e.g., Li, 2014a); and the object of the scholarly publishing activity system would be "to make contribution to the collective disciplinary community". Notably, for each doctor, while the relationships of the multiple activity systems (e.g., the three activity systems mentioned above) can be different, the general structural characteristics and network positions of each activity system remain sufficiently stable, which would allow for analysis (Engeström & Sannino, 2020). Additionally, the activity system of scholarly writing in English and the activity system of scholarly writing in other languages share a jointly constructed object of "gaining recognition in the research field" (e.g., Duszak & Lewkowicz, 2008; Payant & Belcher, 2019; Zheng & Guo, 2019), which, according to Engeström's (2001) conceptualisation of boundary object, refers to shared motives of two or more activity systems. As discussed above, boundary object is conceptualised as "artifacts [i.e., tools, or signs] in the upper triangle that mediate two or more systems" (Akkerman & Bakker, 2011, p. 147). Therefore, boundary objects as mediating artefacts can be seen a means of translation between the different activity systems (see Akkerman & Bakker, 2011). For instance, research results as objects in medical doctors' research activity system can be translated into research data as tools in their scholarly publishing activity system. Thus, the concept of boundary object in CHAT has two meanings: mediating artefacts and shared motives of two or more interacting activity systems.

The process of boundary crossing that demonstrates a learning mechanism of coordination across boundaries resides in individual actors' overcoming the boundary and involves constructing new social relations (Engeström & Sannino, 2020). According to Engeström and Sannino (2020), the notion of agency is still implicit in the articulation of the third-generation CHAT, but can be "seen to emerge through the recognition of differences and complementarities of expertise and positions" (p. 13). For instance, while artefacts play an essential role in facilitating boundary crossing, whether their potential can be realised depends on how they are utilised (Engeström et al., 1995).

In conclusion, the components of third-generation CHAT, together with the concepts of boundary object and boundary crossing offer powerful conceptual and analytical tools for examining and understanding the local, social, cultural, and institutional contexts of medical doctors' scholarly publishing activity system and its interactions with other relevant activity systems. In the next two sections, I explicate in detail CHAT's constitutive components as well as the dynamism within and between activity systems, respectively.

3.2 Constitutive Components of CHAT

The prime unit of analysis in CHAT has evolved into "a collective, artifact-mediated and object-oriented activity system, seen in its network relations to other activity systems" (Engeström, 2001, p. 136). According to Engeström's (2015) theorising on the structure of human activity, an activity system can be represented and studied in terms of seven

interrelated analytical elements (i.e., subject, object, outcome, mediating artefacts, community, division of labour, and rules) and the fundamental forms of mediation between them (see also Cole & Engeström, 1993; Engestrom, 2000; Engeström, 1999; Engeström, 2001; Engeström & Miettinen, 1999). In what follows I explicate and illustrate the components of an activity system and networks of interacting activity systems with reference to medical doctors' scholarly publishing activity system.

The *subject* refers to the individual or subgroup whose stance and view are selected as the perspective of the analysis. Notably, conceptualised as the unit of analysis, activity system is characterised by the complementarity of the system view and the subject's view (Engeström & Miettinen, 1999). How the subjects of the local activity view and interpret the activity constitutes the multi-voicedness of activity systems (Engeström, 2001). Subjects may assume different positions in the division of labour of an activity and embed their own diverse histories within the activity; consequently, the activity system itself "carries multiple layers and strands of history engraved in its artefacts, rules, and conventions" (Engeström, 2001, p. 136). For instance, the institutions (e.g., the university and the hospital) and doctors may hold different perspectives on the scholarly publishing activity system, which can be attributed to their varying motives in the activity system that are related to their different structural roles in the division of labour, although their shared object is to produce new academic knowledge. At the same time, the activity system can be constructed quite differently when viewed from the viewpoint of different

subjects as well as the analyst of this activity system, even though an overall object that characterises this activity system is shared by all subjects (Boer, 2005). Such multi-voicedness of activity systems is multiplied when the unit of analysis becomes networks of interacting activity systems and can be a "source of trouble and a source of innovation, demanding actions of translation and negotiation" (Engeström, 2001, p. 136). Such a dialectical view entails that the study of an activity system needs to bring together "the systemic and subjective-partisan views" within the local activity and across interacting activities (Engeström & Miettinen, 1999, p. 10). In the present study, the subject can be each individual doctor, all the doctors, or several doctors holding the same perspective (see Section 4.6.2).

Although "object-orientedness" is considered as a key attribute of human activity and, consequently, one of the most basic concepts of activity theory, different interpretations of the concept (see Engeström, 2015; Leont've, 1978) constitute contested spaces that can be "potential sources of uncertainties and inconsistencies" (Kaptelinin, 2005, p. 4; Kaptelinin & Miettinen, 2005). As pointed out by Kaptelinin (2005), the "object" of an activity is twofold, as it is translated from two Russian words, *objekt* and *predmet*. Leont've (1978) made a conceptual distinction: "*Objekt*, denoting the objective, material reality in general…. The term *predmet* was used … to denote objective orientation of activity" (Kaptelinin, 2005, p. 7). Accordingly, the *object,* as understood by Engeström (1999, 2015), refers to the "raw material" or "problem space", at which the activity is

directed and which is transformed by the activity into an *outcom*e with the assistance of mediating artefacts (i.e., tools and signs). For Engeström (2015), objects are "durable concerns and carriers of motives" (p. xvi). Despite the different orientations toward the object of activity, the two versions do not compete with each other but are complementary (Kaptelinin, 2005).

As discussed earlier, Leont'ye (1978) proposed that the object of activity is its true motive, and this view is also shared by Engeström (2015) in his theorising of activity theory. However, as argued by Kaptelinin (2005), it is necessary to distinguish the two concepts, the notion of motive and the notion of the object of activity, in line with the two-fold meanings inherent in the concept. According to Leont'ye (1978), the motive emerges as a result of a need meeting its object; there can be multiple motives at the same time, which generally fall in two types: sense-forming motives, which give the activity its personal meaning, and motive-stimuli. For instance, for doctors in the present study, their aspiration to make academic contributions through scholarly publishing can be a sense-making motive, and wining monetary rewards can be a motive-stimulus. Although participation in a collective activity (for collective motives) may be congruent with some of the personal motives, the self-motivating power of participating in specialised activities like scholarly publishing becomes the sense-forming motive in itself (Burkitt, 2021; Hyysalo, 2005; Roth, 2014). As explicated by Roth (2014), the key issue in CHAT is that the object points to a psychological motive, which "gives personal, valuative sense

to the objective conditions and actions of the subject" (p. 11). Moreover, in case of a conflict between several motives, Leont'ye (1978) proposed the notion of "hierarchy of motives" (p. 123), which determines the ranking of an individual's motives and indicates which motive should prevail (see Kaptelinin, 2005). What underlies Leont'ye's (1978) general conflict resolution mechanism is the idea that "[t]he motive with the highest rank in the hierarchy takes over, and the activity oriented towards that motive/object is carried out" (Kaptelinin, 2005, p. 15). However, as argued by Kaptelinin (2005), activities can accommodate more than one motive and be shaped by the whole configuration of multiple motives. Therefore, the object can be different from any of those motives and is collectively defined by the complete set of motives that the subject aspires to achieve in the activity (Kaptelinin, 2005). Given all these considerations, Kaptelinin (2005) concludes that there can be developmental changes of the object of activity over a long time span, although the basic motives of the activity remain stable and unchanged:

> [O]bjects of activities are dynamically constructed on the basis of various types of constraints. These constraints include the needs that the activity at hand is striving to satisfy, available means, other potentially related activities, and other actors involved, each with their own motives and objects. When some of these components change, for instance, the importance of a certain need is increasing, or new means become available, the whole configuration of constraints may require a redefinition of the object of activity to meet the new constraints. (p. 17)

As revealed in Chapter 5, the university's and the hospital's product-oriented motive for scholarly publishing could be considered as constraints on the doctors' scholarly publishing activity. For instance, such constraints included but were not limited to publication requirements. Thus, the doctors' scholarly publishing activity had to satisfy the institutional needs in their scholarly publishing activity system for professional promotion. Consequently, as discussed in Chapter 6, the objects of doctor's research and scholarly publishing activity systems were reconstructed and redefined when the doctors found it difficult, or unrealistic, to publish meaningful/useful research given multiple demands and time pressure. Taken together, Kaptelinin's (2005) discussion reveals that the motive of activity and the object of activity are two separate but related notions.[2] The notion of motive/object of activity can shed light on "both moment-to-moment and long-

[2] According to Burkitt (2021), "[t]he dialectic of activity and motivation (need) is also lost in Kaptelinin's view that if the object of activity is its true motive, then object and motive of activity mean the same thing and retaining the two terms is pointless" (p. 805). However, from the discussion in this section, we can see that Kaptelinin (2005) does recognise the historical and dialectical vision of activity, need, and motive, and emphasises the possibility of multiple motives in an activity. The object of an activity can be its true motive when there is only one motive for the activity, where the two terms mean the same thing. However, as argued by Kaptelinin (2005), such a conceptualisation fails to capture the complexity of poly-motivated activities and does not provide an adequate account of these phenomena. It cannot be simply assumed that when one motive prevails over other motives within the same activity, all the other motives are completely rejected. Moreover, despite the possible developmental changes of motives, the object of an activity can remain unchanged. Furthermore, as discussed above, an activity system constitutes multi-voiced perspectives. Therefore, different subjects with their own histories and different positions in the division of labour may "construct the object and the other components of the activity in different, partially overlapping and partially conflicting ways" (Boer, 2005, p. 74).

term developmental dynamics of activity" (Kaptelinin, 2005, p. 14). As pointed out by Engeström and Sannino (2020), there is an important distinction "between the generalized object of the historically evolving activity system and the specific object as it appears to a particular subject, at a given moment, in a given action" (p. 8-9). The former is connected to societal meaning, while the latter is imbued with personal sense (see Engeström & Sannino, 2020; Leont've, 1978). Conceptualised this way, the concept of object offers an analytical tool for this present study to understand not only what individuals are doing, but also the "long-term why" (Engeström, 1995) or "ultimate reason" (Kaptelinin, 2005) behind various activities. In this thesis, the *object* is the carriers of doctors' various motives, such as producing publishable articles, creating new knowledge, improving clinical work, joining the dialogue of the discourse community, and fulfilling the hospital's publication requirements.

The *mediating artefacts* are instruments (i.e., tools and signs) through which the activity is carried out and the collective object of the activity is transformed (Engeström, 2001; Vygotsky, 1978b). Using and creating artefacts also reflects individuals' agency, that is, gaining control over their own behaviours from the outside (Engeström, 2015; Vygotsky, 1978b). Moreover, the idea of mediation is not merely a psychological idea but also has social implications (Vygotsky, 1978b), and can involve mediating sources from the outside such as social others (Boer, 2005; Engeström, 2015; Yamagata-Lynch, 2010). In medical doctors' scholarly publishing activity system, *mediating resources* and *tools*

may include relevant scholarly literature, colleagues, supervisors, fellow researchers, language professionals, editorial services, journal editors, manuscript reviewers, and so on. Additionally, the same artefact may have different meanings depending on the context, or the activity system (Engeström, 2015). From a CHAT perspective, human cognition is "situated and distributed across social settings and acting in concert with diverse, changeable artifacts" (Roth & Lee, 2007, p. 200).

As discussed earlier, the *outcome* is what the object has been transformed into with the help of mediating artefacts, or instruments. The outcome may be desirable (e.g., publishing of articles, fulfilment of institutional publication requirements for promotion, membership in the academic community, and contributions to knowledge) or negative (e.g., rejection of the submitted manuscripts, failure to meet institutional publication requirements for promotion, and missed opportunities to contribute knowledge).

The *community* comprises individuals and subgroups who share the same general *object*. The *community* may comprise individual doctors, hospital administrators, supervisors, patients, fellow doctors, various gatekeepers of scholarly publishing, and other academic and professional members.

The *division of labour* concerns the horizontal division of tasks and vertical division of power and status, and has to do with how tasks are shared based on available/adopted roles and power relations. For instance, journal editors and reviewers serve as gatekeepers of the quality of scholarship and identify ways to improve the submitted manuscripts,

whereas colleagues are expected to help and support each other. With respect to the hierarchy of power relations involved in scholarly publishing, the actors involved include journal editors and reviewers, who tend to have greater power and higher status than medical doctors who aspire to publish their research. As discussed in Chapter 2, such power differential exerts great influences on scholarly publishing activities. For instance, journal editors and reviewers assume a higher power position by acting as gatekeepers in the publication process (see Starfield & Paltridge, 2019).

Finally, the *rules* refer to the explicit and implicit regulations, norms, conventions, and standards that constrain actions within the activity system. The *rules* of the scholarly publishing activity system comprise the norms and conventions of scholarly publishing and the hospital's policies and regulations, among others. While the rules taking the form of policies and regulations can be explicit as they are clearly described in institutional documents, the rules related to scholarly writing and publishing, such as how to situate research and produce valued knowledge within the target disciplinary community, can be rather tacit and implicit. Doctors' unfamiliarity with these implicit rules, such as genre norms and conventions, may give rise to challenges and difficulties in their scholarly publishing activities.

As Barab et al. (2014) note, CHAT is a powerful analytical tool which is frequently used as "a *lens*, *map*, or *orienting device* to structure analysis of complex sociocultural learning and per performance contexts" (p. 207, emphasis in original). Thus viewed,

CHAT can be used as a theoretical framework for investigating such phenomena as scholarly publishing, which is now increasingly conceptualised as a social practice (e.g., Lei & Hu, 2019). More specifically, drawing on these primary components of an activity system (Engeström, 2015), researchers are able to provide a structured analysis without too much theoretical prescription (Barab et al., 2014). As discussed above, contradictions and boundary crossing are key principles in CHAT (Engeström, 2001). I will explicate in the next section how these constructs can be used to analyse medical doctors' scholarly publishing system.

3.3 Interactions and Dynamics within and between Activity Systems

As captured by Figure 3.1, CHAT is not a static conception of an activity system but an inherently dynamic one (Roth, 2004, 2014). According to Roth (2004), the dynamics embedded within an activity system are characterised by two sets of dialectic units. On the one hand, subject and object constitute a dialectic unit, which is considered by Il'yenkov (1977) as "the epitome of an engine of change" (Roth, 2004, p. 2). On the other hand, the other dialectic unit refers to that participation in activity and learning are "coinciding with changing life conditions", which can be revealed by the resolution of contradictions through "the mediation of relation by a third entity" (Roth, 2004, p. 4).

The dialectical relationship between the subject and the object of an activity system pertains to the dual nature of the object of activity, that is, "the object of practical activity (German, *Objekt*)" and "the object of thought (German, *Gegenstand*)" (Roth, 2004, p. 3,

italics in orginal). The object of activity exists twice – first as a material object and second as an image or vision – concerning both the object's present state and the subject's future perspectives (Roth & Lee, 2007). For instance, with regard to the scholarly publishing activity system, a doctor may decide to make a particular artefact (*Objekt*, e.g., manuscripts); the idea of what s/he wants is the *Gegenstand* of his activity, which may include the production of publishable articles that can make contributions to academic knowledge (the idea or the vision). As Leont'ye (1978) noted, in activity, there is a transfer of "an object into its subjective form, into an image" as well as a transfer of activity into "its objective results, into its products" (p. 50). In a similar vein, the subject constitutes not only "the physical boundaries of the individual or the group" (a material entity) but also "its image … perceived by and characteristic of the individual" (an idea or vision) (Roth, 2004, p. 3). For instance, in the scholarly publishing activity system, the subject can be an individual doctor, who is a clinician-researcher at the same time. On the one hand, s/he is a junior clinician-researcher who is still learning the ropes of clinician practice, research, and scholarly publishing; on the other hand, the idea of what s/he wants is to improve professional clinical practice and conduct advanced clinical and basic research, and consequently to publish her/his research as a well-rounded, expert or a full-fledged clinician-researcher. Moreover, as pointed out by Leont'ye (1978), "activity appears as a process in which mutual transfers between the poles 'subject-object' are accomplished" (p. 50). Thus viewed, learning happens when object and subject mutually

change in the process of activity, and individuals exert their agency to change the material world and societal life just as settings "mutually transform agents and the nature of their interactions with each other" (Roth & Lee, 2007, p. 198). For instance, when a medical doctor adopts strategies to solve the difficulties to achieve the object of scholarly publishing (i.e., as a way of changing his circumstances), s/he would resort to his/her community members and could also learn from them. Such a process would cause changes in both object and subject (see Chapters 6 and 7). These dialectical relationships within and between the object and the subject, which are conceptualised as "nonidentical expressions of the same category" (Roth & Lee, 2007, p. 195), are the embodiments of an inner contradiction (see Engeström, 1999; Engeström, 2001, 2015; Engeström & Miettinen, 1999).

As a key construct of activity theory, contradictions are "historically accumulating structural tensions within and between activity systems" (Engeström, 2001, p. 137). Specifically, Yamagata-Lynch (2010) discusses potential adverse consequences of such systemic contradictions:

> These tensions arise when the conditions of an activity put the subject in contradictory situations that can preclude achieving the object or the nature of the subject's participation in the activity while trying to achieve the object. In some cases, the activity may collapse altogether and the subject may not be able to attain the

object. In other cases, subjects may attain the object but be dissatisfied about how they attained the object. (p. 23)

Such contradictions cause conflicts but also generate new changes in the activity (Engeström, 2001). Thus viewed, development of an activity can be traced by the investigation of disturbances, troubles, and innovations from both historical and current perspectives (Engeström, 1993). New qualitative transformations of an activity emerge as the contradictions of the antecedent form are being solved (Engeström et al., 2015). As an essential feature of activity, the inner contradiction is thus crucial to understanding the movement *in* and *of* activity (Engeström, 2001, 2015; Roth, 2014; Roth & Lee, 2007). Such movements can capture the developmental dynamics of an activity (Engeström & Sannino, 2020), because inner contradictions are "the principle of [an activity's] self-movement and ... the form in which the development is cast" (Il'yenkov, 1977 p. 330). For this reason, an analysis of contradictions in an activity system is critical to understanding its developmental trajectory. As noted by Roth and Lee (2007), while "inner contradictions reveal themselves only during analysis, they express themselves as *trouble* in ongoing activity" (p. 204, emphasis added). Because activity systems evolve and develop through the resolution of contradictions, the concept of contradiction offers a means of identifying potential tensions and learning opportunities by examining the dynamic relationship between the difficulties faced by the medical doctors and the strategies that they adopt to tackle those difficulties in their scholarly publishing activities.

During the process of resolving the contradictions, individuals gain agency and power by polling their efforts and constructing "motive-goals" (Leont'ye, 1978), that is, "a merger of conscious goals of individual actions and the motive of the entire collective activity" (Engeström & Sannino, 2020, p. 11; see also Barab et al., 2002; Roth, 2004; Roth & Lee, 2007). Notably, as Roth (2004) points out, a key factor to understanding individual experience in the context of inner contradictions is the relationship between individual and society. The individual subject may undergo an unconscious internalisation of contradictions that exist at the level of society. Thus, doctors in the present study may attribute to themselves their difficulties experienced in their scholarly publishing activities, but the contradictions may exist elsewhere – for instance, the lack of professional support received from their institutions. Therefore, an analysis of inner contradictions can shed light on "how larger sociopolitical and economic struggles mediate local practices, subjectivities, and therefore learning" (Roth & Lee, 2007, p. 204). Hence, the concept of contradictions in CHAT also provides an analytical lens for the present study to examine the motives constructed behind doctors' actions and how the activity contexts mediate their scholarly publishing practices.

Within the structure of an activity system, Engeström (2015) distinguishes four levels of contradictions: primary, secondary, tertiary, and quaternary. A primary contradiction arises within a constitutive component of an activity system, such as the inner contradiction within the object of an activity that exists twice, as illustrated by the

inherent conflict between the *object* of securing promotions promptly by striving for the quantity of research output and the *object* of contributing to knowledge by producing quality scholarly publications.

Secondary contradictions exist between the constitutive components of an activity system, for example, when institutional rules encouraging a product-oriented approach to scholarly publishing undermine the *subject*'s process-oriented *object* of developing himself or herself into a well-rounded clinician-researcher or the desired outcome of producing new scientific knowledge. Notably, primary contradictions manifest themselves in secondary contradictions (Roth & Lee, 2007), as the inner contradiction hidden is "outwardly manifested in a contradiction of an external order" (Il'yenkov, 1977, p. 265).

A tertiary contradiction appears "when representatives of culture ... introduce the object and motive of a culturally more advanced form of the central activity into the dominant form of the central activity" (Engeström, 2015, p. 70). According to Roth and Lee (2007), such contradictions "exist between the object (motive) of the dominant and the object of a culturally more advanced form of the activity" (p. 203), or "between the old and the *given new* activity/motive" (Engeström, 2015, p. 218, emphasis in orginal). For instance, doctors may just want to publish clinical case reports (the dominant motive), but the hospital promulgates a policy that drives them to conduct biomedical research (the culturally more advanced motive). In the medical literature, the traditional clinical case

report experienced a decline in popularity in the second half of the 20th century because of its relatively low value compared to the evidence-based medical research article using new methodologies (Nissen & Wynn, 2014).

A quaternary contradiction exists between the central activity and the neighbouring activity in their interaction (Engeström, 2015; Roth & Lee, 2007). According to Engeström (2015), the neighbouring activities can be object activities, which refer to activities "where the immediately appearing objects and outcomes of the central activity are embedded" (p. 71). They also comprise instrument-producing activities, subject-producing activities, rule-producing activities, the products/outcomes of which constitute relevant components of the central activity (Engeström, 2015). There are central activities among these neighbouring activities themselves that are in a different way connected to the given central activity and can be hybridising each other through dialogical interchange dialogue (Engeström, 2015). An instance of quaternary contradictions can be the emergence of "[c]onflicts and resistances … in the course of the 'implementation' of the outcomes of the central activity in the system of the object activity" (Engeström, 2015, p. 72). For example, a doctor may need to publish SCI-indexed papers (the central activity) of relatively low quality in order to secure promotion within a stipulated period of time. The doctor may react with resistance to scholarly publishing because s/he may believe that the process of publishing these papers cannot contribute to their development of either research or clinical expertise (the object of activity). Moreover, this type of

contradiction faced by doctors can also be manifested in the difficulty that they encounter to transform data collected from their clinical practice (the object activity) into publishable journal articles (the central activity). This theoretical perspective on contradictions illuminated the root causes of the challenges and the nature of the strategies in the doctors' scholarly publishing activity system.

3.4 Toward a New Generation of CHAT

Within the three generations of activity-theoretical studies of work and learning, the unit of analysis has evolved from mediated action (Vygotsky, 1981) to a collective activity system (Leont'ye, 1978, 1981) and to multiple-interconnected activity systems with partially shared objects (Engeström, 2001, 2015). Sharing the fundamental assumptions of the earlier generations of CHAT that underscore the object-oriented and contradiction-driven character of activity, the emerging fourth-generation CHAT is undergoing a major qualitative transformation (Engeström & Sannino, 2020; Spinuzzi, 2020). Specifically, a fundamental transformation of the objects of human activity is required and, correspondingly, a unit of analysis needs to be created and implemented to an object that is complex and dynamic. Engeström and Sannino (2020) explains that:

> As time is maturing for its development, fourth-generation activity theory should offer a unit of analysis able to grasp a qualitatively new type of activity formations and concerted efforts that can realistically counteract stigma and suffering associated with conditions of deep disadvantage. Such a new step entails the involvement of a

wide variety of actors at multiple levels – local, regional, national and possibly global. (p. 14)

This does not mean, however, that the unit of analysis in fourth-generation CHAT is constructed simply by adding more activity systems to the third-generation unit, but comprises "a web of coalescing heterogeneous work activities" (Sannino, 2020, p. 167). This means that such activity coalitions are built around objects that go beyond boundaries, which are referred to as runaway objects by Engeström (2009) to capture "relatively exclusive professional expert activities" (p. 305). Moreover, fourth-generation CHAT focuses more on processual relations in addition to structural relations, placing an emphasis on "multiple interacting and overlapping learning cycles, which are situated at different hierarchical levels and are both relatively independent and interdependent" (Engeström & Sannino, 2020, p. 15; see also Sannino, 2020). For instance, international scholarly publishing as a form of knowledge production can be an example of the types of object envisioned by fourth-generation CHAT. In the era of academic globalization, such interconnected objects as international scholarly publishing cannot be treated as isolated issues but influence and pervade the objects of various activities (e.g., the objects of clinical and research activities) at various levels (e.g., local and global discourse communities). Specifically, the learning cycle of doctors' scholarly publishing in an EAL context is directed and supported by the work of the university and its affiliated hospital. The learning cycles of these institutions are in turn directed and supported by the national

initiatives, which in turn are influenced and directed by the global trend of Englishisation in knowledge production and dissemination. Reciprocally, the work within doctors' scholarly publishing activities constantly feeds developments and reorientations at the institutional, national, and possibly global levels. Thus, changes can be made at the local level toward a large, societal transformation, which requires the actors involved within and across heterogeneous activities to "learn to operate on the basis of concerted initiatives rather than by top-down orientations" (Engeström & Sannino, 2020, p. 14). Conceptualised as a societal problem space as discussed in Section 2.1 in Chapter 2, the hegemony of English in scholarly publishing as a global phenomenon may thus be deconstructed at the local level of activity coalitions. Adopting the broader perspective of the emerging fourth-generation CHAT and drawing on ideas and instruments developed by the preceding generations of CHAT, the present study aims to contribute to the development of fourth-generation CHAT by investigating the challenges of work in today's world, that is, challenges faced by Chinese medical doctors in their scholarly publishing, and offer implications for relevant stakeholders, such as policy makers, institutions, and practitioners.

Additionally, a key conceptual resource in fourth-generation CHAT is the generation of transformative agency by double simulation, a process by which individuals intentionally solve the problem of conflicting motives and alter their circumstances

(Engeström & Sannino, 2020; Sannino, 2020). The process is described by Engeström and Sannino (2020) as follows:

> The starting point of double stimulation is confrontation with a problematic situation which triggers a paralyzing conflict of motives (first stimulus). In trying to cope with the problem, learners turn to artefacts and invest them with meaning (second stimuli). They decide to rely on these artefacts when instances of the problematic situation reoccur. (p. 16)

According to Engeström and Sannino (2020), the implementation of the second stimulus helps the individuals to have the problematic situation of conflicting motives under control and transform it into a more understandable and manageable one; this recurrent implementation of the second stimuli to solve the problem makes the individuals gain a deeper understanding of the problem and strengthens their capacity to take further actions. This process in turn "strengthens the longitudinal 'rope' of the expansive learning process", and, resultantly, both the problem situation and the individuals are transformed (Engeström & Sannino, 2020, p. 16).

For instance, a hospital requires its doctors to publish a certain number of SCI-indexed papers to secure their promotion within a specified period of time. Thus, the first stimulus or problem space for some doctors would be the tension between the conflicting motives of focusing on the quantity of publications in order to secure promotion within a short period of time on the one hand, and aspiring to publish high-quality research papers,

which may require prolonged engagement with academic writing and clinical practice beyond the time limit, on the other hand. Some doctors might decide to seek support from colleagues and collaborators as mediational resources (second stimulus), which may consist of critical reviews given by senior fellows, journal editors and reviewers with respect to the doctors' academic writing and research skills. As argued by Engeström and Sannino (2020), if the volitional action is taken with the second stimulus implemented, the situation is becoming less problematic and being ascribed with a new meaning. Such a volitional action taken by a doctor in response to the conflict of motives s/he is experiencing reveals a process of transformative agency, that is, a process intentionally initiated and conditioned by an individual or a collective that is determined to learn a way of working (Engeström & Sannino, 2020), such as doctors' effort to become double agents as clinician-researchers and scholarly writers. This process is "crucially a self-designed and self-enforced conditioning", and results in new ways of action and expansive learning (Engeström & Sannino, 2020, p. 18). The resulting outcomes are not only the qualitative transformation at the level of individual competences but also the reorganisation of collective activities and their broader contexts. In CHAT, transformative agency by double stimulation can be a conceptual tool for understanding the strategies adopted by doctors to cope with their challenges in scholarly publishing activities. Moreover, as discussed above, fourth-generation CHAT entails a radical expansion of social relations across boundaries both horizontally and vertically, and is

still in its development stage requiring for conceptual and methodological insights to investigate the dynamical processes of establishing social cohesion around an object shared by heterogenous activities (Engeström & Sannino, 2020). Therefore, it is hoped that this empirical study could contribute to the development of fourth-generation CHAT.

3.5 Chapter Summary

This chapter introduced the historical development of CHAT. It then explicated its constitutive components within the structure of an activity system and the dynamics within an activity system and between multiple activity systems, with reference to scholarly publishing activity systems. The core concepts - boundary crossing and contradictions - were also delineated. As discussed above, CHAT provides an optimal framework for understanding doctors' scholarly publishing activities in their professional context, because in CHAT, individual actions are situated within the collective activity system in the broader cultural, historical, social contexts. It also provides the tools to locate and articulate inner contradictions within the activity system and between multiple activity systems. With my focus on doctors' scholarly publishing practices in their professional context, CHAT can thus reveal their motives carried by the objects of the various activity systems, challenges arising from the systemic contradictions, and coping strategies to solve those contradictions, and shed light on individual agency in their scholarly publishing efforts.

Chapter 4 Methodology

This chapter begins with a discussion of the multiple-case study research design adopted to address the research questions in the present study. Next, I outline the strategies used to select the research site and the participants, and describe the methods used for gathering qualitative data. I move on to present the methods of data analysis adopted before I turn to practical considerations in conducting this qualitative study, including issues such as my positionality and reflexivity, triangulation, and trustworthiness. I then discuss potential ethical issues in qualitative research and the measures taken to deal with them in this study. The chapter concludes with a summary.

4.1 Research Design: A Multiple-Case Study

The research design is closely related to the research purpose and the research questions of a particular study (Casanave, 2003; Duff, 2008; Mason, 2017; Merriam & Tisdell, 2015; Patton, 2015; Stake, 2013; Yin, 2018). The purpose of the present study is to investigate Chinese medical doctors' scholarly publishing activity system in their professional context. In what follows, I will make the case that a multiple-case study design is particularly well-suited for the research purpose of the present study.

As Patton (2015) points out, while the variety of approaches to defining a case gives rise to different views on case studies, "a common thread in defining a case for study is the necessity of placing a boundary around some phenomenon of interest" (p. 392). Yin (2012), for example, defines "a 'case' as a bounded entity (a person, organisation,

behavioural condition, event, or other social phenomenon)" (p. 6). As Creswell and Poth (2018) observe, this entity is bounded by time and place, be it a concrete one (e.g., an individual) or a less concrete one (e.g., a community). Accordingly, a case study is "an in-depth description and analysis of a bounded system" (Merriam & Tisdell, 2015, p. 37). As Merriam (1988) notes, "[c]ase studies are particularistic, descriptive, and heuristic and rely heavily on inductive reasoning in handling multiple data sources" (p. 16) because it focuses on "process rather than outcome, in context rather than a specific variable, in discovery rather than confirmation" (p. 19). Likewise, Yin (2018) recommends the case study as an appropriate empirical method for investigating a contemporary phenomenon (the "case") in depth and within its real-world context, especially when the researcher seeks to answer questions of "what", "how", and "why" but has little control over the events to be examined. The present study aims to explore how Chinese medical doctors carry out their scholarly publishing activities in their professional context, a contemporary phenomenon within real-life contexts over an extended period. As discussed above, the case study design would provide me with an opportunity to develop an in-depth understanding of Chinese medical doctors' scholarly publishing practices and would be well-suited to answer the research questions formulated for the present study. Moreover, the theoretical framework (i.e., CHAT) adopted in the present study requires a naturalistic approach that seeks to understand phenomena in natural settings,

investigates qualitative transformation over an extended period, and takes multiple perspectives into account.

Previous studies on L2 and academic writing (e.g., Casanave, 2003; Flowerdew, 1999b; Li, 2007; Li & Casanave, 2012; Luo & Hyland, 2019; Mei & Yuan, 2010) adopted case study designs and yielded insightful findings. Unsurprisingly, scholars (e.g., Casanave, 2003; Duff, 2008; Flowerdew & Li, 2009a) have advocated the usefulness and strengths of case studies in this field of research. For instance, as Casanave (2003) observes, case studies are well suited for exploring "sociopolitical aspects of written artifacts" (p. 97) and are especially well equipped to answer questions in L2 writing literature that explore power-laden relationships and interactions among individuals, artefacts, and institutions, such as the writers' negotiations in their writing with social others and institutional contexts. Moreover, Flowerdew and Li (2009b) point out that "[c]ase studies potentially allow for varied research angles and methodologies, while providing researchers with opportunities for comparison and theory building" (p. 176). Using case study designs, a wide array of studies (e.g., Lei, 2019; Lei & Hu, 2019; Li, 2006a, 2015; Luo, 2015; Luo & Hyland, 2019) has provided important insights into EAL scholars' scholarly writing and publishing experiences and practices. This further suggests that a case study design is well-suited for the present study.

Given the complexity and multidimensionality of the research problem under investigation, a multiple-case holistic design would facilitate an in-depth contextualised

understanding of Chinese medical doctors' publishing practices and allow cross-case corroboration (Duff, 2008; Stake, 2013; Yin, 2018). Moreover, it was necessary for this exploratory study to select cases from the same context so as not to "prematurely rule out particular variables or factors" (Duff, 2008, p. 119). As Merriam and Tisdell (2015) note, to include multiple cases in a study is also a useful strategy for enhancing its external validity. To achieve triangulation within cases, Stake (2013) points out that "[e]ach important finding needs to have at least three (often more) confirmations and assurances that key meanings are not being overlooked" (p. 33). Similarly, Mackey and Gass (2016) recommend that case studies be conducted with multiple or groups of individuals to compare and contrast their practices within a specific context. In the field of applied linguistics, Duff (2008) observes that the selection of four to six cases can allow for an in-depth description and contextualisation of each one, and can provide multiple examples of the phenomenon under study even if participant attrition occurs. To ensure the strength of a multiple-case study, I decided to invite eight medical doctors to participate in my study. Each doctor's scholarly publishing activity system is treated as a case (see Section 4.6 for more information).

The multiple-case study design in my study follows what Yin (2018) calls a "replication" design rather than a "sampling" design (p. 102). The replication design allows the researcher to investigate the same phenomenon across cases (Depoy & Gitlin, 2016; Yin, 2018). Yin (2018) explains the replication design:

> [E]ach individual case becomes the subject of a whole case study, in which convergent evidence is sought regarding the findings and conclusions for the study; each case study's conclusions are then considered to be the information needing replication by the other individual case studies. (p. 104)

Given that each case in the present study was treated as a unitary unit of analysis, a holistic case study design was adopted (Mills et al., 2010; Yin, 2018). Specifically, I investigated the doctors' scholarly publishing activity system in the context of their overall professional activity system, which constituted the unit of analysis (see Section 4.6 for more details). As Yin (2018) points out, the holistic design is preferably adopted in a case study when no logical subunits can be formed or when the guiding theory of the case study is largely of a holistic nature. A challenge in adopting a holistic design, however, is that as the research progress goes on, the entire nature and the initial design of the case study may change without the researcher's awareness, and that the evidence obtained thus tends to answer different research questions rather than those initially proposed (Yin, 2018).

To embrace this challenge, I remained open to possible shifts in focus. An initial research design was worked out with due attention to Mason's (2017) advice that given the exploratory and context-sensitive nature of qualitative research, research design is an ongoing decision-making process that draws on the practice and context of the research itself. To exploit the flexibility offered by case study research, aspects of my research

design evolved throughout the research process in interaction with data collection and analysis, and appropriate adjustments were made in response to emerging issues of interest.

4.2 The Research Site

The research site chosen for this study was a top-tier hospital (Y Hospital) affiliated with the Medical School of a top research-intensive university (X University) in China. The focal hospital has nearly 50 clinical departments and around 4000 beds. According to the hospital's official reports, nearly 5.8 million patients in 2019 and about 4.9 million patients in 2020 registered at its Out-Patient Clinic (OPC). In 2020, about 240,000 patients were discharged from the wards, and about 160,000 operations were performed, with only about 10,000 employees doing all the work. These figures indicate the huge amount of clinical work undertaken by the hospital staff. In addition to clinical duties and research work, the medical doctors at Y Hospital are also required to undertake teaching and supervision. The medical school offers associate, baccalaureate, master's, and doctoral programmes. Notably, according to Nature Index 2020, X University was among the academic institutions that made fastest increases in their overall research productivity between 2015 and 2020. In the early 2000s, the hospital launched an SCI Paper Fund initiative to *encourage* its doctors to publish SCI articles to boost its research output. To enhance its competitiveness for national research grants/awards and boost its rankings at inter/national levels, Y Hospital rolled out a publication policy around 2010 that included

research output (especially SCI-indexed papers) among job responsibilities. The policy, having undergone several rounds of revision with higher requirements each time, spelled different requirements for different categories of doctors. In the most up-to-date version of the policy that was in effect at the time of this study, all medical doctors were required to publish both Chinese and SCI-indexed papers to secure promotions and win awards. SCI-indexed English papers carried much more weight than Chinese ones, especially when it comes to decisions on promotions and awards, and could catapult hopefuls on the promotion fast track.

Medical doctors at the focal hospital were selected as participants in this study for three reasons. First, the hospital is renowned for its high rankings in various national leagues of clinical capability and research output. Second, although the SCI-indexed papers produced by its staff outnumber those emanating from other Chinese hospitals, its ESI for the category of Clinical Medicine suggests that its research output does not have much international impact. The issue was highlighted in a recent document circulated by Y Hospital: “The quantity of our SCI-indexed papers is continuing to increase, but the quality of these papers has not much improved”. Third, unlike Chinese scholars in other fields whose scholarly publishing has received considerable attention, much less research has focused on Chinese medical doctors, especially their juggling between the demands of academic research and clinical practice. Therefore, research on medical doctors can contribute to not only a contextualised understanding of their scholarly publishing activity

system but also an informed critique of the SCI-oriented promotion mechanism widely instated in mainland China.

4.3 The Participants

I employed a purposeful sampling strategy, namely criterion sampling, to select the participants for this study (Creswell, 2012). The strength of purposive sampling "lies in selecting *information-rich cases* for in-depth study" (Patton, 2015, p. 264, emphasis in original). Thus, I attempted to select the cases from which I could learn much about the issues under investigation in alignment with the purpose of my inquiry. The sampling criteria included: 1) being junior doctors, 2) having experience of publishing in English, and 3) having varying success in their English scholarly publishing. Criterion sampling and snowball sampling were employed to select common cases and contrasting cases. I asked one of my friends, also a medical doctor at another hospital, to recommend potential participants who worked at Y Hospital and met the criteria mentioned above. I contacted these doctors and asked them to invite their friends to participate in this study. For instance, Yang was introduced by my friend who worked as a medical doctor at Y hospital. I aimed to select four to eight participants because too few or many participants would fail to capture the complexity (Duff, 2008; Stake, 2013) of the medical doctors' activity systems.

As discussed earlier, each selected doctor's activity system of scholarly publishing was regarded as the unit of analysis or a case (see Section 4.6 for a discussion on the unit

of analysis in activity systems analysis). Table 4.1 presents a summary of the doctors' publication profiles. In subsequent sections, an overview of their similarities and differences will be provided, and more details will be introduced.

Table 4. 1 Participants' Demographic Background and Publication Profile

Name	Sex	Age	Degree	Department	Professional/Academic Rank	No. of Published Papers		Manuscripts in Progress	
						Chinese	English	Chinese	English
Pang	M	30s	PhD	Orthopaedics	Attending physician/ Lecturer	5	6	0	8[a]
Yang	M	30s	PhD	Cardiology	Attending physician/ Lecturer	0	19	0	2
Bo	M	30s	MMed	Radiology	Attending physician/ Lecturer	4	6	0	2
Xiang	M	30s	PhD	Integrated Traditional Chinese and Western Medicine	Attending physician/ Lecturer	Not specified	9	0	3
Lin	F	30s	PhD	Integrated Traditional Chinese and Western Medicine	Attending physician/ Lecturer	5	7	0	2
Tang	M	30s	PhD	Biliary Surgery	Attending physician/ Lecturer	0	17	0	1

Liang	M	30s	PhD	Cardiology	Attending physician/ Lecturer	2	3	0	2
Hang	M	30s	MMed[b]	Integrated Traditional Chinese and Western Medicine	Attending physician/ Lecturer	1	3	0	2

Note. Scholarly publications were counted only when the participants were the first and/or corresponding author. All English publications were SCI-indexed articles.

a. The number includes manuscripts rejected before.

b. Hang was pursuing a doctor's degree in Y Hospital at the same time.

All the doctors joined my study in 2021 except Liang and Hang, who were recommended by Yang and Xiang respectively and came on board in 2022. While Yang, Pang, Bo, Xiang, Lin, Tang, and Liang were working as full-time clinician-researchers at the time of this study, Hang was pursuing a doctoral degree in X university, with which Y Hospital is affiliated, and was expected to graduate in August 2023. At the same time, Hang was undertaking professional work and needed to meet the university's and hospital's publication requirements. At the time of this study, all the doctors had a doctoral degree expect Hang and Bo.

Specifically, Yang and Liang were from the Department of Cardiology; Pang from the Department of Orthopaedics; Bo from the Department of Radiology; Xiang, Lin, and Hang from the Department of Integrated Traditional Chinese and Western Medicine; Tang from the Department of Biliary Surgery.

Yang, Pang, Bo, Tang, Liang, Hang did either their master's studies or doctoral studies at X university, whereas Xiang and Lin had no previous study experience at the university and graduated with a doctoral degree at another top medical university in mainland China. All the doctors were in their thirties, had similar academic backgrounds and learning experience, and reported that they had received little training in either academic writing or scholarly publishing. They were under similar pressure to publish and meet the hospital's publication requirements for a promotion to the rank of associate professor/deputy chief physician. In the following, I provide some additional background

information about each participant's study and publication experiences.

Yang

Yang was recommended by my contact person (also a medical doctor) at Y Hospital for having published many SCI-indexed articles in English. He was enrolled in an undergraduate-postgraduate-doctoral integrated programme at the Medical School of X University in 2008 and graduated with a doctoral degree in 2016. He then started working as a post-doctoral fellow in his doctoral supervisor's team at Y Hospital and was expected to finish his post-doctoral research in 2021. At the same time, he was undertaking clinician responsibilities in the Department of Cardiology at Y Hospital and was undergoing a clinical training programme. Yang did not have any overseas experience. At the time of this study, he had been studying and working at X University and its affiliated Y Hospital for almost 13 years. His good number of English-medium publications notwithstanding, he confided that the quality of his SCI-indexed papers was not high, as indicated by the relatively low impact factors of the journals where his papers appeared and the unsatisfactory language quality of these papers. To secure a promotion, he still needed to publish papers in high-ranking international journals.

Pang

Pang was enrolled in an undergraduate-postgraduate integrated programme in the Medical School of X University in 2003 and graduated with a master's degree in 2010. In the next three years, he worked at a hospital affiliated with a provincial university. In

2013, he left this job to study in a doctoral programme at a top medical school affiliated with P University, a leading research-intensive university in mainland China, and graduated with a doctoral degree in 2016. He was then recruited by Y Hospital and started working in the Department of Orthopaedics as a full-time clinician-researcher in the same year. In 2019, Pang stayed at a medical school in USA as a visiting scholar for three months. Although he published papers in prestigious SCI-indexed journals before he joined Y Hospital, Pang told me that he was struggling with writing papers in English, due to his inadequate English proficiency and heavy workload at Y Hospital. As my findings revealed in the following chapters, such personal and situational factors prevented Pang from pursuing his aspiration to publish research papers in high-quality SCI-indexed journals. He confided that he was not willing to play the numbers game – it is the quality of scholarly publications, not the quantity, that matters. Consequently, Pang lamented that the number of academic papers published during his employment at Y Hospital was far from enough to secure him a promotion to associate professorship.

Bo

Bo graduated with a bachelor's degree from a top medical university in 2011. He then started working as a resident doctor and later as a medical specialist trainee at Y hospital's Department of Radiology. During this period, he became an on-the-job postgraduate in 2015 at Y Hospital and graduated with a master's degree in 2018. At the time of the study, he was a lecturer/attending physician. He told me that as a first author

or co-first author, he had published four papers in Chinese-medium journals and six papers in SCI-indexed English-medium journals. He had two papers under review in SCI-indexed English-medium journals, and one of them just was accepted during the present study. According to him, his writing-up of scholarly papers, especially English papers, had been through many vicissitudes, thereby making his publishing journey "rather time-consuming" and "painful" (Interview, 8 August 2021). He confided that out of his own free will, he would like to publish in Chinese-medium journals; however, in reality, only SCI-indexed English-medium journals would become his first choice for his manuscripts, because Chinese-medium journals had been "abandoned" in the local evaluation system. Despite his previous successful experience in scholarly publishing, his clinical research paper under review at the time of study had been rejected twice. He lamented that due to his heavy workload, he decided that he would leave the paper as it was for now and seek other possible outlets.

Xiang

Xiang obtained his bachelor's, master's and doctoral degrees from the same top medical university in mainland China. Right after graduating with a doctoral degree in 2021, he started working as a full-time clinician-researcher at Y hospital. During his doctoral studies, as a first author, he had published four SCI-indexed English papers and, as co-first coauthor, five more papers. He had also published papers in Chinese-medium journals. At the time of this study, Xiang was just recruited by Y hospital, already

submitted one paper to one SCI-indexed English-medium journal and was preparing two new manuscripts. Even though he had published quite a few English papers, he confided that he would personally not have inclined to write a single paper if it had not been for graduation and promotion requirements and would like to fully focus on his professional work as a clinician. As a result, he questioned the validity of the SCI-oriented evaluation mechanism for medical doctors and faced an identity dilemma. In his words, "Am I a clinician, or am I a researcher?" (Interview, 15 August 2021).

Lin

Like Xiang, Lin received her bachelor's, master's and doctoral studies from the same top medical university in mainland China, where Xiang had also studied. She obtained her doctoral degree in 2018 and then started working at Y hospital. During her doctoral studies, she had published two SCI-indexed English papers as first author and five papers in Chinese-medium journals. During her work at Y hospital, she published five SCI-indexed English papers but did not publish any Chinese papers. She bemoaned that unlike other junior medical doctors who were "insiders" and had previous study experience at Y hospital, the publication requirements for promotion would be rather difficult for "an outsider" like herself (Interview, 29 August 2021). Despite the greater challenges faced by her than those by the "insiders", she acknowledged that she had learned a great deal during her three years at Y hospital. At the time of the study, she had one SCI-indexed paper under review with an English-medium journal and was preparing new manuscripts.

Tang

Tang was enrolled in a master's programme in the Medical School of X University in 2010, continued to purse his doctoral studies in the same year because he successfully published three SCI-indexed papers during his master's studies, and graduated with a doctoral degree in 2016. Because he published six SCI-indexed English papers during his doctoral studies, he was recruited as a full-time clinician-researcher at Y Hospital right after graduation. At the time of this study, he had published eight SCI-indexed papers as first author since 2016 but no papers in Chinese-medium journals as first author. When asked to self-evaluate his English language ability, Tang was quite confident in his scholarly writing ability and rated himself a "85 out of 100" (Interview, 7 November 2021). For him, language proficiency was not a problem, but significant research ideas were hard to come by (Interview, 7 November 2021). At the time of the study, he had one manuscript under review and was also preparing new manuscripts in English.

Liang

Liang did his bachelor's and master's studies at two different top universities in mainland China from 2010 to 2018. He continued to pursue a doctoral degree at X University and graduated in 2021. Like the other participants who did their studies at the medical school of X university, he started working at Y Hospital right after graduation. At the time of this study, as first author, he had published two Chinese papers and three SCI-indexed English papers. He was working on two new manuscripts in English.

According to him, his successful publication of English papers was due to his intensive reading of relevant research articles, which he used as models to guide his own scholarly writing. During this process, he found it quite challenging to conceptualise research at the beginning and organise his writing in the Discussion section. In his own words, "how we present our results, how we discuss the results, and how our research is useful for future directions in our field – I found it quite challenging to integrate all these aspects in my writing" (Interview, 28 February 2022).

Hang

Hang graduated with a bachelor's degree from a top medical university in mainland China in 2016 and then obtained a master's degree from Y University in 2019. After working at Y Hospital as a medical doctor for nearly two years, he became an on-the-job doctoral student at X University in 2021. At the same time, he still needed to do clinical work required by the Department. He was feeling "quite pressured" because his doctoral project was in the area of biomedical engineering, but he still needed to do clinical research and work as a clinician, which was not directly related to his doctoral research. He also needed to meet the university's and hospital's publication requirements. At the time of this study, as first author, he had published three SCI-indexed English papers and one Chinese paper. He had one paper under review with an SCI-indexed English-medium journal, which had received a minor revision decision, and just submitted the revised manuscript. Additionally, he was writing up a new manuscript. He mentioned that the

main challenge for him was that it was difficult to write clearly because he wrote an English paper in a very Chinese way. For example, he tended to "write long sentences with attributive clauses, making it difficult for the readers to understand" (Interview, 27 March 2022).

4.4 My Role as Researcher

In line with the interpretive research paradigm underpinning the epistemological and methodological logics of the present study, I was well aware that I as the researcher served as an important instrument of the study (Creswell & Clark, 2017; Guba & Lincoln, 1981; Mason, 2017; Merriam & Grenier, 2019; Patton, 2015; Stake, 2010). As a meaning-making process, good qualitative inquiry delves deeply into the complexities of human experience (Stake, 2010) and provides opportunities for the researcher not only to understand the experiences of others but also to examine the experiences that the researcher brings to the inquiry (Patton, 2015). The researcher's background, experience, and perspective constitute the initial framework against which the studied group of people are assessed, and undergird the credibility of the findings of an qualitative inquiry (Mason, 2017; Patton, 2015). These personal and interpersonal elements will, to some extent, affect what is studied and help shape what is discovered, and therefore need to be acknowledged in a qualitative inquiry (Creswell, 2012; Creswell & Creswell, 2018; Patton, 2015). Patton (2015) provides a more detailed description:

Reflection on how your data collection and interpretation are affected by who you

are, what's going on in your life, what you care about, how you view the world, and how you've chosen to study what interests you is a part of qualitative methodology. (p. 3)

As discussed above, qualitative research focuses on a group's shared patterns of social practices in their natural setting over an extended period of time (Creswell & Poth, 2018; Hammersley & Atkinson, 2019). This research paradigm requires researchers to be involved in an extensive and intensive experience with participants, and it is thus necessary for them to reflect reflexively on their "biases, values, and personal background, such as gender, history, culture, and socioeconomic status (SES) that shape their interpretations formed during a study" (Creswell & Creswell, 2018, p. 260). As Mason (2017) explicates, reflexivity means that researchers need to adopt a critical stance on their research practice by questioning their own assumptions and recognising the impact of their subjectivity (e.g., thoughts, actions, and decisions) on their practice and interpretations. Thus, in what follows, I reflect on my positionality and reflexivity, and openly discuss my role in my research. Throughout this study, my position was that of both an insider and an outsider. Being an insider, I shared not only cultural and linguistic backgrounds with the participants, but also the issues or problems (e.g., language difficulties) faced by EAL researchers when publishing in English-medium journals. My personal backgrounds and experiences offered me an intimate perspective on the issues under examination. For instance, I worked as a lecturer in a mainland Chinese university

where junior academics were similarly under pressure to publish. This insider perspective helped me gain access to and establish rapport with my participants. Such closeness to sources of data was key to a case study, and my close contact with the participants and their problems made key insights possible (Patton, 2015). Meanwhile, I detached myself to a certain degree from my participants to avoid over-rapport in order to not bias my ability as a researcher to interpret their perspectives. I was an outsider without participating in their activities, and my participants considered me as a researcher from the outside (see Cohen et al., 2017). Being an outsider, I was aware of the differences between our disciplinary and academic communities. This helped me notice some issues (e.g., the challenges of being a clinician while conducting research to meet the publication requirements) that would have otherwise been neglected by an insider researcher who might be reduced to being "insufficiently critical" (Hermann, 2001, p. 86). Being an insider-outsider, I constantly maintained sensitivity to aspects, such as the context of the study and my personal and interpersonal experiences, which would possibly impinge on my criticality and may unduly influence my interpretations, and reflected on my role and actions as a researcher. Throughout the research process, I attempted to maintain emphatic neutrality which could help build rapport and establish a relationship that develops empathy by creating a non-judgmental space to show the researcher's openness (Lincoln & Guba, 1985; Patton, 2015).

To enhance reflexivity, I wrote reflective notes during my study to reflect on my

personal experiences as a researcher and on the overall research process of data collection and analysis. In writing these journal entries, I reflected on how and to what extent my past experiences may have influenced and shaped my stances towards and interpretations of the research site and the participants (Creswell & Poth, 2018; Duff, 2008; Lincoln & Guba, 1985; Patton, 2015). As regards data analysis, the notes in the reflective journal took the form of memos that helped shape the development of codes and themes, and insights emerged from this process (Creswell & Poth, 2018; Duff, 2008). As such, reflective journaling helped me as a researcher to produce less partial knowledge and enhance trustworthiness (Johnson & Christensen, 2019; Lincoln & Guba, 1985) (see Section 4.7 for a detailed discussion).

4.5 Data Collection Methods

In order to answer the research questions, multiple types of data were collected from various sources to achieve "triangulation" of the data and enhance the trustworthiness of the findings emerging from this study (Merriam, 1988; Merriam & Tisdell, 2015; Miles et al., 2014). The primary sources of data were in-depth interviews, whereas complementary data comprised artefacts (e.g., the participants' manuscripts), documents (e.g., policy documents), and text-based interviews with the doctors. According to Stake (2010), the main purposes of interviewing include:

1. Obtaining unique information or interpretation held by the person interviewed;

2. Collecting a numerical aggregation of information from many persons;
3. Finding out about “a thing” that the researchers were unable to observe themselves. (p. 95)

In this study, interviews with the doctors yielded information about their scholarly publishing experiences and practices, including their language and literacy histories, their views on scholarly writing and publishing, and mediating sources or tools involved in their scholarly publishing activities, among others. The complementary data were collected to shed light on the institutional/professional context of the doctors’ publishing activity system and to gain a better understanding of the impact of certain contextual factors on their scholarly publishing practices. These artefacts included, but were not limited to, documents and brochures concerning the focal hospital, the university, and the departments.

4.5.1 In-Depth Interviews

As reiterated in this thesis, the purpose of this exploratory study was to investigate Chinese medical doctors’ lived scholarly publishing experiences and practices. Interviews offer the opportunities for the researcher to investigate unobservable phenomena such as the perceptions or attitudes of those being interviewed and to capture the complexities of their experiences (Mackey & Gass, 2016; Patton, 2015). In addition to providing insights reflecting the interviewees’ “relativist perspectives”, interviews can be particularly helpful in suggesting explanations (i.e., the “hows” and “whys”) of the phenomena under

investigation (Yin, 2018, p. 183). As Mason (2017) notes, qualitative interviews are "in-depth, semi-structured or loosely structured forms of interviewing" (p. 63) or "'conversations with a purpose'" (p. 62). Specifically, in-depth interviewing is interested in exploring other people's lived experience and their meaning-making of that experience (Seidman, 2006). As Seidman (2006) further explicates, in-depth interviewing's strength lies in that researchers can see how people's experience interacts with their social and institutional contexts where they work and learn the interactions among a group of people in the same contexts. Given the focus of the present study on relationships between activities and contexts, in-depth interviewing was most suited for collecting the information needed. Furthermore, detailed and rigorous planning of research interviews should be conducted with the research purpose in mind, and a structure is essential for an in-depth interviewing method given its open-endedness (Mason, 2017; Seidman, 2006). With a thoughtful structure, researchers can be ready to make instantaneous decisions about the content and sequence in the interviews as they progress without misinterpreting what they infer from the participants or imposing their own perspectives on the participants rather than eliciting theirs (Seidman, 2006). In multi-case studies, standardised questions in the interviews can ensure consistency and comparability across interviewees (Mackey & Gass, 2016; Mason, 2017; Patton, 2015; Seidman, 2006), who can provide insights into a matter under study and may have corroboratory or contrary evidence (Yin, 2018). Apart from the standardised questions, different questions also need

to be asked with different interviewees so that situated knowledge can be generated from them (Mason, 2017).

In light of the key considerations in qualitative interviewing discussed above, the interviews in the present study adopted a semi-structured interviewing format. This format combines a conversational strategy with an in-depth interviewing structure, that is, intensive/prolonged case study interviews and shorter case study interviews (i.e., informal conversational interviews) within an interview guide approach (Mason, 2017; Patton, 2015; Yin, 2018). As Patton (2015) notes, the interview guide serves as helpful references and immediate reminders to make sure that all relevant topics are covered and also creates spaces for the interviewer to further explore related topics. Such an interview guide offers a useful framework for the interviewer to structure questions in terms of the content, sequence, and importance, and pursue in-depth information when needed, while at the same time it also provides opportunities for the interviewees to express their own understandings in their own words (Patton, 2015).

Additionally, the informal conversational interview format can elicit interviewees' extended answers (Mackey & Gass, 2016) and offer the opportunities for the interviewer to be flexible, spontaneous, and responsive to individual differences and situational changes (Patton, 2015). Notably, informal conversational interviews need to be informed by sensitising concepts and the research purpose of the inquiry (Patton, 2015). More importantly, such interviews can help the researcher to corroborate certain already

established findings (Yin, 2018).

Taken together, the interviewing format in the present study thus lay somewhere on the continuum between the structured open-ended interview and the unstructured interview, with the assistance of an interview guide (Mackey & Gass, 2016; Mason, 2017; Patton, 2015; Yin, 2018). This combined strategy gave me flexibility in making decisions about what topics needed in-depth explorations and what new areas of inquiry emerging from the interviewing process needed to be addressed (see Patton, 2015).

To conduct the in-depth interviews, I followed the three-interview approach (Seidman, 2006) and conducted three rounds of interviews with the participating doctors. The first round of interviews focused on the doctors' life history to establish the context of their experience. The second round of interviews concentrated on the details of the doctors' lived experience in scholarly publishing within the context where it occurred and upon which their opinions may have been formed. The third round of interviews encouraged the doctors to reflect on the meanings of their scholarly publishing experiences. During the interviews, I followed the combined interviewing strategy discussed above. In each round of interviews, I followed the overall interview structure to enable the doctors to reconstruct and narrate a range of constitutive events in and provide the details of their scholarly publishing experiences and make meaning of their experiences by focusing on the factors contributing to their present situation. The interview guide for the present study was developed on the basis of my research questions

and previous research (see Appendix B).

Specifically, in the first round of interviews, I conducted one or more follow-up interviews with the participating doctors. The interview/s focused on their previous experience, such as literacy histories and the contexts which situated their experience (Curry & Lillis, 2010; Flowerdew & Li, 2007a). Notably, I asked the doctors to tell me about their Chinese and English learning and writing experiences and their scholarly writing/publishing in Chinese and English (see Appendix B). Moreover, when interviewing my participants, I found that their scholarly publishing practices were influenced to varying extents by their attitudes towards scholarly publishing in their professional context and perceptions of the relationship between clinical practices and research activities. Thus, I also probed into their perceptions, practices, and experiences regarding their respective clinical work and research activities.

The second round of interviews were built on the first round of interviews that had yielded specific information on each focal doctor and aimed to explore the specific details of the doctors' scholarly publishing experiences and practices. Interview questions in this round concentrated on the elicitation of factors that had given rise to contributions and impediments to their scholarly publishing activities at various stages, such as writing up a manuscript, revising and resubmitting it, and responding to editors' and reviewers' comments. The interviews also centred on the contextualisation of their scholarly publishing activities by focusing on the relationship between their scholarly publishing

activities and the wider community (see Appendix B).

In the third round of interviews, I asked the doctors to reflect on the meaning of their scholarly publishing experiences. These interviews built on both the first and second rounds of interviews and focused on intellectual and emotional connections in their scholarly publishing activity systems. Following Seidman's (2006) advice, the interview questions related to their thoughts, feelings, and emotions were phrased with a future orientation (see Appendix B). While the first and second rounds of interviews involved asking questions about the lived experiences of the doctors' scholarly publishing activities and established conditions for reflecting upon what they were doing in their lives (Seidman, 2006), some questions in the third-round interview were directed more at hypothetical scenarios than lived experiences (see Mason, 2017). This was because I found that when I asked "how" questions to elicit their attitudes towards and emotions about their scholarly publishing activities or related issues, the focal doctors still tended to reconstruct details of their scholarly publishing experiences in their responses. Based on "fast mental reasoning" during the interviews (Mason, 2017, p. 69), I rephrased my questions in a hypothetical formulation bearing on my research questions. For instance, when I asked the doctors how they felt about their scholarly publishing practices, some tended to redescribe their scholarly publishing experiences. In one interview, I then rephrased my question in a hypothetical manner: "What if there were not any institutional requirements for scholarly publication?" The doctor responded emotionally that "without

such requirements, I would not wish to write even a single academic paper either in English or in Chinese but focus wholeheartedly on my clinical work only!"

I managed to meet some of my participants face-to-face to establish rapport with them. However, because of logistic constraints, especially the travel restrictions during the COVID-19 pandemic, I could only conduct online interviews (Kvale & Brinkmann, 2009). Specifically, I used WeChat, a free instant messaging and voice/video call app widely used in mainland China, to conduct the interviews. I also sent messages via WeChat or used email correspondence to follow up on related issues that needed further investigation or clarification. This enabled me to "elicit additional data if initial answers are vague, incomplete, off-topic, or not specific enough" (Mackey & Gass, 2016, p. 225). All the interviews were conducted in Chinese, the first language shared by the interviewer and interviewees, thus removing concerns about and ensuring the quality and quantity of the data collected (Mackey & Gass, 2016). These interviews were recorded and later transcribed for analysis.

I also kept field notes during the interviews (Emerson et al., 2011; Miles & Huberman, 1994). The field notes in the form of reflective remarks (i.e., reflections and commentary) enabled me to reflect on issues that emerged during the interviewing process. Also, I noted down interesting or potential issues raised by the doctors and included these issues in the follow-up interviews. Furthermore, the field notes had the potential to "add substantial meaning to the write-up" and "strengthen coding, in pointing

to deeper or underlying issues that deserve analytical attention" (Miles & Huberman, 1994, p. 66). Thus, these field notes led to modifications and adjustments to my interview questions and facilitated my data analysis. For instance, some doctors pointed out that non-discursive difficulties were more prominent in their scholarly publishing activities. This led me to focus more on contextual factors in the follow-up interviews. I entered the field notes in my research journal immediately after the interviews. While I was coding the data, I also noted down my reflection on and tentative interpretations of the data using MAXQDA2022 (Version 11.1.0), an advanced software package for qualitative research. Table 4.2 presents the timeline and the length of in-depth interviews with each participant and the relevant documents collected.

Table 4. 2 A Summary of Interview Timeline and Relevant Documents

Participant	Interview Timeline and Length[a]	Relevant Documents[b]
Yang	• 6 February 2021 (60 min) • 14 March 2021 (61 min) • 18 April 2021 (121 min)	• 2 manuscripts (including revisions added according to editor's and reviewers' comments) • 1 response letter
Pang	• 7 February 2021 (59 min) • 14 March 2021 (71 min) • 18 April 2021 (61 min)	
Bo	• 8 August 2021 (139 min) • 23 October 2021 (104 min) • 29 October 2021 (83 min) • 12 December 2021 (96 min)	• 1 manuscript (two revised versions) • 1 response letter
Xiang	• 15 August 2021 (49 min) • 30 October 2021 (48 min) • 2 January 2022 (50 min)	• 2 manuscripts
Lin	• 29 August 2021 (64 min) • 28 December 2021 (59 min) • 27 March 2022 (40 min)	• 1 manuscript (including revisions added according to editor's and reviewers' comments) • 1 response letter
Tang	• 7 November 2021 (32 min) • 28 December 2021 (33 min)	
Liang	• 28 February 2022 (47 min) • 25 March 2022 (37 min) • 7 October 2022 (51 min)	• 1 manuscript • 1 response letter
Hang	• 27 March 2022 (61 min) • 23 March 2023 (63 min)	

Note.

a. The interviews listed here were the intensive ones. There were also follow-up queries, such as instant messages and informal conversations that were not recorded. Additionally, in the case of Tang and Hang, due to their heavy workload, the interviews were conducted twice but covered all the essential topics for the three round interviews.

b. The three doctors did not share their manuscripts because they said that their manuscripts at hand were unfinished ones at the time of the data collection.

4.5.2 Artefacts and Documents

The predominant tendency in academic writing research, since its inception, has been text-focused and cognitive (see Lillis, 2008; Paltridge et al., 2016). However, as Lillis and Scott (2007) note, such "textual biases" treat language/writing as solely or primarily "a linguistic object" and lead to studies that take "text as the object of study" (p. 10). One problem is that previous studies have paid insufficient attention to texts as linguistic and cultural artefacts (Lillis & Scott, 2007). With a "social turn" in academic literacy research that views writing as a "social act" (see Candlin & Hyland, 2014), an ethnographic perspective on academic literacies, or an ethnography of writing, starts to emphasises the text as social practice rather than the text as linguistic object (Lillis & Scott, 2007). However, this does not mean that texts or detailed analysis of texts would be abandoned when attention is focused on academic writing as social practice (Lillis & Scott, 2007; Paltridge et al., 2016). Thus, an ethnographic perspective on academic literacies is marked by "the extent to which *practice* is privileged above *text*" (Lillis & Scott, 2007, p. 10, emphasis in original) rather than the negligence of text. To bridge text and context, such an ethnographic notion of *practice* links the specific instances of individuals' language use with their situated conditions and social structures (Barton & Hamilton, 2012; Lillis, 2008). Thus, as Barton (2001) suggests, there is a need to establish the link between

research on textual analysis and textual practices and explore their mutual influences. In so doing, textual practices, where texts and practices come together, constitute a type of social practices complemented by such practices (e.g., the writing and use of texts) (Barton, 2001). Since the present study aimed to investigate Chinese medical doctors' scholarly publishing practices and adopted an ethnographic perspective on academic writing, texts related to the doctors' scholarly publishing practices were considered important linguistic and cultural artefacts, and analysis of such texts was expected to inform a contextual analysis of scholarly writing and publishing. Accordingly, I asked the doctors to share with me the various artefacts related to their scholarly publishing practices, such as their manuscript drafts, comments on their manuscript drafts, and documents and letters related to the editorial process of their manuscripts. Such textual artefacts embodied the "text histories" that constitute "text production and trajectories towards submission and publication" (Lillis, 2008, p. 368). By bringing the different artefacts together in this way, I could understand how certain contextual factors shaped text production and trajectories and how the texts and the practices influenced each other.

Additionally, documents also constitute an important source for a case study to "corroborate and augment evidence from other sources" (Yin, 2018, p. 180). For instance, documents can help verify details (e.g., titles of organisations) mentioned in the interviews. Most importantly, as Yin (2018) points out, documents can provide detailed information to corroborate information from other sources and create opportunities for

inferences to be made, which can be treated as clues worthy of further investigation. Thus, I collected documents related to the university, its affiliated focal hospital/s, and the departments concerned within the hospital/s. I also conducted an Internet search for relevant documents which can provide useful information to guide preparation and orientation for the research under investigation (Yin, 2018). For instance, I browsed through the focal hospital's and the university's official websites and searched for news articles and documents stipulating rules and regulations for clinical practice and scholarly publication. I also asked the doctors to share with me any documents concerning their scholarly publishing practices. These artefacts and documents offer the potential to provide information about the different levels of contexts (e.g., national and institutional contexts) in which the doctors' scholarly publishing activity system was embedded, and the dynamics between the scholarly publishing activity system and its interacting activity systems.

4.5.3 Text-Based Interviews

In the previous section, I discussed the conceptualisation of ethnography as method in academic writing research (Lillis, 2008; Paltridge et al., 2016). According to Lillis (2008), an ethnography of writing is operationalised as the interview method, or "talk around texts, which [offers] the researcher an additional lens from which to understand the text" (p. 355). As Lillis (2008) observes, such interviews as talk around text vary along "a *text–writer* continuum", depending on the researchers' different stances towards

the text and the talk. The present study used "talk around text" from the *writer*-focused end of the continuum. Specifically, such a stance towards talk around text is particularly interested in exploring writers' perceptions of the texts that they have produced and their writing activities, instead of simply investigating the texts *per se* (Lillis, 2008; Lillis & Curry, 2010; Lillis & Scott, 2007; Paltridge et al., 2016).

Therefore, such text-based interviews provide insights into the trajectories of writers' texts towards publication seen from their own perspectives and establish the link between their writing practice and their specific contexts (Lillis, 2008; Lillis & Curry, 2010). However, as Lillis (2008) points out, "talk around texts" approach is at risk of being reduced to "a simple reflection of a writer's perspective" (p. 362) without considering social contextual factors that have shaped writers' text production. To avoid this tendency, longer conversations (see the discussion on intensive case study interviews in the preceding section), especially literacy history interviews and cyclical dialogue around texts over an extended period of time, are instrumental in understanding the relationships between writers' "current perspectives and practices … [and] the broader sociohistorical context of an individual's life (and academic writing) trajectory" (Lillis, 2008, pp. 362-363; see also Barton & Hamilton, 2012; Ivanič, 1998; Lillis & Curry, 2006).

Following such investigative approaches to academic literacies (Paltridge et al., 2016), I had "talks around texts" with the doctors to investigate their perspectives on their linguistic and rhetorical decisions made in their manuscripts (e.g., the use or non-use of

hedges) and their responses to the comments on their manuscripts (e.g., the alternating use of "thanks" and "thank you" in every two responses). As discussed above, such "talk around texts" thus did not adopt a linguistic approach to academic writing (e.g., counting linguistic features across texts) but "encourage[d] writer-participants to identify aspects of the text that were worthy of analysis" (Lillis, 2009, p. 212), that is, making allowances for the writers to choose what should be emphasised (see Section 7.2). In other words, the researcher as a linguist/discourse analyst is "to work *with* writer-participants, not *on* them" and, through talk around text, to further explore the sociohistorical contexts of writer-participants' writing practices (Lillis, 2009, p. 213, emphasis in original). Before the interviews, I asked them to share with me their manuscripts, preferably those they were revising. When examining their manuscripts, I paid particular attention to textual features that they mentioned in the previous interviews (i.e., valuing writers' emic/insider perspectives) or that I found interesting and prominent (i.e., leveraging outsider "expert" knowledge drawn from linguistics and literature) (Lillis, 2009). By investigating the doctors' perspectives on their textual practices, I was able to gain insights into the participants' emic perspectives on their text production and histories and the context in which their scholarly publishing practices were embedded, and uncover the "social" patterning of such practices, such as the networks of relationships around text production.

4.6 Methods of Data Analysis

Multiple types of data – field notes, interview transcripts, manuscripts and other related documents and artefacts – were collected in this study to address the research questions. Following Yagamata-Lynch's (2010) approach, I conducted a thematic analysis and an activity systems analysis of the data. In conducting the thematic analysis, I followed some general analytical strategies, such as inductive and abductive data analysis (Charmaz, 2006; Patton, 2015; Tavory & Timmermans, 2014) and within-case analysis before cross-case analysis (Creswell & Poth, 2018). In what follows, I present several guidelines followed in my data analysis.

First, data analysis in qualitative research is an ongoing process, which starts at the initial stage of the study (Hammersley & Atkinson, 2019; Robson & McCartan, 2016). The early analysis and progressive focusing helps the researcher get a general sense and a deeper understanding of the data (Miles et al., 2014; Robson & McCartan, 2016). With the researcher's immersion in the collected data, the research purpose and research questions may be reformulated in an ethnographic study, which offers the flexibility of an emergent research design (Hammersley & Atkinson, 2019). For instance, I initially set out to focus on textual production in the doctors' scholarly publishing activities. However, as I conducted data analysis concurrently and interactively with data collection, I found that my participants constantly emphasised the contextual factors that influenced their publishing activities, which led me to pay more attention to their scholarly publishing

activity system and its interacting activity systems. Following general principles of qualitative data analysis (e.g., Charmaz, 2017; Creswell & Poth, 2018; Glaser & Strauss, 2017; Patton, 2015; Tavory & Timmermans, 2019), I analysed my data in an iterative, inductive and abductive way (Charmaz, 2017; Tavory & Timmermans, 2019; Timmermans & Tavory, 2012). On the one hand, the process of conducting qualitative research is inductive, involving a bottom-up approach characterised by the phases of turning the data into more abstract form of information (Creswell & Creswell, 2018). Such inductive process requires the researcher to work back and forth between or within research stages to look for emergent patterns in the data throughout the research process (Creswell & Creswell, 2018; Patton, 2015). More importantly, the inductive approach requires the researchers to avoid "preconceived", "doctrinaire", or "pet" theories in the data analysis process (Glaser & Strauss, 2017, p. 46; see also Charmaz, 2006, 2017). However, Tavory and Timmermans (2019) argue that this inductive approach only answers the "what" questions generally, but leaves the "so what?" questions unexplored. Thus, abductive analysis is necessary in qualitative research to provide insights into the situation under investigation and make it understandable (Tavory & Timmermans, 2013, 2019). Similarly, Marshall and Rossman (2016) note that the attempts to avoid any predetermined nonmaterial boundaries does not mean that theory in natural settings should be discarded. In the present study, although I tried to stay as open as possible at the initial stage of data analysis to answer the "what" questions, it was kept in mind that

this study also set out to answer the "how" and "why" questions based on the theoretical framework of CHAT. Therefore, at the later stages of more focused data analysis, I adopted the abductive approach proposed by Timmermans and Tavory (2012), which relies on "the researcher's cultivated position" (p. 173) that is based on researchers' own life experience as well as their knowledge of broader theoretical fields. As pointed out by Tavory and Timmermans (2019), "[w]here grounded theory [inductive analysis] presumes that empirical observations are inherently sociologically relevant, abductive analysis sifts through these observations based on how they relate to existing theories" (p. 540). It has also been widely acknowledged that researchers' prior knowledge, including knowledge of the extant research, inevitably finds its way into the researchers' data analysis process (e.g., Braun & Clarke, 2013; Charmaz, 2006; Patton, 2015). As argued by Dey (2005), researchers' prior knowledge needs to be used as resources to provide insights into data analysis processes as long as researchers stay open without holding a prescriptive opinion about the analysis. Moreover, if researchers tend to adopt an abductive approach to data analysis and aim to use it as an analytical strategy geared towards the development of theory, Tavory and Timmermans (2019) suggest that instead of keeping the distance from the existing knowledge base regarding the field of study, researchers should read extensively and intensively to acquire knowledge within and around the field before they conduct the relevant research and while they are doing so (see also Marshall & Rossman, 2016; Patton, 2015). To give an example of my analysis,

both inductive and abductive approaches were used in conducting the thematic analysis and the activity system analysis (see Section 4.6). For example, the theme "Play the Publication Game" (see Sections 6.2.3 and 6.4) emerged after I grasped the conceptual underpinning of this term which offered explanatory power for the doctors' various strategies in response to time pressure.

Second, in qualitative research, it is recommended that "within-case" analysis is carried out before "cross-case" analysis because confusion may arise when both analyses are simultaneously carried out (e.g., Creswell & Poth, 2018; Patton, 2015; Stake, 2013). Creswell and Poth (2018) explain this analysis process as follows:

> [A] typical format is to provide first a detailed description of each case and themes within the case, called a ***within-case analysis***, followed by a thematic analysis across the cases, called a ***cross-case analysis***, as well as assertions or an interpretation of the meaning of the case. (p. 75, emphasis in original)

Furthermore, what constitutes a case needs to be defined before case analysis and comparative analysis are carried out (Creswell & Poth, 2018; Patton, 2015; Yin, 2018). As discussed above, a case is a bounded system which can be anything from an individual, a group, an organisation to a geographical area (Stake, 2013; Yin, 2018). Based on the research questions and the analytical methods, each case in this study was the unit of analysis, resulting in multiple units of analysis. In the thematic analysis, each doctor's scholarly publishing activity system was the unit of analysis, while in the activity system

analysis, the unit of analysis was the foregrounded perspective from either an individual (the individual subject), several individual doctors (the interpersonal subject) or all the doctors (the community subject) (see Section 4.6.2 for a detailed discussion).

4.6.1 Thematic Analysis

The purpose of the thematic analysis was to identify themes for further exploration from a CHAT perspective and to examine mediations between different components of the doctors' scholarly publishing activity system and relationships between their publishing activity system and relevant systems. In line with the qualitative paradigm underlying the present study, I adopted a reflexive approach to my thematic analysis (TA) because this approach prioritises the researcher's subjectivity and reflexivity by emphasising his or her active role in the knowledge production process (Braun & Clarke, 2006, 2013; Braun et al., 2019). Following Braun et al.'s (2019) approach to doing reflexive TA, I describe, below, the steps that I took to conduct TA. Although my analytical steps are explained linearly, my TA was a reflexive and recursive process (see Braun & Clarke, 2006; Terry et al., 2017).

In code identification, I followed general principles of constructivist grounded theory (Charmaz, 2006, 2017). My code identification comprised two phases: an initial coding phase followed by a focused, selective coding phase. In the initial coding phase, I read the data closely and iteratively to familiarize myself with the data before starting to code. I tried to remain open to, but also stay close to, the data by coding the data line by line

and using in vivo codes (i.e., the participants' words as codes). While this initial coding phase was kept as open-ended as possible, it should be acknowledged that I held preconceived ideas and prior skills when approaching and coding the data (Braun et al., 2019; Charmaz, 2017).

Next, I conducted focused coding, in which decision was made about which initial codes made the most analytic sense to categorise my data incisively and completely in my emerging analysis. The focused coding helped me to "synthesize, analyze, and conceptualize larger segments of data" (Charmaz, 2017, p. 138). In this phase, I constantly compared codes with codes and treated them as provisional ones. Notably, the move from initial to focused coding was often seamless rather than a linear process (Charmaz, 2017). This inductive and data-driven approach to code identification enabled me to avoid imposing my prior theory on the data.

After the coding was done, I constructed themes based on the patterns that my focused codes suggested. Specifically, I identified "features of similarity and relationship across a range of different codes [or tentative categories] that means they can be clustered together into a possible theme" (Terry et al., 2017, p. 28). In this process, I identified a "clear core idea or concept that underpins a theme" (Clarke et al., 2015, p. 102), which reflected a pattern of shared meaning across a certain range of codes/categories and captured something important in relation to the research questions (Braun & Clarke, 2006; Braun et al., 2019). For instance, the focused codes - "inadequate language skills" and

"lack of genre knowledge" - were clustered together into the theme of "lack of grounding in scholarly publishing", which was related to the research question concerning the difficulties and challenges that doctors faced in their scholarly publishing activities.

I then reviewed and defined the candidate themes, as they were further revised or even rejected. This reviewing process was to make sure that the themes worked well in connection with the coded data, the dataset, and the research questions, while the defining process was to check each theme was coherently bound to a central organising concept (Terry et al., 2017). I made adjustments to the candidate themes wherever necessary to make sure that they fitted together and did not overlap. The revising and defining phases helped to improve the capacity of the themes to capture the essence of the data clearly, concisely and comprehensively (Braun et al., 2019).

4.6.2 Activity System Analysis

I followed Yamagata-Lynch's (2010) approach to conducting an activity system analysis that involved the identification of the unit of analysis, activity settings, activity system networks, and systemic contradictions. As discussed in Chapter 3, the interactions among multiple activities and the boundaries between them need to be examined to understand the development of and changes in both human activity and societal systems (Engeström, 2001, 2015; Yamagata-Lynch, 2007, 2010). Such an activity systems analysis can help researchers "identify activities critical to answering their research questions and examine the collective meaning making processes" (Yamagata-Lynch,

2010, p. 22). In what follows, I describe this process of identifying bounded systems for the activity system analysis. Like TA, an activity systems analysis is a reflective and iterative data analysis process rather than a clean step-by-step process (Yamagata-Lynch, 2007, 2010). As discussed in Chapter 3, the unit of analysis in activity systems analysis is the object-oriented activity (Engeström, 2001, 2015; Engeström & Sannino, 2020; Yamagata-Lynch, 2010). In this study, the unit of analysis was each doctor's scholarly publishing activity system. However, Yamagata-Lynch (2007) notes that in data analysis, it can be "very difficult to manage simultaneous cycles of activities that were initiated by multiple individuals directed toward similar objects" (p. 459). Moreover, an activity system comprises multi-voiced perspectives of the subjects (Engeström & Miettinen, 1999). Therefore, Yamagata-Lynch (2007) argues that CHAT analyses need to "unpack the unit of analysis associated with the subject" (p. 459). Adopting Rogoff 's (1995) sociocultural approach to development that incorporates personal, interpersonal, and institutional/community planes, Yamagata-Lynch (2007) identifies bounded systems of activity according to the subject of an activity. Specifically, the subject of activities that corresponds to the three planes of analysis can be the individual on the personal plane, groups of individuals on the interpersonal plane, and community-based collective activities on the community plane (Rogoff, 1995; Yamagata-Lynch, 2007, 2010). According to Rogoff (1995), the three planes of analysis "are inseparable, mutually constituting planes comprising activities that can become the focus of analysis at different

times, but with the others necessarily remaining in the background of the analysis" (p. 139). Such an approach to CHAT-informed data analysis can help researchers zoom into one plane of analysis at a time without being distracted by the complex relationships between object-sharing activities carried out by different subjects (Yamagata-Lynch, 2007) and make CHAT-informed data analysis manageable to researchers themselves and understandable to their readers as to which plane of analysis is being investigated (Yamagata-Lynch, 2010). For instance, in order to meet the hospital's publication requirements, one doctor focused strategically on increasing his number of English papers by publishing in SCI-indexed but relatively low-impact journals, but another doctor put a premium on the quality rather than the quantity of his scholarly publications and targeted prestigious international journals, and still other doctors collaborated with each other on research projects. In the example, when a single doctor's perspective was foregrounded, the activity system was analysed on the personal plane. However, when several doctors working together shared the same perspective, the activity system was investigated on the interpersonal/community plane. It is important to point out that in the activity systems analysis, the unit of analysis adopted remained the scholarly publishing activity system, regardless of the planes of analysis discussed above.

Drawing on her previous studies (Yamagata-Lynch, 2003), Yamagata-Lynch (2007) notes that the isolated units of activities identified in activity systems analysis are situated within a broader, real-world context, which needs explication in the analysis in order to

offer systemic implications (see Section 3.3). Therefore, another concept, activity settings, has been introduced by Yamagata-Lynch (2007) into activity system analysis to capture how the activities being analysed fit into the general context in which individuals are situated (see also Yamagata-Lynch, 2003; Yamagata-Lynch, 2010). Informed by Gallimore and Tharp (1990) and Tharp and Gallimore (1991), Yamagata-Lynch (2010) defines activity settings as "bounded systems related to the social environment in which object-oriented activities and goal-directed actions are anchored with other related activities with similar objects" (p. 24). This means that contextual elements in the activity systems, which are reported by participants to have impacted their individual actions and collective activities, need to be taken into account in an activity system analysis (Yamagata-Lynch, 2007, 2010). Activity settings thus offer an analytical lens for researchers to interpret how the social context influences various activities or vice versa (Yamagata-Lynch, 2010). Therefore, I employed this concept to situate the doctors' scholarly publishing activities within a bounded context of professional activities and investigate their networks of activity systems. This was done through my qualitative thematic analysis of interviews (see section 4.6.1). Specifically, I identified the activity settings by weaving together the contextual information that were reported by the doctors to have affected their scholarly publishing activities. Notably, the identification of activity settings through such an interpretive process was grounded in my data rather than predetermined categories. In so doing, this analytical process of identifying activity

settings would shed light on "how activity settings, object-oriented activity, and goal-direction actions are fluid, intertwined, and changing from moment to moment" (Yamagata-Lynch, 2010, p. 24).

After the three-plane analysis and the identification of activity settings, a trustworthy unit of analysis can be determined and multiple activity systems related to the study can be identified (Yamagata-Lynch, 2010). Then, in their activity system analysis, researchers need to zoom in and out to investigate the relationship between one central activity system and other activity systems to find systemic implications, which reveals networks of activity systems (Engeström, 2001, 2015; Yamagata-Lynch, 2010). In this process, it is important for researchers to locate an activity unit as a systemic reference point to engage in constantly comparing the relationship between a single unit and multiple units of activity (Yamagata-Lynch, 2010). For instance, I used a doctor's scholarly publishing activity system as a reference point to identify other activity systems, such as their clinical work activity system and their research activity system, as the activity settings for this study. It is important to point out that my interpretations of a single unit and multiple units of activity were sometimes modified after examining a series of activities, because my data analysis was an ongoing and iterative process based on the emergent results. Moreover, because the dynamics were likely to vary across the individual doctors' networks of activity systems, my analysis focused on the personal plane of analysis to reveal individual idiosyncrasies of their activity systems, while the

general structural characteristics of an activity system remained stable (Engeström, 2001). For instance, although the activity settings for each doctor's scholarly publishing activity system were largely the same, the activity system may be experienced differently by individual doctors. Thus, the contextual influence on each doctor's scholarly publishing activity system may vary depending on how they responded to the structural tensions both in their scholarly publishing activity system and between their interacting activity systems.

Based on the results of my thematic analysis and the activity systems analysis, I identified contradictions inherent in the doctors' scholarly publishing activity system and their influence on this activity system and its related activity systems. To facilitate this process of identification, I drew on these results of my data analyses within the context of the research questions to construct the activity systems model. In my research design, my data were all subject-centred because I was asking questions of all the doctors. Thus, I identified the subject first, then the object, and other components (i.e., tools, rules, community, division of labour) in the activity systems. For instance, the object was identified with reference to the theme "Motives" in TA. Using an iterative data analysis process, I constantly compared the results of the thematic analysis and the activity systems analysis to map out tensions and contradictions that caused changes in or transformations of the nature of the activity in relation to the subject's effort in the attainment of the object (Yamagata-Lynch, 2007). For instance, the difficulties concerning time pressure in TA was related to the systemic contradiction between the

object and the rule in activity system analysis, which were found to be rooted in the primary contradiction that was identified with reference to the conflicting motives in TA (see Section 6.1). During this process, the relationship between the subject and the object, which was identified at an earlier stage of the data analysis, needed modifications, as I gained a deeper understanding of the context and the doctors' perspectives on the activities with which they were engaged. Therefore, I went back to the data set to repeat the data analysis process discussed above for the relevant activity system. Drawing on the findings of TA, I then examined the relationships between the components of an activity system and between different activity systems to unveil contradictions and tensions in the system and identified the ways in which the doctors reduced or resolved these contradictions and tensions (see Sections 5.1.3, 6.1, and 7.1).

In presenting and communicating my findings, I drew on the CHAT triangle model and developed accompanying narratives to describe each doctor's experience with scholarly publishing. I then identified themes related to the components of the doctors' scholarly publishing activity system and to sensitising concepts, including difficulties, mediating resources, and coping strategies (Engeström, 2015; Roth, 2004; Yamagata-Lynch, 2010). It should, however, be noted that the triangle model was used as a visual and conceptual tool to represent the activities and interactions between them to contextualise and complement the narratives.

4.7 Trustworthiness

To ensure the quality of qualitative research, researchers need to minimise the flaws in their observations and assertions and check for the accuracy and credibility of their findings (Patton, 2015; Stake, 2010). Although the concepts of validity and reliability underpinning a (post)positivist paradigm have been used in qualitative research, they do not carry the same connotations that they do in quantitative research (Creswell & Creswell, 2018; Creswell & Miller, 2000; Lincoln et al., 2017). Given the non-positivist orientation of the present study, I adopted the term "trustworthiness" (Lincoln & Guba, 1985) to relate to the issues of validity and reliability in qualitative research.

According to Lincoln and Guba (1985), trustworthiness can be enhanced by prolonged activity in the field (i.e., the researcher's engagement during an extended period of time), triangulation (i.e., multiple sources of data) and respondent validation (i.e., member checking). First, the multiple-case study required my prolonged engagement with the participants (i.e., in-depth interviews). The prolonged engagement enabled me to develop insights into their experiences as clinicians-cum-researchers, establish trust and rapport with them and engage in conversations with them. This allowed me to develop a rich and in-depth understanding of the issues under study. Second, as discussed earlier in the data collection section, multiple types of data were collected from multiple sources to achieve data triangulation. Such triangulation provided thick descriptions and took multiple perspectives into account, thereby lending more

confidence in the findings obtained and conclusions drawn from the study. Third, two types of member checking were employed in the study to verify my interpretations and conclusions (Lincoln & Guba, 1985). During the interview sessions, critical information provided by the participants and my interpretations were summarised for the participants to check their accuracy. At the end of the study, my research findings were summarised for the participants to check their authenticity and accuracy. A follow-up interview with the participants was conducted to offer an opportunity for them to comment on my findings and interpretations. This strategy is considered by Lincoln and Guba (1985) as "the most critical technique for establishing credibility" (p. 314).

In addition, low inference and reflexivity are also useful strategies to enhance trustworthiness in qualitative research (Johnson & Christensen, 2019). As discussed earlier, I explicated my positionality and reflexivity throughout the research process. Low-inference descriptors , which aims to record observations as concrete as possible in the participants' own words to achieve high reliability in qualitative research (Seale, 1999), were thus presented using the participants' verbatim accounts (i.e., direct quotations). Verbatim quotations of the participants provided information about not only what the participants experienced, but also how they felt about a certain situation (i.e., their interpretations and personal meanings) (Johnson & Christensen, 2019). The presentation of verbatim accounts could help avoid researchers' reconstructions of the general sense of the participants' words and the potential influences of their personal

perspectives on the reporting (Seale, 1999). Thus, readers can have a trustworthy access to the participants' perspectives and their experiences (Maxwell, 2013).These strategies helped to ensure that "the findings are accurate from the standpoint of the researcher, the participant, or the readers of an account" (Creswell & Poth, 2018, p. 274) and, consequently, enhanced the trustworthiness of the findings yielded by this study.

4.8 Ethical Considerations

In conducting qualitative research involving human subjects, it is important to identify and address ethical issues arising in the research process because an awareness of ethical issues can lead to more thoughtful and ethical research practices (Lincoln & Guba, 1985). Most importantly, the privacy and confidentiality of the participants should be well protected (Creswell, 2012; Creswell & Poth, 2018; Mackey & Gass, 2016). This requires the researcher to be open, transparent, and respectful for the participants and the research site (Creswell & Poth, 2018; Fetterman, 2019). Accordingly, I followed the following guidelines to address potential ethical issues in different phases of my study.

First, all the doctors' participation was voluntary. My research plan was reviewed and approved by the Institutional Review Board (IRB) of my university before I obtained approval of and sought informed consent from all the participants. I stayed open and honest with my participants. The informed consent form written in straightforward English and Chinese (the participants' L1) explained the purpose and general procedure of the study and promised the confidentiality of the information provided and of their

identities. I invited the participants to ask me any questions related to the consent form to ensure comprehension on their part and alleviate their concerns. Following this, I sought their signature on the informed consent form (see Appendix A) if they agreed to participate in my study. In the form, I also made explicit the participants' rights to withdraw at any time from the study.

Second, I collected data in a way that caused no harm to the participants. All the data were used for research purposes only. All arrangements for interviews were made to the participants' best convenience. Questions were asked in a supportive and non-threatening way. Only I had the access to the data collected in my study. All information related to my participants was confidential, and they were identifiable by codes known to me only. Specifically, I coded all the data collected for my study and removed any identity-related information therein. Therefore, the participants in this study were identifiable only to me through the codes. Additionally, redactions were made wherever necessary in the data extracts (e.g., from the doctors' manuscript drafts, response letters and other relevant artefacts) presented in this thesis. Specifically, I avoided taking large chunks of texts from their manuscripts and left out terminologies in their texts that could possibly be used to identify the publications and hence the participants. These measures were aimed to ensure the participants' anonymity and confidentiality.

Third, I offered free English editing service to the participants in my study, if needed, to gain access to them, build rapport and trust with them, and reciprocate their

participation. It is important to note, however, that I explicitly explained our respective roles and responsibilities in the editing process and maintained reflexivity and sensitivity to my role as a researcher and the context so as not to get too involved in the participants' scholarly publishing activities. This was also to ensure that invitations to participate in research must not involve offers of inappropriate rewards (Mackey & Gass, 2016). As should be clear by now, these strategies were expected to help ensure the trustworthiness of the findings emerging from this study.

4.9 Chapter Summary

In this chapter, I explicated the research methodology adopted in this study to address the research questions posed. First, I presented the research design and explained why a multiple-case study was well equipped to answer my research questions. Next, I explained the rationales for my selection of the research site and the participants and discussed my positionality and reflexivity in line with the qualitative research paradigm underlying this study. I then introduced the methods of data collection (i.e., in-depth and text-based interviewing, and documents and artefacts) and data analysis (i.e., thematic and activity systems analyses). Finally, I presented the general guidelines that I followed to ensure the trustworthiness of my findings and the protection of my participants' rights. In the next chapter, I will depict the activity systems and settings, discuss the university's, the hospital's and the doctors' motives for scholarly publishing and the contradictions in doctors' scholar publishing activity systems.

Chapter 5 Scholarly Publishing in a Professional Context: Activity Settings and Motives

This chapter aims to answer the first research question on the activity settings and the motives of the major stakeholders (i.e., the university, its affiliated hospital, and medical doctors) for the doctors' scholarly publishing in their professional context. It presents findings on the institutional contexts for the doctors' scholarly publishing activity systems, the major stakeholders' shared and conflicting motives for scholarly publishing meant for professional promotion and knowledge contribution, and the impact of the contextual factors on their various motives. Following that, the chapter concludes with a brief summary. The findings of this chapter set the scene for the next two chapters, in which contradictions inherent in the doctors' scholarly publishing activities will be discussed in detail.

5.1 The Professional Work Activity System

The doctors' scholarly publishing activity system is one of the major subsystems of their professional work activity system. Other subsystems include the research activity system, the clinical work activity system, and the teaching activity system. Notably, these activity systems were interconnected and interacting with other activity systems both within and beyond the current network of activity systems. As the focus of the present study was on the doctors' scholarly publishing activity system, which was closely related

to and interacting with their research and clinical work activity systems, my analysis was then centred on the three major subsystems: the scholarly publishing activity system, the research activity system, and the clinical work activity system within their overarching professional work activity system. As Figure 5.1 shows, the major subsystems introduced above were implicated in the attainment of the object of the doctors' professional work activity system and were thus embedded in this overarching activity system.

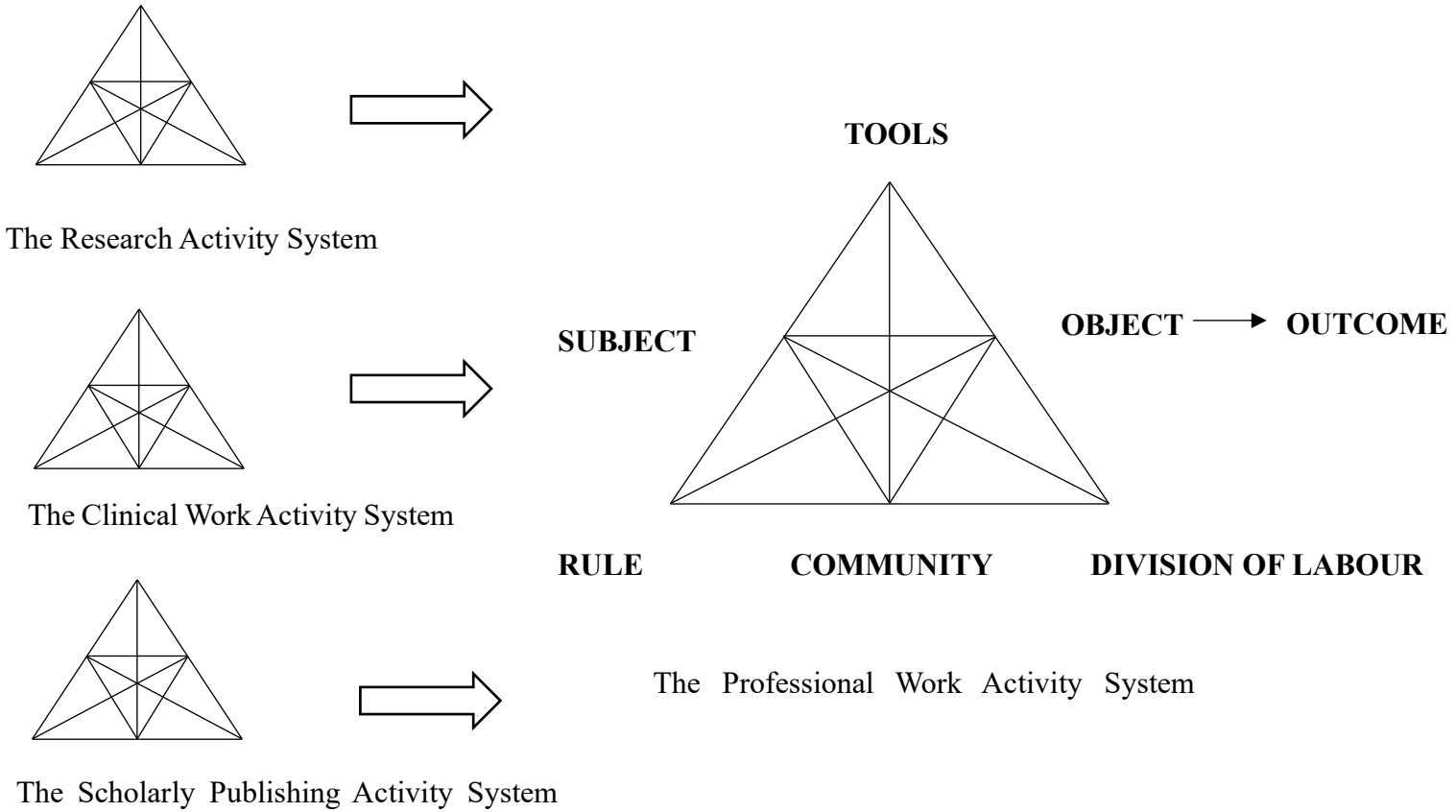

Figure 5. 1 The Doctors' Professional Work Activity System and its Subsystems

As indicated in Figure 5.1, the object of the doctors' professional work activity system was to develop them into full-fledged clinician-researchers that could make contributions to knowledge. With reference to the role of research publications, this overall object was officially promulgated in X University's promotion document: "Under the guidance of National Initiative … X University evaluates the quality, contribution, and influence of representative publications" and "continues to improve the professional promotion system … with the aim to provide a skilled workforce for the strong growth of X University" ("The University Requirements for Professional Promotion [2022]"). Such promotion policies revealed that the object was focused on the quality of knowledge production and professional development. Previous studies have also found that such objects are prioritised by institutional documents (e.g., Lei & Hu, 2019; Pickstone et al., 2008; Trostle, 1992; Velho, 2004).

Given the focus of this study on the doctors' scholarly publishing activities, the subjects were the medical doctors who negotiated their scholarly publishing efforts in their professional context. The tools in their professional work activity system consisted of clinical knowledge and skills, research knowledge and skills, senior colleagues, fellows, collaborators, and resources provided by the university, the hospital, or the department. The community consisted of the university and hospital administrators, the university academic committee, colleagues, patients, and so on.

The division of labour involved both the horizontal division of tasks and vertical division of power and status. The division of tasks at the horizontal level included the university and the hospital providing support for the medical doctors, patients either as clinical subjects or research data, and colleagues helping and supporting each other for the attainment of the object of their professional work activity system. When it comes to power hierarchy, the university and the hospital, journal editors and reviewers, and the doctors were considered to have higher statuses and greater power than the patients.

The rules included the university's promotion criteria and guidelines (i.e., basic requirements concerning ethics and academic background, public service, medical work, teaching requirements, scholarly outlets), research guidelines and protocols, clinical guidelines, and tacit rules and norms in their professional work context. The promotion criteria and requirements for scholarly publishing and clinical work will be introduced below. As regards the promotion of medical doctors, the University Requirements for Professional Promotion (henceforth URPP) offered two professional tracks: the academic track and the practitioner track. As the participants in this study were lecturers/attending physicians, the focus was only on the promotion requirements for the rank of associate professor/associate chief physician. All the doctors in this study reported that the requirements for scholarly output were challenging to attain, but all the other requirements were clearly specified and could be fulfilled progressively. They all indicated their aspiration or promotion to associate professorship, which would require

fewer years to gain promotion, allow access to more resources and earn a much higher salary. The URPP specified the important role of scholarly output in determining the track for professional promotion. To encourage junior researchers from Y Hospital to produce scholarly publications, the URPP provided an accelerated promotion track to associate professorship for staff under 35 and with a doctoral degree. The "under 35" age requirement applied to both promotion tracks and was linked to the age eligibility for the Young Scientists Fund of the National Natural Science Foundation of China (henceforth the NSFC Young Scientist Fund)[3]. The NSFC official document, which is publicly available, stipulates that "at the time of applying, male applicants should be under 35, while female applicants should be under 40".[4] Notably, there was no gender-based age differentiation in the URPP. Table 5.1 summarises the basic promotion criteria.

[3] The NSFC is open to all hard-discipline researchers.

[4] Available online at https://www.nsfc.gov.cn/publish/portal0/xmzn/2020/05/ .

Table 5. 1 X University's Promotion Requirements for Medical Doctors

Requirement	Accelerated Track for Associate Professor	Normal Track for Associate Professor	Normal Track for Deputy Chief Physician
Length of service since previous appointment (i.e., lecturer/attending physician)	Nil	At least 5 Years	At least 7 years
Age	Under 35	Nil	Nil
Mandatory requirement for research funding [a]	Principal Investigator for one project supported by the NSFC Young Scientist Fund or one other higher-level project	Principal Investigator for one project supported by the NSFC Young Scientist Fund or one other higher-level project	Nil
Clinic work experience	No required number of years	No required number of years	Fulfil clinic requirements and serve as a backbone doctor for at least 5 years
Research output	1. A-level article/s ≥1; or B-level articles ≥5 2. Principal Investigator for NSFC ≥1 (required amount of funding specified), and B-level research articles ≥2	1.A-level article/s ≥1; or B-level articles ≥4 2. Principal Investigator for NSFC ≥1 (No specified amount requirement）	1. B-level articles ≥2; or E-level or above articles ≥6, and C-level or above articles ≥3 2. Principal investigator for provincial level or above research funds ≥2, and for at least 1 NSFC (the minimal amount specified)

[a] Detailed funding requirements are omitted for the sake of anonymity. Although the first two tracks both require national level research funding, the differences lie in the amount of funding required.

All the doctors in this study intended to publish more research papers and concentrate on their research output for promotion because they understood that they needed to publish enough papers to succeed in funding applications. A close look at Table 5.1 reveals that knowledge production in the form of research articles was prioritised for professional promotion at X university. Notably, only first author or corresponding author publications were counted for professional promotion. Specifically, Bo explained the authorship issue as follows:

> For a doctor at Y Hospital, only first or co-first authorship matters, and even second authorship means nothing. Second authorship earns no monetary rewards and is useless for professional promotion. For co-first authorship, if there are three co-first authors, the performance weight [of one paper] will be divided by three. It means that you need to be co-first authors of three papers if you want to gain the performance weight of a single first-authored paper. (Interview, 25 December 2021)

As shared by the participants, most doctors at Y Hospital would prepare for both the normal track for associate professorship and the deputy chief physician track, aiming to publish as many SCI papers as possible in a short period of time. No matter which track a doctor would choose, the clinical workload was considerable (see Section 4.2). Y Hospital stipulated that "doctors must have at least two clinical sessions a week, each of which much receive more than 24 patients". Given such clinical requirements in addition to their teaching and other administration duties, doctors had a heavier workload

compared to other academic staff at X University who intended to apply for associate professorship[5]. Notably, although there were different publication requirements for different promotion tracks, the publication requirements for the deputy chief physician track were found by the participants to be "quite demanding" (Interview with Liang, 7 October 2022). The outcome of the doctors' professional work activity system could be either 1) success in meeting the university's promotion criteria and making novel contributions to knowledge or 2) failure to meet the university's promotion criteria and make limited contributions to knowledge.

To ensure the quality of research output or the successful attainment of the object of the doctors' professional work activity system, X University issued "the Reference Book for the Rankings of High-Quality Scientific Journals and Academic Conferences (Provisional)" in 2020. The Reference Book had two attachments. Attachment 1 presented a seven-category list of journals ranging from the highest rank (Category A) to the lowest Rank (Category F). Attachment 2 presented a long list of over 4,000 journals across hard disciplines recognised by X University. Notably, fewer than 40 of these journals were Chinese-medium ones, with the remainder all published in English. There were only two Chinese-medium journals in Category E, which were already the highest ranking among all the Chinese-medium journals. In Categories E and F, there were fewer

[5] Doctors' teaching duties include but are not limited to developing course materials, giving lectures to medical students, and supervising them in clinical learning situations.

than 10 Chinese-medium journals specialising in medicine. Given the large number of journals listed in the Reference Book, a random check of the journals falling in the field of medicine revealed that almost all the journals were SCI-indexed and published in English. With reference to Table 5.1, this would mean that medical doctors (as well as other academic staff at X University) were in reality impelled to publish in English if they hoped to be timely promoted.

These rules and norms for professional conduct and practice were deeply seated in managerialism, characterised by an audit culture in research evaluation systems, and promoted quantifiable performances (see Gao & Yuan, 2021; Roberts, 2007; Rowlands, 2012). As will be discussed in detail below, such neoliberal values were also spotted in the university's rules for the activity systems of scholarly publishing and clinical work.

5.1.1 The Scholarly Publishing Activity System

Figure 5.2 below presents the scholarly publishing activity system. In this activity system, the subject was a medical doctor, whose object was to turn his/her research into publications that create new knowledge, improve clinical work, join the dialogue of the disciplinary community, and fulfil the hospital's publication requirements. The subject's mediating resources and tools included relevant scholarly literature, colleagues, supervisors, fellow researchers, language professionals, editorial services, journal editors, manuscript reviewers, among others. The subject's community comprised hospital administrators, supervisors, patients, fellow doctors, various gatekeepers of scholarly

publishing, and other academic and professional members. The division of labour concerned how tasks were shared based on available/adopted roles and power relations. For instance, journal editors and manuscript reviewers served as gatekeepers of the quality of scholarly publications and offered feedback to improve the manuscripts under review, whereas colleagues were expected to provide mutual support. With respect to the power relations involved in scholarly publishing, the journal editors and manuscript reviewers were at higher rungs of power and authority than were the doctor, who aspired to publish in their journals. The rules prevalent in the activity system comprised both the explicit/implicit norms and conventions of academia and the hospital's policies and regulations regarding scholarly publishing. The outcome could be 1) desirable (e.g., published articles, the meeting of institutional publication requirements for promotion, membership in the academic community, and contributions to knowledge) or 2) negative (e.g., rejection of the submitted manuscripts, failure to meet the institutional publication requirements for promotion, and missed opportunities to contribute knowledge).

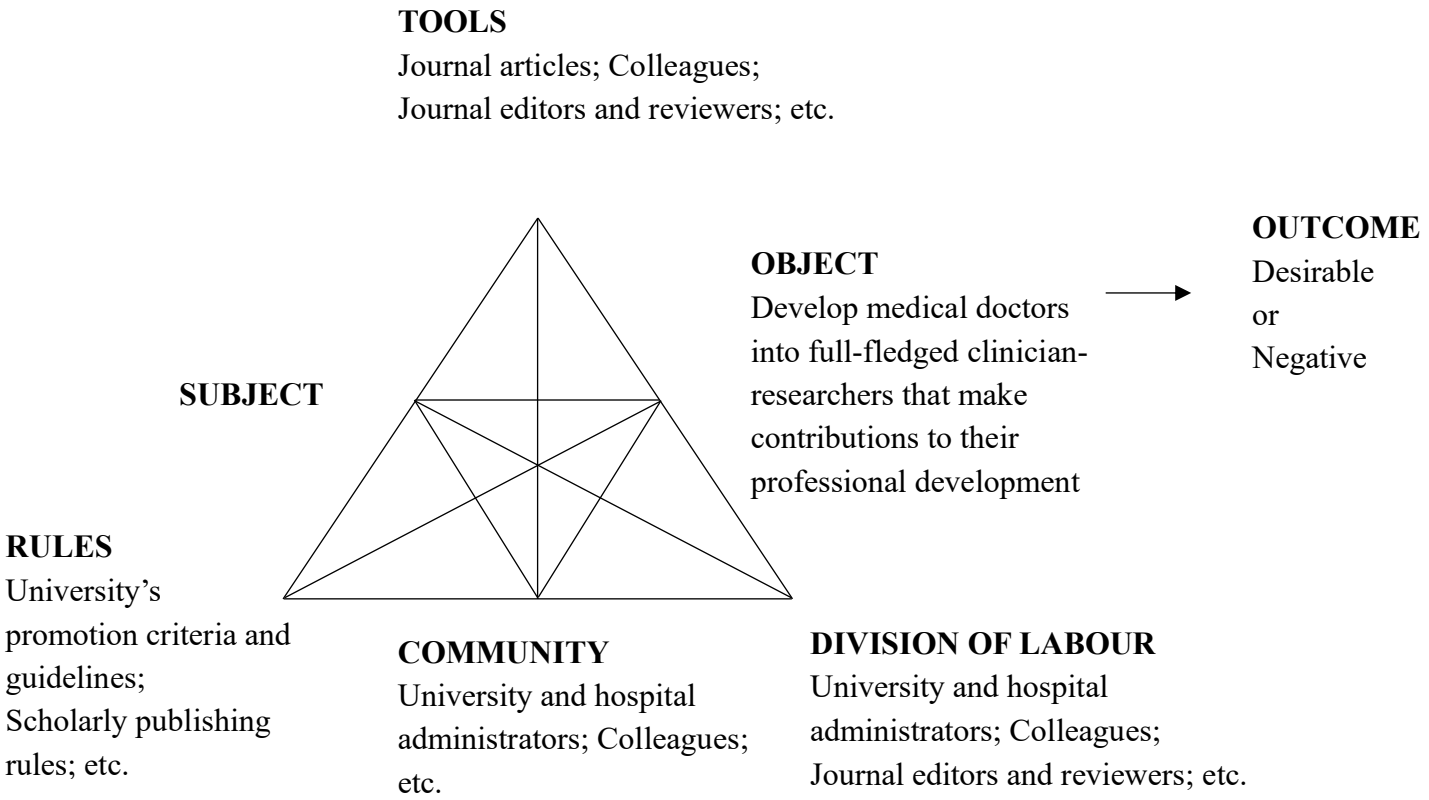

Figure 5. 2 The Scholarly Publishing Activity System

5.1.2 The Research Activity System

Figure 5.3 depicts the doctors' research activity system. In this activity system, the object was to collect data that would lead to papers published in good journals and contribute to knowledge production. The subjects of the activity system were the doctors. The tools included relevant literature, medical records, research equipment, colleagues, collaborators, and patients. The community comprised the university and hospital administrators, colleagues (especially medical team leader), and patients. The division of tasks at the horizontal level included the university and the hospital providing support for the doctors' research and publication endeavours, journal editors and reviewers as gatekeepers of scholarly publishing and sources of feedback on the doctors' research, patients, colleagues helping and supporting each other, and collaborators. The university and the hospital, journal editors and reviewers, and doctors tended to have higher statuses or greater power than the patients. The rules of the activity system consisted of the university's and the hospital's regulations and requirements about research conduct (e.g., ethics), and the norms and conventions of research[6]. The outcome of the activity system could vary from 1) success in turning raw data into potential research data that could

[6] The research activity system consisted of the subsidiary activities of conducting experiments, gathering data of potential research value, and building and managing databases. As these activities were not directly related to the focus of this study, they were not discussed in this thesis. Notably, these research-related activities were not officially recognised by the university and the hospital as a constitutive part of their professional work. How this lack of institutional recognition may have affected the doctors' activity systems of scholarly publishing and clinical practice will be discussed later.

result in publishable manuscripts and making contributions to knowledge production to 2) failure to do so.

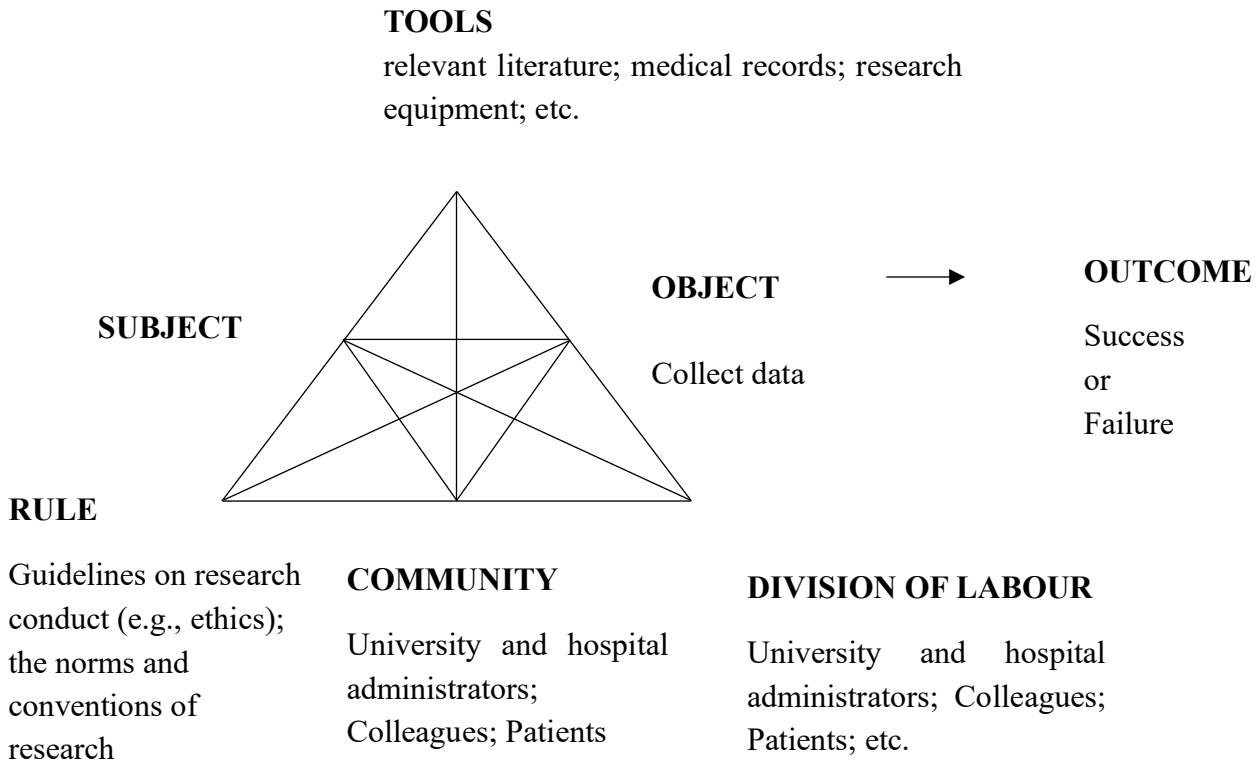

Figure 5. 3 The Research Activity System

5.1.3 The Clinical Work Activity System

Figure 5.4 presents the doctors' clinical work activity system. In this activity system, the object was to treat patients suffering various illnesses successfully and collect potentially usable research data. The subjects of the activity system were the doctors. The tools included relevant literature, medical records, clinical equipment, and colleagues. The community comprised the university and hospital administrators, colleagues (especially fellow doctors), and patients. The division of tasks at the horizontal level involved the university and the hospital regulating the doctors' clinical practice, colleagues providing support to each other, and patients reporting symptoms and other relevant matters faithfully and accurately. As regards the hierarchy of power and status, the administrators from the university and the hospital and the doctors had greater power or higher statuses than the patients, and the senior doctors had a higher status than the junior doctors. The rules of the activity system comprised the university's and the hospital's active policies, regulations, requirements, guidelines or standards concerning clinical practice, and the explicit/implicit norms and conventions of clinical practice. The outcome of the clinical activity system could vary from 1) cure of patients' illnesses, gaining patients' satisfaction, development of the doctors' clinical abilities, discovery of new and better ways to improve clinical practice that could contribute to the development of clinical practice guidelines and clinical research to 2) inadequate treatment of patients, dissatisfaction reported by the patients, inadequate and insufficient development of the

doctors' clinical abilities and skills, limited contributions to the development of the clinical practice and research.

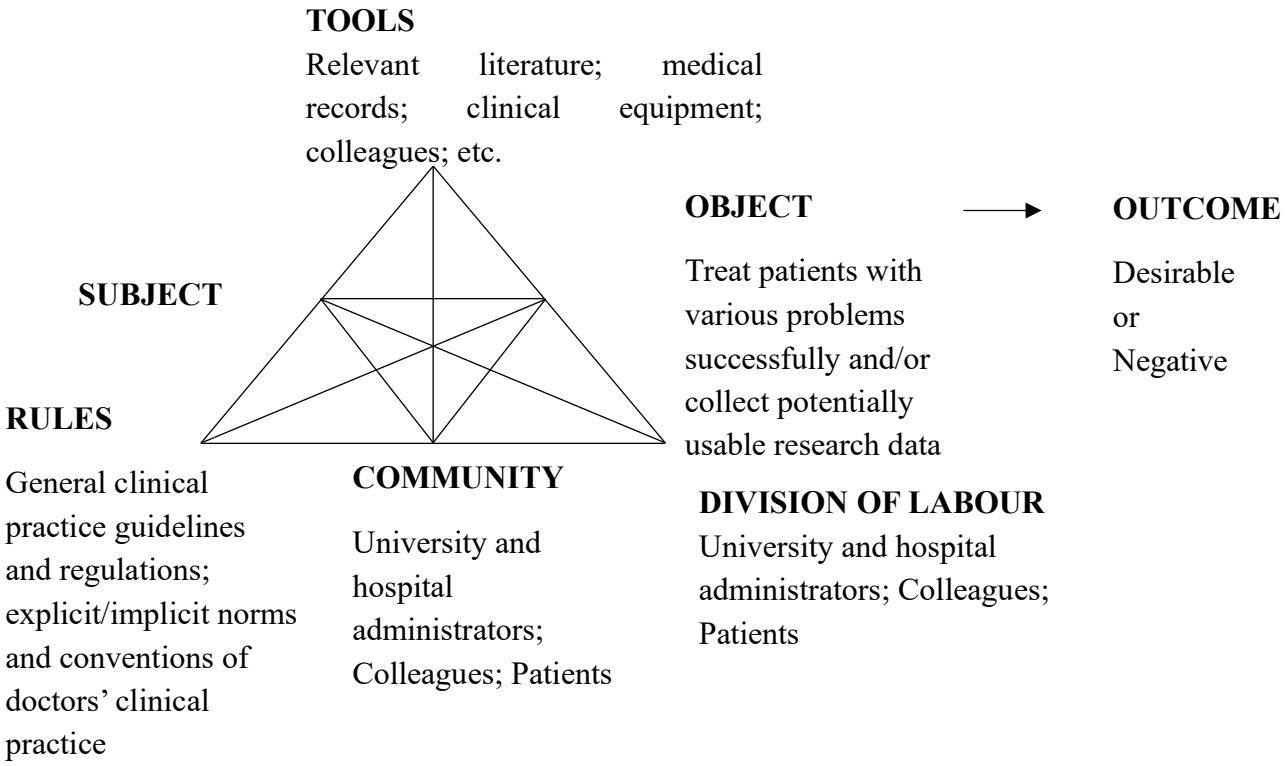

Figure 5. 4 The Clinical Work Activity System

5.1.4 Interactions between the Activity Systems

Figure 5.5 visualises the interconnectedness and interactions between the activity systems embedded within the doctors' professional activity system. Specifically, based on the types of research (i.e., clinical research and/or basic research) conducted by the doctors, the interactions between the clinical and research activity systems were different. For the doctors conducting clinical research, the expected outcome of the clinical activity system was raw data (e.g., patients' medical records) that would serve as tools for the research activity system, the outcome of which would function as mediating resources for the scholarly publishing activity system. For the doctors doing basic research, the desired outcome of the research activity system was development of clinical practice and knowledge that would function as rules and tools in the clinical activity system. The outcome of the clinical activity system also contributed to the attainment of the object of the research activity system, when the objects of the two systems were well aligned (Li, 2014a). Moreover, the activity systems of scholarly publishing and research would then interact with each other and collectively contribute to the attainment of each other's object. For instance, by engaging in these two activity systems, the doctors developed their clinical skills and research knowledge. Ideally, these three activity systems were interconnected and had partially shared objects. The route from the object of the clinical activity system to that of the research activity system and then to that of the scholarly publishing activity system represented a transitional process from the specific to the more

abstract (see Engeström, 2001). However, the partially shared objects between the three activity systems did not automatically lead to a doctor's full participation in all the activity systems. For instance, a doctor's participation in one activity system to achieve its object may not contribute to the attainment of the other two activity systems' objects or even cause undesirable outcomes in these two activity systems or the overarching professional work activity system.

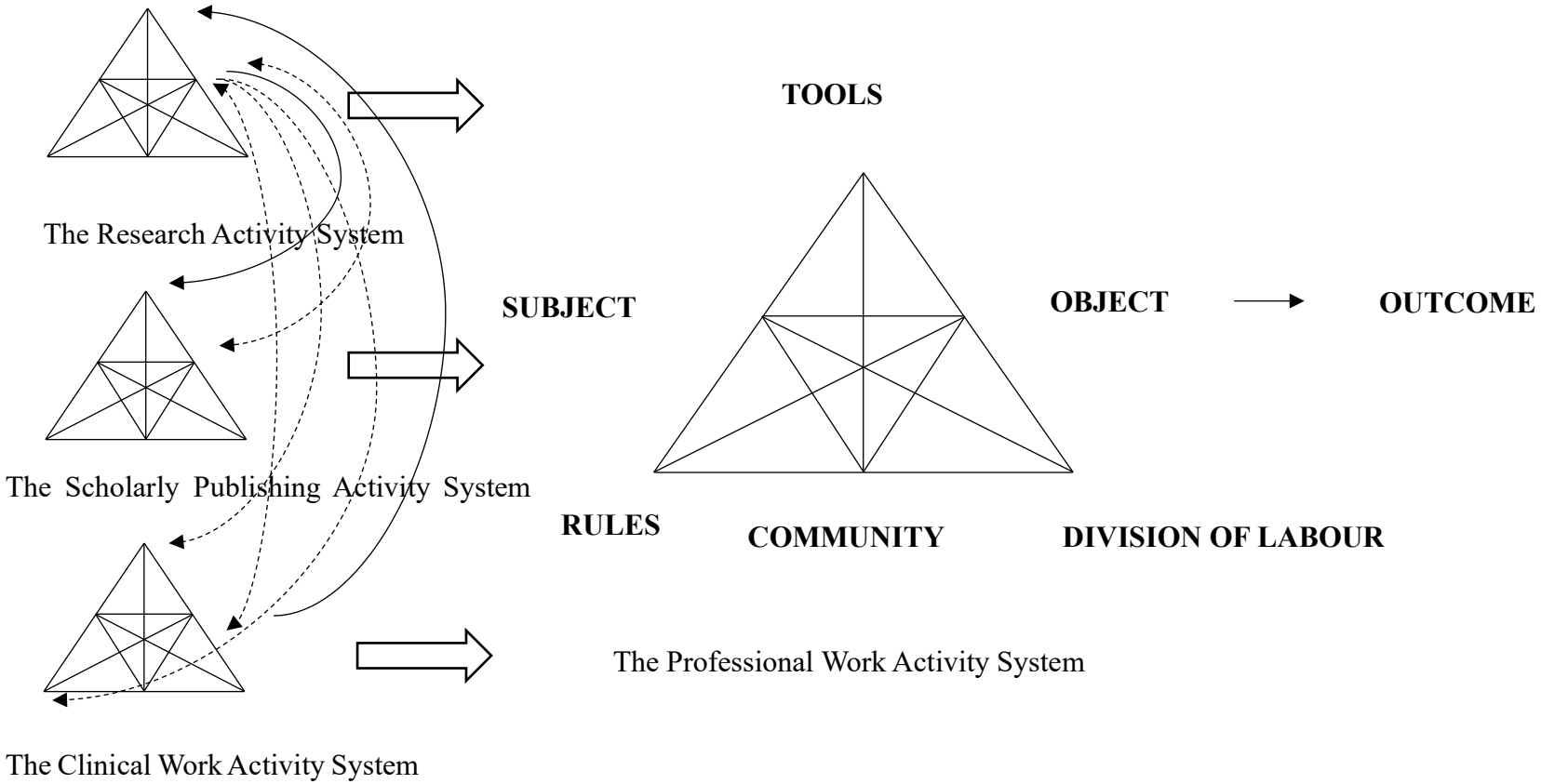

Figure 5. 5 Interactions between the Activity Systems

As will be revealed in the next chapter, while all the doctors were involved in the three activity systems, the pressure of timely promotion originating in the object of their professional work activity system caused tensions between the activity systems. This problem was also noticed by the hospital's administrators:

> Basic research has been divorced from clinical problems. The basic research team and the clinical research team work separately from each other with no focused research areas. Basic research fails to support the resolution of scientific problems in the clinical practice. Different research teams have no intrinsic motivation to collaborate with each other. For instance, the number of SCI journal papers has continued to increase, but the quality of publications has not improved. In particular, little research has been conducted to support clinical practice, failing to meet the clinical needs. ("Key Issues" (2020))

The document claimed that this problem led to the hospital's efforts to establish a ranking list of SCI journals as discussed above. A close look at the ranking list revealed that there were much fewer journals specialising in clinical research than those focusing on basic research. As will be revealed in Chapter 6, such a contextual factor (i.e., the hospital's ranking of journals) would profoundly affect the doctors' scholarly publishing practices and cause tensions between their other activity systems.

5.2 Motives for Scholarly Publishing

The university and the doctors appeared to have multiple, and even somewhat conflicting, motives for scholarly publishing. These motives included accelerating the development of the university and the hospital, enhancing inter/national influence, promoting doctors' professional development, meeting the university's promotion requirements, improving doctors' scholarly publishing abilities, and contributing to knowledge. As discussed in Section 5.1, these motives could be interpreted as centring on the production of knowledge (e.g., published papers as research output) and the cultivation of researchers (as human resources for the university's research capacity development) - the main factors that influence a university's development (see Beran et al., 2017; Curry & Lillis, 2017a; Hussin & Ismail, 2009). Specifically, the Foreword of the Reference Book for the Rankings of High-Quality Scientific Journals and Academic Conferences (Provisional)", mentioned earlier, stipulated that:

> The aim of the Reference Book is to accelerate the building of the university into a world-class university, encourage academic staff to publish high-quality papers, including papers published in domestic scientific journals with international influence or top international or important scientific journals recognised by the field, and to present papers at top academic conferences at home and abroad. This Reference Book is compiled by the University's Academic Committee.… The

journals included in the early warning list[7] issued by authoritative organisations (e.g., CAS Documentation and Information Centre, Chinese Institute of Scientific and Technological Information, Clarivate Analytics, etc.) are not included in this Reference Book.

This introduction stated clearly the university's motives for and interest in doctors' research output. The same motives and interests were reflected in the reward systems for the academic staff. As discussed in Section 5.1, there were different ranking categories of journals. The amount of money awarded for each paper depended on the university's ranking of the journal in which the paper was published, ranging from 5,000 RMB (about US$700) for a research article in an SCI journal belonging to Category D to 100,000 RMB (about US$14,100) for a research article published in a Category A journal ("Regulations on Management of Award Schemes for SCI Articles", 2019)[8]. In addition to SCI award scheme as an incentive mechanism, there were various university funds that doctors could apply for in support of research activities, for example, funds for laboratory equipment ("Regulations on Management of Research Funds"). Furthermore, the university had a performance-based evaluation scheme based on the hospital's categories

[7] Specifically, the National Science Library of the Chinese Academy of Sciences (CAS in short) has started launching an "Early Warning List of International Journals" each year since 2020 so as to address academic misconduct in China. CAS's annual list includes journals that are assessed to be untrustworthy or predatory. See more information at https://www.nature.com/articles/d41586-024-00629-0

[8] Only the first author/s or the corresponding author/s with the university and the hospital as the first affiliation was/were eligible for the award scheme.

of SCI papers. Within each category, SCI papers were ranked from in the highest to the lowest in terms of performance weight as follows: original article (full performance weigh = X), brief report and research letter (X/2), meta-analysis article, systematic review article, review, and case report (X/3), and editorial material (X/4) ("Measures for Performance Appraisals") [9].

In its official document, the hospital emphasised and legitimised the important and indispensable role of SCI journal articles in the development of the hospital and thus prioritised such articles in its integrated management system concerning research awards, performance appraisal and, ultimately, professional promotion. It declared that such an SCI-oriented assessment mechanism would "encourage the intersection of clinical research and basic research, facilitate publication of high-quality and highly impactful original articles, and establish a ranking list of journals that offers the corresponding award schemes and meets the needs of the hospital's development." ("Innovations in Research Management", 2020)

Such evaluation measures largely revolved around academic quality assurance with a focus on performativity- and audit-driven accountability, as manifested in the university's and the hospital's various policy documents and reports. They tainted various stakeholders' motives for scholarly publishing. The doctors tended to accept the

[9] Doctors' performance was also assessed in other ways. In particular, the performance weights of SCI journal articles topped those of all the other assessment measures. Given the focus of this thesis, only the measure for performance appraisal concerning SCI publication was introduced.

university's and hospital's publication requirements and subjugated themselves to the assessment mechanism. They interpreted such requirements as meant for the development of individuals, the hospital, and clinical practice in general. For instance, Pang noted that "it was right to *encourage* doctors to publish" (Interview, 7 Feb 2021). Similarly, Liang concurred with Pang that "such requirements could spur doctors into publishing" and "serve as a pushing force", and that when "working in such a research-intensive hospital, you must do some research and publish something new" (Interview, 28 February 2022). Hang bluntly pointed out that "the reason behind the hospital's publication requirements concerns the hospital's disciplinary development and ranking" (Interview, 27 March 2022). Furthermore, Lin opined that the product-oriented appraisal of annual research output was a tool for the hospital to inject competition among different departments:

> At the end of each year, there was an appraisal of each department's performance, that is, to appraise the research output of the departmental staff and students. There were no institutional requirements of performance goals each year. But there were evaluations of and rankings of each department according to the department's annual performance…. Such annual performance reviews affect the funding allocations for each department. For example, if the annual research output of a department is not so good, the hospital will not give much funding to the department. (Interview, 29 August 2021)

As Lin further explained, although the hospital's appraisal system did not officially require how many papers a department, or a doctor, should publish, this ranking system of annual departmental performance compelled the departments and their doctors to publish as many papers as possible in order to secure more funds. This explained why the participants did not show much concern for appraisal at the departmental level as long as they were under pressure for promotion, because individuals' efforts to publish for promotion collectively contributed to both their departmental and individual research performances. Not surprisingly, given the requirements for each individual's performance, the doctors' immediate concern and their urgent motive for scholarly publishing had to do with meeting the university's publication requirements for promotion. As revealed by the participants, promotion was linked to one's status, income, and resources. Bo confided that：

> There is a very important factor. For most doctors, the most important issue is professional promotion. People tend to think that doctors at Y Hospital are busy with patients every day. However, the first thing in his/her mind every day is not about patients, but to publish articles, apply for funding, and then get promoted, because professional promotion is closely related to his/her status in the department, the status in the hospital, his/her income, and his/her status among peers. How many patients you treat and how well - it doesn't mean much to the doctors at Y Hospital. Clinic work is not very important then, because there are no standardised measures

to assess whether you are a good doctor or not…. I think the most important reason [for publishing] is actually professional promotion, which is closely related to peer recognition and remuneration…. So the promotion mechanism compels you to publish because it is closely related to your own interests. This is a policy orientation issue. There is no hospital [those like Y Hospital in China] that assesses doctors' professional promotion using criteria for clinical practice. (Interview, 8 August 2021)

Bo continued to mention another issue:

Another important factor is age…. When you apply for a certain national research fund, male applicants need to be under 35, and women applicants under 40. Thus, when you apply for a particular promotional track, there is also the age threshold. (Interview, 8 August 2021)

Lin also mentioned the age factor in the hospital's publication requirements and explained that the hospital had demanding requirements for junior doctors' research output for its own interests, such as improving inter/national rankings in clinical and research areas and obtaining more national funding. This factor was also noted by other participants, such as Pang, Hang, and Bo. Lin provided an explanation:

So, the requirements for junior doctors are quite high. Because the hospital wants to encourage those young doctors to make contributions to its development at their prime age when they are most productive. After 3 or 5 years, when you reach a

certain age, it will have other development plans for you. For example, they may put more emphasis on the development of your clinical skills. (Interview, August 2021)

Liang also commented on the issue raised by Bo:

I guess the hospital needs to develop its own research capacity, and there is competition between different hospitals…. The hospital's research output, including publications and funding, will have an impact on its reputation…. This will in turn influence patients' decisions as to where to seek treatment…. I think that's probably why the hospital has publication requirements for us. (Interview, 7 October 2022)

Interestingly, when asked about the relationship between clinical practice and research, the participants all agreed that they were highly related and mutually facilitative, and that high-quality clinical research required extensive clinical experience and prolonged engagement with clinical work. However, in a productivity- and outcome-oriented institutional context like Y Hospital, their motive for timely promotion led them to focus on publishing, which would in turn affect the outcome of their scholarly publishing activity system, as will be discussed in Chapter 6. Specifically, the participants prioritised professional promotion as the superior motive for their scholarly publishing efforts over other motives such as gaining monetary rewards and passing performance appraisals, all of which were merely considered as the by-products of professional promotion. Lin, for example, emphasised that "publishing for promotion is certainly very

important. It is of great importance even for your whole life development" (Interview, 29 Aug 2021). Xiang confided that:

> I publish partly for gaining recognition and monetary rewards but mostly for professional promotion. I just want to use publications for promotion. I don't care whether publishing will get me monetary rewards or not…. Personally, I don't want to write papers, and I don't like writing papers…. Now the hospital has such [publication] requirements for promotion, so I push myself to write. Otherwise, I would not write at all. (Interview, 15 August 2021)

When asked about whether and how clinical work was evaluated for professional promotion, all the other participants concurred with Bo that although there was an appraisal system for clinical work, it was not factored into the promotion requirements due to the lack of quantity measures to assess the quality of such work. The participants were receptive to the SCI publication requirements for promotion because they provided a clear quantifiable measure to assess their performance. The above discourses and narratives concerning the disregard for clinical work in the hospital's promotion requirements and age-related stipulations revealed that the hospital used fast-track promotion as a strategy to pressurise junior doctors to produce as much research output as possible within a short period of time at the expense of their development of clinical abilities and skills. In particular, all the participants were well aware of the "time cost"

for promotion (see Table 5.1) if they failed to work intensely and publish the required number of papers. Yang gave the following illustration:

> For instance, A and B were hired by Y Hospital at the same time. A likes to do research and fulfil all the promotion requirements for associate professor within one or two years. A will then get corresponding remuneration. However, if B doesn't like to do research, s/he has to wait [at least] five years. (Interview, 2 February 2021)

Admittedly, the participants had some issues with the SCI-oriented promotion policy. For instance, although they had intrinsic motivations to publish to make knowledge contributions as will be discussed later, all the participants agreed that not every doctor should publish in order to get promoted, especially given the university's and the hospital's demanding publication requirements. Specifically, they disagreed about whether and to what extent SCI publications should serve as assessment measurements for promotion. As an illustration, Yang noted that "The orientation [of SCI promotion policy] is problematic…. However, I think this is currently the fairest way to evaluate a doctor for promotion" (Interview, 14 March 2021). Bo opined that:

> I think scientific research is necessary [for doctors], but [the promotion policy] is too radical. What can we doctors do? That's how the promotion mechanism works – you must publish in a journal with a high IF. Consequently, your research will deviate from clinical research. It can be problematic…. For instance, why do you do research? You do it because you like it and want to make contributions to discipline-

specific development in your field. However, the global scientific community, including journals, leaps towards fast publications. (Interview, 8 August 2021)

Among the doctors, Pang was the most critical, viewing such a promotion orientation as affecting doctors' professional practices and giving rise to grave consequences not only for the doctors concerned but also for the patients:

As a doctor, I think it is right to encourage doctors to publish SCI publications. However, I would not agree that every doctor should publish [to get promotion]. It is problematic when SCI publications are used as metrics for professional promotion, monetary rewards, and graduation requirements. I think SCI publications should be part of scientific research that emphasises more about academic contributions. However, when they are used as metrics, people just write as many papers as possible without doing much scientific work…. When the hospital puts SCI publications at the centre of its professional promotion mechanism, the consequences are that doctors who are incapable of carrying out clinical tasks such as conducting surgery but has published the required number of papers are promoted very fast. It is unfair to those doctors who have high level of clinical skills but do not know how to write papers…. This would do harm to disciplinary development and patient treatment. (Interview, 7 February 2021)

Despite the problematic consequences of such a promotion mechanism, some doctors mentioned possible learning affordances. Lin, for example, had mixed feelings:

> I feel quite pressurised because it is very difficult for me to meet those promotion criteria…. However, I think this mode is quite good. I feel that I have learnt something that I had never learnt before and that my abilities, such as my research ability and writing competence, developed dramatically. (Interview, 29 August 2021)

Additionally, despite their different views of the "publish or perish" policy discussed above, knowledge contribution was among the doctors' motives for scholarly publishing and could win recognition in a wider community. Liang said that "I want to present what my research has found and establish a niche in the field for fellow researchers to discuss some issues that have not been resolved" (Interview, 28 February 2022). Yang shared a similar view:

> You have some ideas and do some research. Other fellow researchers are doing similar research which could make up for the deficiency in your research…. This then encourages you to do some better stuff. (Interview, 14 March 2021)

Likewise, Bo expressed his aspirations to publish:

> When you do research, you will gain new knowledge and insights. Then you want to turn your new findings into scholarly publications. It would be even better if there were no requirements as to which language-medium or categories of journals your manuscripts need to be submitted to. (Interview, 8 Aug 2021)

Bo's comment illustrated the tension between doctors' self-motivated language choice for publications and the institutionally imposed pressure to publish in English. Of

all the participants, only Xiang explicitly mentioned the important role of publishing in Chinese-medium journals to disseminate knowledge in the local community. However, although all the doctors reported that they would like to write papers in Chinese because it was their native language, they all refrained from publishing in Chinese-medium journals because of the promotion requirements and their concerns about the quality of Chinese-medium journals. Yang pointed out that "the university required us to publish SCI papers. Chinese papers don't count. What else can I do?" (Interview, 6 February 2021). Tang noted that "all the top journals in my field are English-medium ones…. I would consider publishing in Chinese-medium journals only when they become high-quality outlets one day" (Interview, 7 November 2021). Lin sighed that:

> Even though you have put a lot of efforts to publish a lot of Chinese papers, their weight may not even come close to that of one English-medium paper published by others, because Chinese medium papers are not included in Y Hospital's promotion requirements. (Interview, 29 August 2021)

In this regard, Hang explained that:

> Frankly speaking, high impact factor means a high level of influence. However, only English-medium journals have such a high level of influence. Chinese-medium journals doesn't have such influence…. Chinese-medium papers have not reached such internationally recognised standards. (Interview, 27 March 2022)

Bo also addressed this issue：

> It is all because of the policy orientations. Years ago, Chinese-medium papers were well recognised, and doctors all published in Chinese-medium journals. Now, English-medium journals are prioritised, and doctors all turn to English-medium journals. Consequently, we all know that the quality of Chinese-medium papers is very low [*shui huo*, meaning very bad stuff]. So Chinese-medium journals are full of low-quality stuff. (Interview, 8 August 2021)

Hang concurred that "I feel Chinese-medium journals do not deserve the data I have collected"; therefore, he would only publish "ordinary stuff" in such journals (Interview, 27 March 2022). Such accounts were corroborated by comments made by the other participants when asked about when they would consider Chinese-medium journals. Lin, for instance, noted that "I will only publish in Chinese-medium journals as a skill practice" (Interview, 29 August 2021).

Such perceptions contributed to a "language turn" in journals in mainland China. As noted by Liang, "many journals of Chinese publishers, which used to be Chinese-medium, are now turned into English-medium" (Interview, 28 February 2022). All the participants also indicated that they only considered publishing in English-medium (or SCI) journals as a legitimate way of knowledge contribution. This, however, would in turn marginalise the Chinese-medium journals and harm the development of the local community (see also Lillis & Curry, 2010; López-Navarro et al., 2015; Martín et al., 2014). Unlike other studies that reported scholars' dilemma about the choice of languages for publication (see

Curry & Lillis, 2004, 2017a; Flowerdew & Li, 2009a; Lei & Jiang, 2019; Li & Flowerdew, 2009; Lillis & Curry, 2010), the participants in my study explicitly stated the reason why they "chose" to publish in English, which was mediated by either their preferences or external forces (see also Flowerdew & Li, 2009a; Guardiano et al., 2007; Haberland, 2005; Lei & Jiang, 2019; Li & Flowerdew, 2009; Lillis & Curry, 2010).

5.3 Discussion

This chapter examined the activity settings of the doctors' scholarly publishing activity system and the stakeholders' motives for their scholarly publishing activity systems. With reference to the activity settings, the findings revealed that the doctors' scholarly publishing activity systems were embedded within their professional work activity systems and interconnected with the activity systems of clinical work and research (Chen et al., 2014; Li, 2013, 2014b; Pan et al., 2015; Yuan et al., 2013). These findings suggest that the doctors needed to juggle their scholarly publishing activities with clinical and research activities from the other connected activity systems. Consequently, competing demands would occur in their professional work activity systems and result in tensions between the activity system of scholarly publishing and the other activity systems. While the scholarly publishing activity system revolved around the university's and the hospital's explicit rules and regulations prescribing certain outcomes for the doctors or/and other stakeholders, the activity systems of clinical work and research lacked explicit norms and specific guidelines but operated by tacit

knowledge based on the doctors' interpretations of relevant institutional policies. For instance, the doctors tended to prioritise their research/scholarly publishing activity systems at the expense of their engagement in the activity systems of clinical work due to some unsaid understandings resulting from individuals' interpretations of the promotion policy. Such varying engagement in the different activity systems had a profound impact on the doctors' scholarly publishing practices as well as their practices in the other two activity systems.

The different levels of engagement may result from the fact that there were no specific stipulations or guidelines for the doctors' overall professional workload, especially those concerning the professional work time to conduct the various activities related to scholarly publishing (e.g., research time) (see Chen et al., 2014; Li, 2014a, 2014b; Ye & Liu, 2013), which will be explicated in Chapter 6. The reason might also be that the hospital's appraisal system was not comprised of any *preset* standards which could be used to predict and measure doctors' overall professional work but only offered a *post-hoc* evaluation model for their annual performance that prioritises the research output. For instance, Lin mentioned that there were no specific requirements for each department's or each doctor's overall performance at the beginning of each year but the hospital ranked the different departments according to the department's overall research performance at the end of each year. The ranking results in turn affected the amount of funding allocated to each department in the coming year (e.g., the higher rank a

department is, the more funding it will be allocated). If the department's ranking was relatively low, departmental funding would be reduced, which would have a negative effect on individual doctors' future research activities, and consequently, their research output and professional promotion. This means that the doctors and their affiliated departments needed to hold themselves accountable to manage and maximise their publication output in order to compete for a higher rank in the hospital's annual appraisal report. This further revealed that the doctors' activity systems were rooted in a culture of competitive performativity characterised by auditing and accountability mechanisms (see Bardi & Muresan, 2014; Curry & Lillis, 2014; Curry & Lillis, 2017b; Hyland, 2016; Lillis & Curry, 2010). Together with the quantity measures of research output discussed earlier, it was little surprise that the doctors' scholarly publishing activity systems naturally became central to their overarching professional activity system, with an overriding emphasis on the object and outcome of the scholarly publishing activity systems. Such a product and quantity orientation in turn impinged on the doctors' scholarly publishing practices, thereby causing tensions between the activity systems as will be explicated in Chapter 6.

Given the various stakeholders' motives for scholarly publishing, the findings showed that there were multiple and somewhat conflicting motives for the doctors' scholarly publishing, including promoting the development of the university and the hospital, ensuring the quality of research output, encouraging the doctors' professional

development, meeting the promotion requirements for research output, and contributing to the knowledge base. These motives revolved around the production of knowledge (e.g., research output) and cultivation of quality researchers (e.g., human resources that can enhance the university's research capacity), which are main factors influencing a university's development (Beran et al., 2017; Curry & Lillis, 2017a; Pickstone et al., 2008). In the context of health professions, according to Trostle (1992), research capacity building refers to "a *process* of individual and institutional development which leads to higher levels of skills and greater ability to perform *useful* research" (p. 1321, emphasis added). The effectiveness of such research capacity building for health professions is often measured, or mismeasured, through research output such as scholarly publications (e.g., Y Hospital's ranking list of SCI journals), successful grant applications (e.g., the NFCS Youth Fund) and professional titles (e.g., associate professor/deputy chief physician) (see Pickstone et al., 2008). Ideally, the effectiveness of research capacity building should be assessed with process-oriented measures. However, at X University and Y Hospital, it was product-oriented measures (e.g., the promotion requirements as drivers of doctors' research output) that dominated.

The institutional evaluation/promotion system was likely to fail and banish individuals (e.g., Pang) who held long-term developmental motives for scholarly publication (e.g., knowledge production and research capability building). Consequently, while all the stakeholders shared process-induced/long-term collective motives for

scholarly publishing, they tended to value product-oriented outcomes of scholarly publishing (i.e., fast publications and timely promotion) much more in their day-to-day practices. Doctors at Y Hospital had to play along with the top-down requirements and publish in order to secure promotions. This would pose challenges, especially for junior doctors, as will be discussed in Chapters 6 and 7. As revealed by the various guidelines and regulations discussed in Section 5.1, the university and the hospital framed the publication requirements for professional promotion in terms of developing both individual and institutional research capability and, consequently, boosting their research competence and building the university into a world-class one. The university's overall motive for its staff's scholarly publishing aligned well with the Chinese government' ambition to build world-class universities in response to the internationalisation and globalisation of higher education worldwide (Ren, 2023; Teo & Ren, 2019; Wang, 2014; Yang et al., 2021). Such a national agenda seemed to be instigated in part by metrics of global university rankings (Marginson, 2018). Accordingly, policies driven by such a motive would adopt the intensifying marketisation of higher education in China as a governing rationality in the management of universities (e.g., efficiency and quality assurance and assessment guided by metrics) (Li & Xue, 2020; Mok, 2005). Such a trend was also reflected in X University's and Y Hospital's adoption of a quantity-based evaluation regime, which turned knowledge production into an economic activity

powered by reward schemes for publications (e.g., Curry & Lillis, 2017b; Englander & Smith, 2013; Lillis & Curry, 2013).

Although previous studies investigated the internationalisation and marketisation of universities in China, relatively little has been reported about their influences on research and publication in a university-affiliated hospital context. Similar to the findings of previous research on higher education contexts, this study revealed an extensive and comprehensive auditing of individual staff's research output in a professional academic context. Specifically, the institutional evaluation/promotion system assumed that "the value of research is located in performance, outcome and output rather than through research-as-process and knowledge-building" (Raddon, 2011, p. 42). The doctors, however, held mixed attitudes towards, or even conflicting motives for, their scholarly publishing, given their dual role as clinician-researchers in a hospital affiliated with a research-intensive university. How such contextual conditions would affect doctors' professional practices and what consequences may arise have been little studied. As I will explicate in Chapters 6 and 7, such contextual factors would impinge on doctors' scholarly publishing practices and their professional development and knowledge contribution. Understandably, the product-oriented motives for scholarly publishing led the doctors to adopt very pragmatic strategies, as also will be shown in the next two chapters. While these strategies could assist in the attainment of the object and outcome

of their professional work activity system (e.g., securing promotions), they could also hamper the doctors' growth and, consequently, their scholarly publishing abilities.

Taken together, informed by fourth-generation CHAT, the present study contributed to the knowledge base by zooming in on the activity settings for the participating doctors' scholarly publishing activity systems and thus provided new empirical evidence for the development of CHAT. By shedding light on the interactions and interconnectedness between the various activity systems, the study provided empirical support of the unit of analysis proposed by fourth-generation CHAT, that is, "a web of coalescing heterogeneous work activities" (Sannino, 2020, p. 167) that "involves a wide variety of actors at multiple levels – local, regional, national and possibly global" (Engeström & Sannino, 2020, p. 14). Therefore, unlike previous studies that mainly investigated local actions and coping strategies concerning scholarly publishing activities, the present study revealed that the object-oriented and contradiction-driven character of the doctors' scholarly publishing activity system was influenced by multiple-level factors operating in the social, cultural, institutional, and even global contexts.

5.4 Chapter Summary

This chapter introduced the activity settings (i.e., the doctors' professional work activity system and its embedded activity systems) and the major stakeholders' motives for doctors' scholarly publishing activities. First, drawing on a cross-case analysis, the activity settings were presented and construed as contexts for the doctors' scholarly

publishing activity system. Second, documents and interviews were qualitatively analysed to reveal the university's/the hospital's and the doctors' respective motives for scholarly publishing. Then, this chapter discussed how the activity settings and the stakeholders' motives influenced the doctors' scholarly publishing practices. Specifically, analyses of activity settings showed that the doctors' scholarly publishing activity systems were embedded within their professional activity system and interconnected with their other activity systems. Furthermore, the analysis revealed both convergences and divergences in the stakeholders' motives for scholarly publishing, which contributed to tensions between the different activity systems. In the subsequent chapters, the challenges and contradictions that arose in the doctors' scholarly publishing activity systems will be revealed and discussed.

Chapter 6 Scholarly Publishing in a Professional Context: Multiple Demands and Coping Strategies

The previous chapter discussed the activity settings and the major stakeholders' motives for doctors' scholarly publishing. This chapter will identify the object-induced primary contradiction and its manifestations as secondary contradictions in the doctors' scholarly publishing activity systems within their professional work activity systems. Specifically, the object-related primary contradiction concerned the dual object of developing the doctors' clinical skills and scholarly publishing expertise to make knowledge contributions on the one hand and expecting them to be promoted timely by having their knowledge contributions published within a stipulated timeframe. This primary contradiction manifested itself in secondary contradictions between the object and the rules, and between the object and the division of labour. This chapter will begin with an overview and a detailed description of the object-related contradictions in the doctors' scholarly publishing activity systems. Then, the strategies adopted by the doctors to cope with the difficulties and challenges will be presented, and the consequences of these coping strategies will be discussed. Next, the contradiction between the object and the rules, and between the object and the division of labour will be analysed and presented. By way of conclusion, these findings will be discussed with reference to the literature, and a brief summary will be provided.

6.1 Object-Induced Challenges and Contradictions in Scholarly Publishing

Figure 6.1 shows a CHAT schematic representation of the results of the activity systems and thematic analyses, and Table 6.1 summarises the results.[10] The primary contradiction arising from the duality of the object was revealed by the figure and the table, causing secondary contradictions concerning the tensions between the object and the rules, and between the object and the division of labour within the doctors' scholarly publishing activity systems.

[10] In this thesis, P, S, T, and Q were used to refer to primary, secondary, tertiary, and quaternary contradictions, respectively.

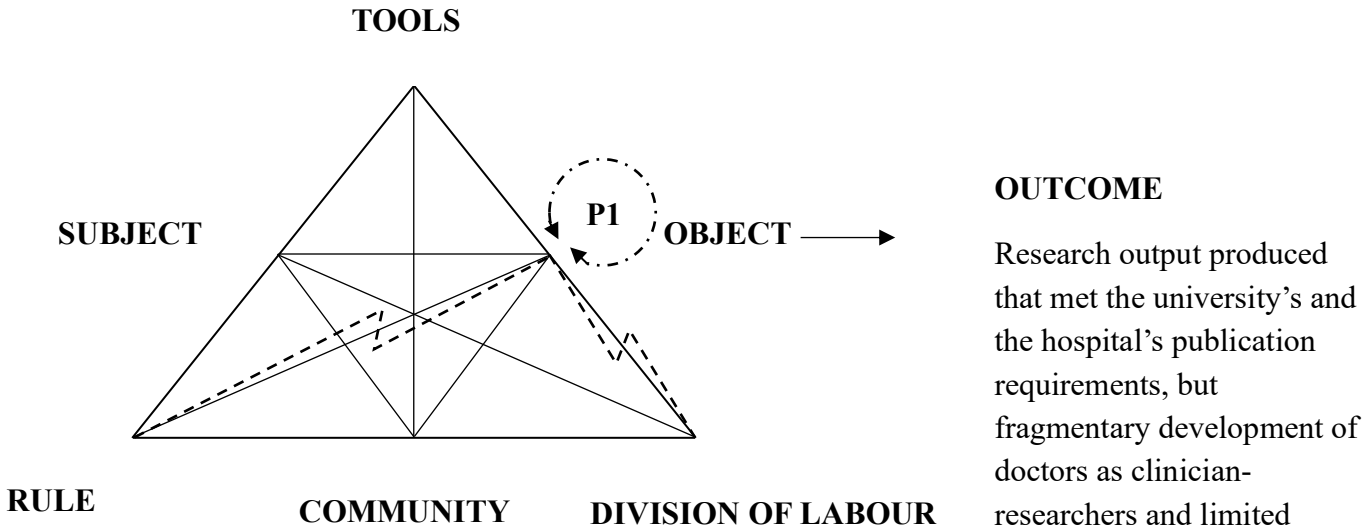

Figure 6. 1 Object-Induced Tensions in Scholarly Publishing

Table 6. 1 Object-Related Challenges and Contradictions in Scholarly Publishing

Thematic Analysis	Activity System Analysis	
Challenges/Difficulties	Manifested in Secondary Contradictions	Rooted in Primary Contradiction
Tight timeframe	**Object-Rule** The tension between attaining the object of developing the doctors' clinical skills and scholarly publishing expertise and the expectations of meeting the demanding promotion requirements within a short period of time	**Object-Object** The duality of the object of developing the doctors' clinical skills and scholarly publishing expertise to make knowledge contributions on the one hand and expecting them to get promoted timely by having their knowledge contributions published within a stipulated timeframe on the other hand
Lack of resources needed to conduct (quality) research	**Object-Division of Labour** The tension between attaining the object of developing junior doctors' clinical skills and research capabilities to make knowledge contributions and the hierarchical structure/the outcome-oriented management of the university and the hospital as well as the underdevelopment of the hospital on a global scale	

6.2 Publishing as a Clinician-Researcher: Tight Timeframe and Coping Strategies

6.2.1 Publishing among Multiple Demands as a Double Agent

As revealed in Figure 6.1 and Table 6.2, a time-related challenge was unravelled, and it was rooted in the duality of the object of a doctor's scholarly publishing activity system. In this study, all the eight doctors reported that they faced such a challenge, especially in securing professional promotion by meeting institutionally imposed publication requirements within a stipulated period of time. As also noted in Chapter 5, the doctors' professional activities included but were not limited to activities related to scholarly publishing, research, clinical work, teaching tasks, and administrative duties. Given the prioritisation of research output (i.e., publications and research grants) in the promotion mechanism, the scholarly publishing activity system took centre stage among the activity systems subsumed in the overall professional activity system. In particular, the timeframes stipulated for the promotion tracks compelled doctors to produce research output within a relatively short period of time (e.g., from a minimum of three years to a maximum of five years). Through the demanding publication requirements, the promotion mechanism exerted tremendous pressure on all the doctors in this study. They all reported that they had to invest extra time in research and writing academic papers. Pang noted that:

> There is no time for me to do the research…. Chinese doctors are VERY busy. Compared to the doctors in other countries, the clinical workload is much heavier

for Chinese doctors…. Normally, I work from 8 am to 10 pm a day, doing clinical consultation and performing surgeries…. So I was like a solider from a battlefield after a week's work. The workload is very heavy, and the clinical duties are onerous…. Especially for doctors in a top-grade (i.e., *Sanjia*) hospital like Y Hospital, the workload is rather heavy due to the uneven [regional] development and unbalanced distribution of medical resources in China. (Interview, 7 February 2021)

Yang concurred with Pang:

I think that being a doctor in China is very taxing if you want to be both a clinician and a researcher…. Compared to doctors in other countries, your clinical workload is much heavier. (Interview, 7 February 2021)

Xiang provided a more detailed explanation:

First, we don't have much time to do research…. Second, we usually are quite busy with work and don't have large chunks of time to write papers or collect data in a systematic way. The time [for research and writing] is rather fragmented. This contrasts with academics working in universities, who have large chunks of time and can systematically design their research, collect data, and then write up manuscripts. The main challenge for a clinician [to do research] is that they have much clinical work to do…. The hospital does not give you time to conduct research. (Interview, 30 October 2021)

Tang talked about the competition for time between his professional work and scholarly publishing activities:

> Because we need to do much clinical work …, we are quite busy and tired. We have to do the very busy clinical work and conduct research at the same time. We have no choice because we need to fulfil the promotion requirements. When you work in a large hospital like Y Hospital, you must do the work like this if you want to have a career. You need to act according to the rules. (Interview, 7 November 2021)

> [The main challenge] is time, because I'm very busy with clinical work. I can only use bits and pieces of my free time to write papers. The process is quite intermittent and fragmented … and thus takes such a long time due to my busy work…. I don't have large chunks of time for writing. For example, it has taken me nearly half a year to draft this manuscript…. The writing process was full of unstable moments. I really don't want to write those papers anymore…. I don't have the energy to write this kind of article myself. (Interview, 28 November 2022)

Bo's comment even formulated the contradiction in the duality of the object:

> This working time issue [of being a clinician-researcher] is rather contradictory. You spend much time on clinical work, and the time spent on research and other activities will be naturally reduced. You only have 24 hours a day, and you still need time to sleep. If you spend less time on clinical work, the profits you can earn for your

department will be reduced accordingly…. The department is also another kind of society. It just wants outcomes. (Interview, 25 December 2021)

In addition to their heavy clinical work, the participants also mentioned the time pressure related to the conduct of clinical research when compared to basic research. Hang noted that:

One important component of patient-oriented clinical research is the follow-up time…. For example, it will take 3 months, 6 months, or 12 months. It will take a very long time for us to follow up with patients. The time cost is rather high, while basic research depends on "luck". Sometimes your experiment succeeds after just one try. Sometimes you try 5, 6, 7, or even 8 times, but your experiment still fails. (Interview, 23 March 2023)

Pang also mentioned a similar issue and took a long time to find patients willing to participate in research:

One problem in reality is that patients are not willing to be followed up with…. The rate of follow-up is quite low. Thus, it would be rather difficult to do some high-quality clinical research. (Interview, 6 February 2021)

Lin further explained why time was critical to high-quality clinical research:

Generally, clinical research takes a very long time because of the necessary observations, so the publishing speed for clinical research papers is rather slow. For basic research, as long as we have animal models, the publishing time is rather

short…. If you do clinical research, the longer the research is conducted, the better quality the research can be. Because you can have more patient data, you can then observe more indicators. (Interview, 27 March 2022)

Bo was also aware of such differences between publishing clinical research and publishing basic research and admitted that publishing basic research would be "faster" and that the basic research journals tended to have much higher IF than clinical research journals. He further explained how such differences would affect promotion:

A manuscript in my area [i.e., clinical research] can be submitted to a journal with an IF around 7 only when it is extremely strong. Otherwise, it is generally submitted to a journal with an IF around 3, or worse, to a journal with an IF around 1…. However, the requirements for promotion are only concerned with whether your article is published in an SCI-indexed journal and what IF it has, and nothing else. (Interview, 25 December 2021)

Also aware of the research-related time differences, Xiang pointed to the contradiction between the hospital's policy orientations and doctors' actual publishing practice:

Although the hospital encourages us to do clinical research, it is just easier to publish basic research. They just need to conduct some mice experiments or gene/cell-related experiments. When you do such experiments multiple times, you can then publish papers. This is a contradiction. (Interview, 2 January 2022)

Another time factor concerned the publishing/reviewing process. Liang and Bo both reported that they spent considerable time re/submitting their manuscripts to journals due to their target journals' lack of interest in their clinical research topic. Liang explained that:

> The global disciplinary community lack interest [in my field - Chinese medicine]. This causes us to constantly re/submit our manuscripts to different journals after rejections. Or the journals could not find reviewers for our manuscripts. This can take more than half a year. It took nearly a year for this manuscript to be accepted. The efficiency is very low. (Interview, 30 October 2021)

Bo suffered much from the re/submission and reviewing process of his clinical research:

> The reviewers got so many questions for this manuscript…. I took much effort to write a 10-page response. When resubmitted, it was rejected again. Such depressing outcomes could break you down…. In addition to doing my weekly clinical work, I spent all the rest of the week in re/submitting my manuscript to target journals because different journals have different submission requirements…. Together with the reviewing process, it took nearly three months just for the re/submission of a single paper, and then it was rejected again. (Interview, 8 August 2021)

All the participants reported that they had encountered reviewers who did not seem to have the right specialisation, and this may add time cost to their publishing practice. For instance, Lin mentioned that:

> One thorny problem was that reviewers who were not specialised in my field requested me to add more stuff in my review article which I didn't think relevant …. Then, I needed to spend a lot of time to read and summarise the literature on the area they mentioned. I feel this can be quite a challenge to me. (Interview, 29 August 2021)

Given the contextual constraints, it was not surprising that all the participants reported that writing up manuscripts in English would take much time and effort and pose additional challenges to their publishing endeavours. For instance, Pang gave the following explanation:

> Why is it so difficult for Chinese medical doctors to publish a high-quality SCI paper? Because it requires great effort – you also need to consider the issue of academic writing apart from the content. Particularly, when you don't have large chunks of time to do the work, it is basically very difficult. I have been working at Y Hospital for four years. I tried finishing writing up my manuscripts more than once, but I just couldn't manage to do that. (Interview, 14 March 2021)

Because the difficulties of writing in English were found to pertain to the subject-related contractions, this issue will be discussed in Chapter 7. To alleviate the time

problem, the doctors mainly adopted three strategies, namely, investing extra time, playing the publication game, and collaborating with intradepartmental members. The following sections turn to these strategies.

6.2.2 Investing Extra Time

All the participants adopted the strategy of investing extra time on research and scholarly publishing. Pang lamented that "you need to find extra time to do research" (Interview, 7 February 2021). Similarly, Yang admitted that "I can only sacrifice some of my spare time…. I just get myself fired up" (*da jixue*, literally *injecting chicken blood*, meaning self-encouraging) (Interview, 14 March 2021). Tang also said that "we do have a heavy burden of clinical work, so we can only squeeze our own time to do research and write papers" (Interview, 7 November 2021). Liang reported that he would "muddle through" on his own and "need to find some time after work in the evenings to do research" (Interview, 7 October 2022). Xiang did the same: "I will write and revise my papers reporting my funded research if I still have some energy left after a day's clinical work"; "I can only write papers after my eight-hour work schedule. So even when I was on clinical duty, I would squeeze some time to take a look at my manuscripts" (Interview, 2 January 2022). Bo moaned that on top of the daily eight-hour or even ten-hour workload of clinical duties and other professional duties, "you need to invest extra 2-5 hours a day to do research if you want to publish. Even so, it would take nearly a year or even two years to finish writing up this manuscript and then submit it" (Interview, 25 December

2021). This strategy was also adopted by Lin. When I contacted her for an interview, she mentioned that she needed to conduct research experiments on weekends. In the case of Xiang, who did mainly patient-oriented experimental clinical research, a different time-management strategy was adopted:

> Most of my scientific research is about clinical research. Usually when I provide outpatient services, I will directly include those patients that meet the criteria for my research project, then collect patient data and follow up with them…. These two things can be done simultaneously. Relatively speaking, work and research are not in serious conflict. (Interview, 15 August 2021)

Notably, according to Xiang, such "research projects could only be conducted when the IRB was approved by the hospital's committee of experts in the field" (Interview, 2 January 2022). Thus, when including the patients as research subjects in his research projects, he would first "let them sign the [consent] form and then fill some scale forms"; after the clinical treatment was done and finished, he would then follow up with them (Interview, 15 August 2021). Although this strategy was not explicitly mentioned by the other participants, they all reported that they would keep the medical records in the hospital's system to build clinical databases. For instance, Hang reported that "when inputting the patients' medical records, you can add some notes to remind you that the data can be used for future research" (Interview, 23 March 2023). Similar strategies have

also been found to be employed by scholars and academics in other studies (e.g., Casanave, 1998; Curry & Lillis, 2004; Li, 2014a; Tian et al., 2016).

As revealed by the participants' accounts, the institutional system did not take account of doctors' time for research-related activities. Together with other demanding duties, the "forced" adoption of the strategy of investing extra time caused tensions between activity systems and changes in the object, the rule, the community, and the division of labour of the other activity systems, as revealed by the following participants' accounts.

Within the doctors' professional activity system, the findings in this chapter revealed that much time and energy of the doctors was invested in its subsystem of scholarly publishing. As noted in Chapter 5, their most urgent motive was to publish to secure promotion, which dominated the object of their professional activity system over other motives (e.g., knowledge production) and there were no quantitative measures to evaluate the quality of their clinical work. Hang confided that:

> In the hospital's appraisal system, publications are assessed in terms of both quantity and quality. Clinical work is assessed only in terms of quantity, such as the number of outpatient visits. There are no criteria to assess the quality of clinic work. It would be okay as long as you don't have medical accidents. (Interview, 23 March 2023)

Apparently, the doctors invested much of their energy in their activity systems of scholarly publishing and research, which in turn reduced the effort invested in clinical work. Hang continued to talk about the pitfalls:

> This could do harm to doctors' professional development. More doctors put more energy to write papers but not to improve clinical skills…. Consequently, they didn't pay attention to the details in their clinical practice due to their negligence, which would lead to medical malpractice. (Interview, 27 March 2022)

Lin described typical clinical practice when she said that she just followed the hospital's protocol concerning clinical guidelines and standardisation of practice when she provided outpatient services. Bo was more critical:

> Currently, Y Hospital only cares about research output, and doesn't care about clinical work. It makes no much difference whether a patient is cured or even dies after medical treatment…. Doctors in various departments that have so many professional titles like PhD supervisors actually are not able to make an accurate diagnosis and give the right treatment. (Interview, 25 December 2021)

Pang provided a complementary perspective:

> Now there is such a phenomenon – those medical professionals and experts are excellent in disease diagnosis and treatment but don't know how to write papers. The consequences are that they are treated unfairly in the professional context when SCI papers are used as an evaluation criterion by the university and the hospital.

> This evaluation system awards fast promotions to many people who don't know how to conduct surgery and diagnose diseases. (Interview, 7 February 2021)

All the participants except Lin, Tang, and Liang explicitly remarked that this problem would lead to conflicts between doctors and their patients and result in the deterioration of doctor-patient relationships. Bo made an insightful comment on such conflicts:

> People tend to think it's doctors' fault…. However, the problem of doctor-patient relationship is not rooted in the conflicts between doctors and patients. It is a conflict between government and patients, which is just transferred to doctors. (Interview, 29 October 2021)

Although all the doctors tended to invest more time and energy into research and publishing activities, their heavy burden of clinical work still made it difficult for them to conduct useful research that would take much time and effort. This led to object/rule-related tensions in the activity systems of clinical work and research. Bo sighed that：

> The consequence is that your clinical work is done crudely, and your research process stagnates. Everything is done crudely. (Interview, 25 December 2022)

Pang brought up the issue of fake medical papers in China due to the SCI-dominated evaluation mechanism for Chinese doctors with heavy workloads. He explained that "the main reason is that [this mechanism] drives doctors crazy and leaves them no other options" (Interview, 7 February 2021). Concurring with Pang, Bo confided that "medical

researchers are found to be the largest group of researchers [in China] who are accused of academic misconduct" (Interview, 23 October 2021).

The tension surrounding the changing object of the research activity system was attributed by the participants to the SCI evaluation mechanism stifling doctors' interests and dampening their enthusiasm for doing good research. As noted in Chapter 5, all the participants showed interest in publishing their research to make knowledge contributions. However, in order to secure promotion, the participants were compelled to put aside their research interests and do some research that could lead to fast publications. Yang, for instance, confided that:

> Sometimes when I encounter some [interesting research] problems, I feel that my workload is heavy and my research output is relatively small, so I may just give them up. For example, I am interested in a problem, but I find that I have to collect so much data by myself and use the hospital system to check data records one by one. Then, in the end this paper based on it can only be published in a journal with a mediocre IF. If I need to spend so much effort, I might as well use stuff that I have at hand. (Interview, 14 March 2021)

Similarly, Pang, Bo, Xiang, and Tang confided that their research interests were compromised because juggling the demands of both clinical and research activities required too much time and energy. For instance, Bo made the following comment:

Your research interest may be killed…. You find a research problem which does not interest you, but you still do the research. You may have the research published in a journal with a very high IF, which is good for your promotion. (Interview, 8 August 2021).

Xiang's account spelled out the issues discussed above:

All the clinicians who want to do scientific research will face this problem. The hospital won't allow you to spend the 8 hours of clinical work time on scientific research. No, it won't. It may be more than 8 hours of clinical work time or even 10 hours a day. Sometimes you have to work overtime. Therefore, when doing scientific research, clinicians are squeezing their own time. This means that there are not so many clinicians who can do a good job in scientific research. There are some but not so many. Clinicians are rather overtaxed because clinical work takes up large chunks of time. There are not so many clinicians who still have much energy left to do research. Very few clinicians can excel in doing research and publishing a lot of high-quality papers. Therefore, the current situation in China is that clinicians are not so motivated to be engaged in scientific research because they have nearly exhausted all their energy in clinical work. Consequently, they are not able to do research as they would have liked to do. (Interview, 2 January 2022)

Based on the participants accounts, Table 6.2 below summaries how the tensions caused by the strategy of investing extra time transformed constitutive components of

different activity systems. Figure 6.2 below schematically presents the tensions between activity systems.

To sum up, adopting the strategy of investing extra time caused systemic changes and tensions in the activity systems of clinical work, research, and professional work. New strategies would need to be adopted as a result of the changing object of the research activity system.

Table 6. 2 Changes Caused by the Tensions Arising from the Strategy of Investing Extra Time

Activity System	Changes
The Professional Work Activity System	• The object shifting to being dominated by the object of publishing to secure promotion • Community concerning health services that have become unsatisfactory to patients • Division of labour becoming unfair to doctors who invest more in clinical work
The Clinical Work Activity system	• The object changing to include collecting data for research • The rules concerning code of conduct and/or code of ethics changing to being not properly followed by doctors • Community concerning patients being not properly treated
The Research Activity System	• The object changing from producing intrinsically meaningful research to pursuing external career goals through instrumental publishing • The rules concerning research ethics changing to being not properly followed by doctors

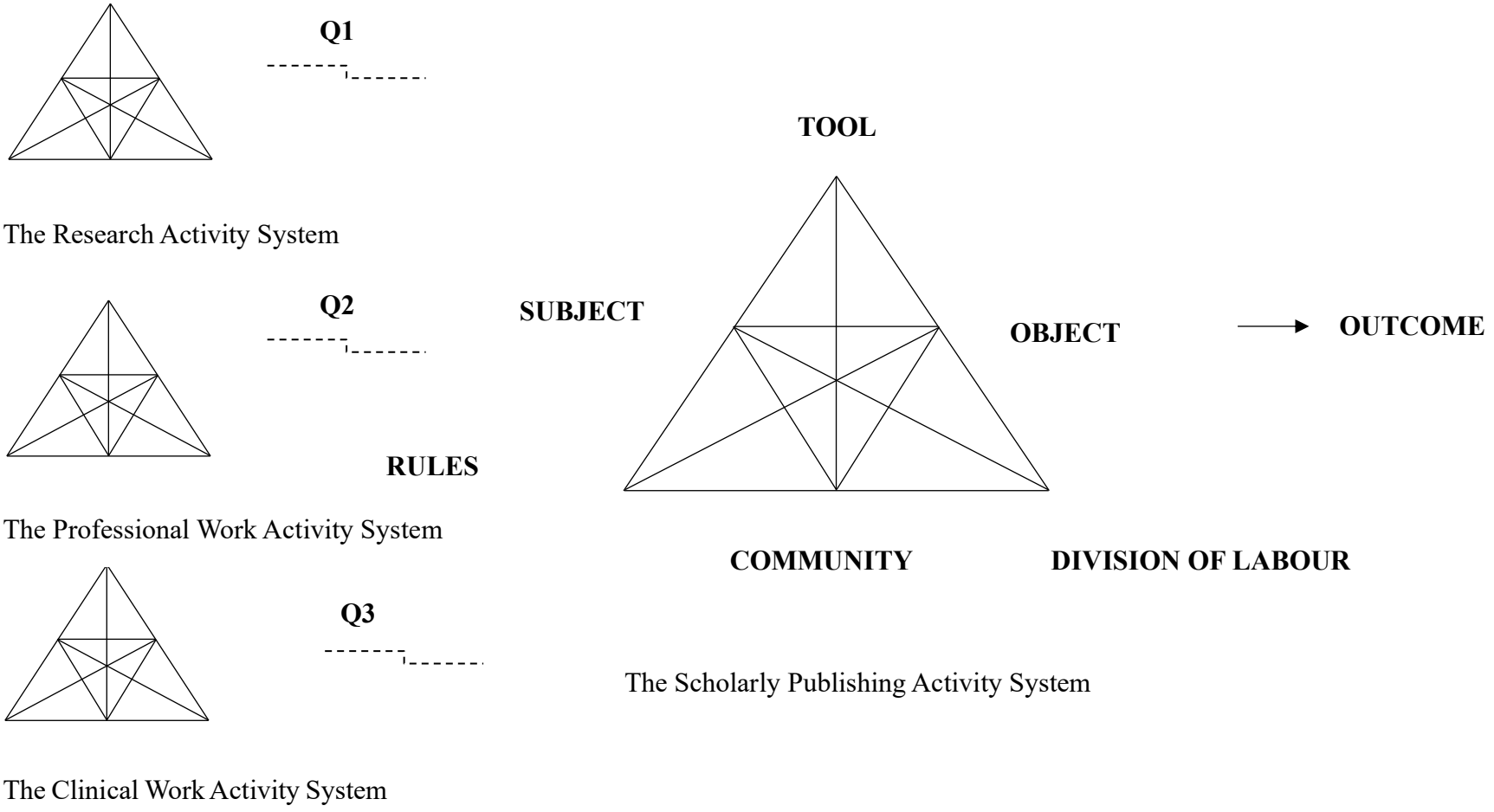

Figure 6. 2 New Tensions Caused by the Strategy of Investing Extra Time

6.2.3 Playing the Publication Game

In line with the changing object of the research activity system (see Table 6.2), a strategy adopted by the participants to manage time and energy was to play the publication game. This strategy could only be utilised successfully when the doctors had a thorough knowledge of the institutional policies that stipulated publication requirements for promotion, different types of research valued, and the scholarly publishing rules. First, according to the journal list compiled by the university and the hospital, as introduced in Chapter 5, there were much fewer journals specialised in clinical research than in basic research. Liang noted that:

> For our ranking list, IF is a very important factor…. Only five or six journals [of clinical research] are included in Category B, and the others are all included in Categories C and D or in even lower categories. (Interview, 7 October 2022)

Moreover, the participants reported that journals specialised in basic research have much higher IF than those in clinical research. For instance, Lin gave the following contrast:

> My colleagues who do basic research can publish in a journal with an IF that is higher than 10 … which they say is a normal thing. However, to us who do clinical research, it would be very difficult to even publish in a journal whose IF is only 5. (Interview, 27 March 2022)

Such differences, according to Bo, explained why doctors shifted to basic research:

> Basic research may not be related to clinical practice…. They [some doctors] just write papers. It is easier for them to get research funds, publish in journals with a much higher IF, and then get promoted more quickly…. The IF of their papers can be higher than 10 or even multiples of 10. Consequently, they can also get national research funding. (Interview, 25 December 2021)

As also noted in Chapter 5, research grants at national levels were required for promotion. Other participants shared Bo's view that basic research stood better chance of getting national funding and that it would be next to impossible for young doctors lacking both institutional resources and clinical experience to get national grants supporting clinical research. For instance, Yang noted that:

> According to the results of successful applications for national research funding this year, there were only a few grants for clinical research. It was rather difficult for junior clinicians to get such grants. So far, the National Natural Science Foundation [of China] just wants to sponsor basic research. (Interview, 6 February 2021)

Pang concurred that:

> Of course, no one is required to publish basic research. However, if you want to get promotion, you need to do basic research and then apply for basic research grants. (Interview, 18 April 2021)

As pointed out by Bo, such a preference for basic research was instigated by the national policy orientation:

> It [Basic research] can fundamentally facilitate the development of science…. It emphasises the *cutting-edge* science in medicine. That's what China is now short of…. From the state's macro perspective, its funding naturally centres on basic research…. In recent years, because the state advocates research, many hospitals now don't value doctors' clinical skills but only their research grants and published papers. The focus is on research grants, and published papers are the preconditions for research grants. (Interview, 25 December 2021)

Concurring with Bo, Pang noted that:

> When you apply for research funding, what do the funding organisations require? You need to have papers, especially CNS [basic research journals - *Cell*, *Nature*, and *Science*] papers and the like. If you have such papers, you can get a lot of funding. (Interview, 14 March 2021)

Second, given the tight timeframe for promotion, the participants also considered the feasibility and output efficiency of different kinds of research. As noted in Section 6.2.1, the participants were aware of the variations in time investment required by different types of research. Specifically, the participants were aware of the much longer time and the many more resources needed to conduct high-quality clinical research comparted to basic research. However, according to the participants, clinical research could be more readily publishable for junior doctors if it was a retrospective clinical study or a case report due to their low cost in time and funding. Nonetheless, they indicated that

retrospective clinical studies were considered low-quality and inferior to experimental clinical and basic research. Yang, who published many retrospective clinical studies, reported that:

> Clinical research [e.g., retrospective studies or case reports] is different. You can easily collect some data [from the hospital's database] to publish papers. Although it's difficult to publish in a journal with a high IF, you can still publish in a journal with a low IF as long as you have a large number of cases. Or when the disease you reported was quite new, or the treatment you reported was quite advanced - all these are publishable…. However, if you aim to publish high-quality clinical research in a top-tier journal, it would be rather difficult. Because such research requires you to improve the current clinical practice as a whole or make substantial contributions to the clinical field. It can be very difficult because of its rather high cost [i.e., time and money]. (Interview, 18 April 2021)

What Yang referred to as high-quality clinical research was RCT (Randomized Control Trial), that is, experimental clinical research. As confirmed by the other participants, such RCT was considered high-quality evidenced-based research that is well recognised in the global scientific community. Although it was evident in the interviews that all the doctors had a clear idea of what RCT is and how it can be done, only Xiang among all the participants published one high-quality paper based on RCT in a top-tier journal, which he considered "the most difficult task" and took him "one year and two

months from submission to acceptance", not counting the time spent on the research and manuscript writing (Interview, 15 August 2021).

Third, the participants also took into account the time-consuming nature of the manuscript reviewing process that was full of uncertainties, especially when there were not so many high-IF journals of clinical research on the hospital's ranking list. Bo talked about factors that could influence the reviewing process:

> You need to consider many aspects based on your thorough knowledge of each journal. What kind of articles does this journal like? What is the research focus of this journal? What is the language quality of your manuscript, and does your language meet the journal's standards? (Interview, 8 August 2021)

When asked about whether their manuscripts were "biased" against by those international journals, Xiang gave a positive response: "indeed it happens. Some [editors and reviewers] tend to think that research conducted by Chinese scholars lacks scientific rigor" (Interview, 30 October 2021). Bo added to Xiang's perspective:

> No matter whether the research is conducted in China or other countries, the fundamental element is scientific rigour. You can say it [i.e., a retrospective clinical study] is not rigorous. Indeed, it is NOT rigorous enough. However, such retrospective studies can only be conducted in this way. (Interview, 29 October 2021)

Pang explained why such biases could happen from time to time:

> One reason is language. They feel that they cannot understand your English. The main reason, however, is the [bad] impression that China has left on the scientific community. They tend to think that Chinese scholars can be academically dishonest. (Interview, 14 March 2021)

Although the other doctors did not explicitly report experiencing such biases, their choice of journals to submit their manuscripts to, to be discussed later in this section, indicated that they were aware of such biases.

Now that the relevant background information is introduced, what follows detail how the doctors played the publication game. First, as noted in Chapter 5, there were two normal promotion tracks for doctors (i.e., the academic track and the practitioner track). To save time, the participants chose to do research that required relatively less time and energy investments. As Liang reported, "the hospital doesn't care about what kind of research you are doing, as long as the journals of your publications are included in the hospital's journal list" (Interview, 7 October 2022). Furthermore, as reported by the participants, most doctors would prepare for both tracks, and they would give top priority to the quantity of their publications. Therefore, the participants published retrospective clinical studies, case reports or review articles in journals which did not have a high IF but were included in the hospital's ranking list. Specifically, they used the hospital's database to write papers on retrospective clinical studies and/or case reports, while

writing review articles did not involve any patient data collection. These types of research did not require first-hand collection of medical data.

Second, due to the relatively low IFs of journals in clinical research and the time-consuming nature of experimental clinical research, the participants turned to basic research because it could lead to fast publications and the journals in basic research have much higher IFs. Yang, Tang, and Lin just published their first "basic research" paper at the time of the study, respectively, and Hang's papers mostly fell into the category of basic research. Pang only published one "basic research" paper prior to the present study, which, according to Pang, "was rejected six times, but only got accepted the seventh time" (Interview, 18 April 2021). Only Bo and Xiang did not publish any basic research. Bo, after multiple rejections of his paper on a retrospective clinical study, related that "I have learnt a lesson from this paper…. In the future, my papers need to shift their focus towards basic research which is more publishable" (Interview, 23 October 2021). Unlike others, Xiang was the only one who focused on clinical research, but he chose only to do experimental clinical research because he confided that he was not good at basic research and that other types of clinical research (e.g., retrospective clinical studies) were considered inferior to experimental clinical research. Notably, the participants had much to share about the challenges/difficulties when publishing basic research for the first time, as will be discussed in Chapter 7 as subject-related contradictions.

Third, the participants were familiar with the scholarly publishing rules in the

international community and adopted various strategies to maximise the chance of their manuscripts being accepted. Notably, when asked how to navigate the publishing process more effectively, the participants unanimously reported that they would first check whether and how many Chinese scholars had published in the target journals before. This may explain why most of the participants said that they had never encountered biases from editors and reviewers of international journals, because they had ruled out those journals that may bias Chinese scholars before submitting their manuscripts. Xiang confided that:

> When we looked at the proportions of papers written by Chinese scholars in each journal [in medicine], we found the majority of the journals had very low percentages. From this information, we knew that international journals still hold the opinion that the research conducted by Chinese scholars was not so solid…. I think it is all because of the publishing pressure, like that exerted by the university's and the hospital's promotion policy. This made Chinese scholars do experiments and publish papers like crazy. Actually, high-quality research takes a very long time and requires many people's effort and funding. It was then natural that the international community would question your research because you finished doing all the experiments so quickly and got such good results. (Interview, 30 October 2021)

Xiang's account exactly captured the duality of the object discussed in this chapter and the contradictions that would arise from this duality. Pang also observed that papers

by medical scholars from more developed areas were accepted more easily than Chinese doctors:

> I think this is a very common phenomenon. In journals of a certain field, you read many articles written by scholars from the same areas [other than mainland China]. They are relatively more active. It may be that they have advantages in language, and their status as doctors is high in their countries and areas. In addition, their research time may be more abundant than ours. Their follow-up system, especially the collection and storage of medical data, is more systematic, more credible, and more detailed. Such differences are rooted in the systems. (Interview, 29 August 2021)

Additionally, the participants also reported that they would take a close look at the scope and guidelines of the target journals. Lin provided a detailed description:

> First of all, you need to find journals in your field, or related to your field. Second, there are a lot of ways to achieve this. You can start to search journals through public platforms, and also read some articles in your target journals to see what they like and what kind of papers they have accepted. After this, you need to adjust the structure of your manuscripts to fit the target journals' requirements. All these will increase the chances of your manuscripts being accepted. (Interview, 28 December 2021)

However, although the participants played the publication game in various ways to increase publications within a relatively short period of time, the strategy hindered their professional development as junior clinician-researchers aspiring to make knowledge contributions in their field and caused new tensions among their activity systems. Figure 6.3 below presents schematically the new tensions arising from the adoption of this strategy.

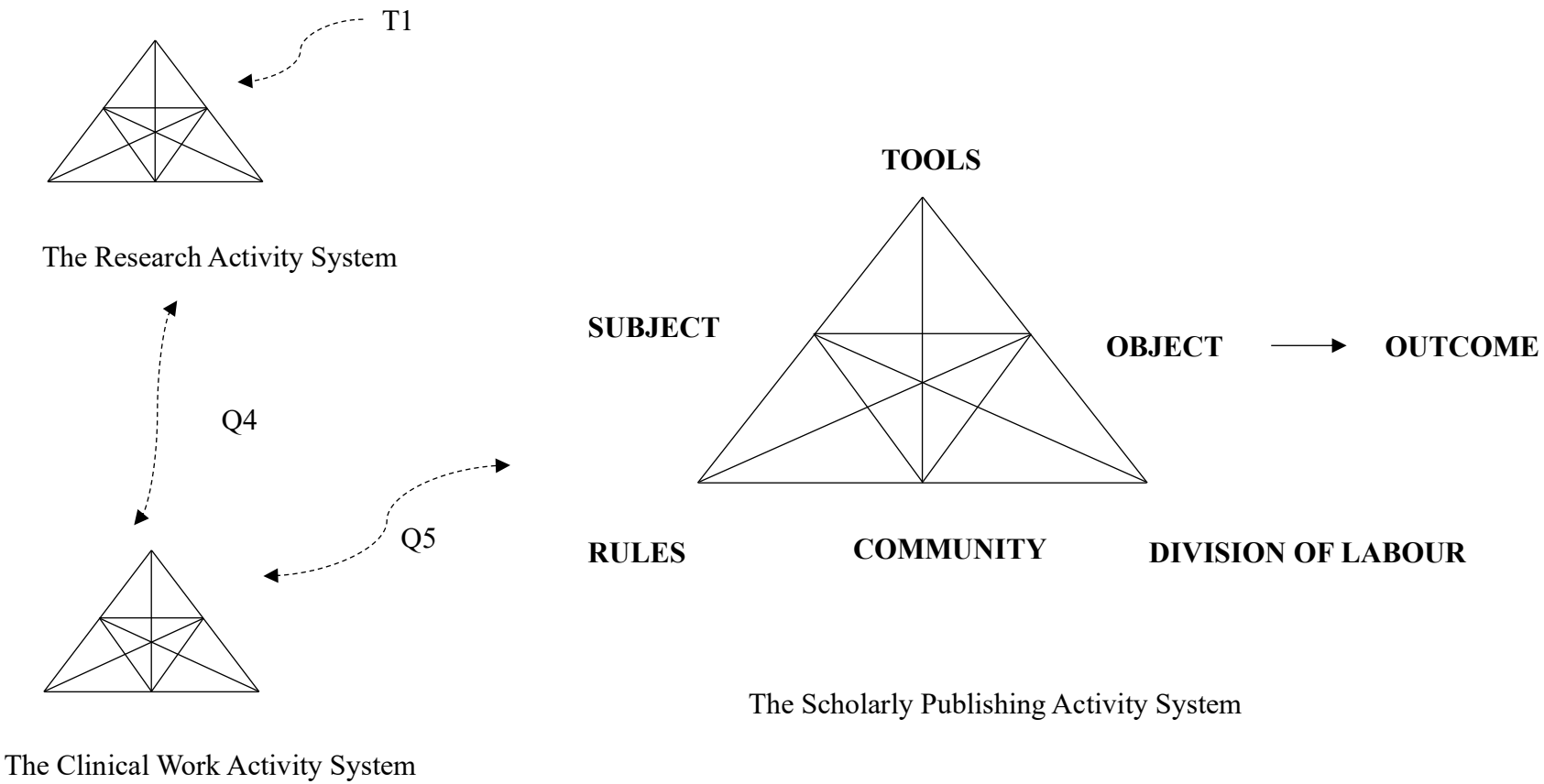

Figure 6. 3 New Tensions Created by the Strategy of Playing the Publication Game

First, a tertiary contradiction (Tension T1 in Figure 6.3) arose when the doctors adopted the strategy of conducting basic research, which was a new type of research introduced into the scholarly publishing activity system to achieve its object. This led to changes in the rules and tools of the scholarly publishing activity system, which caused secondary contradictions between subject and rules, and between subject and tools. As will be introduced in Chapter 7, the doctors who conducted basic research reported the challenges/difficulties faced by them.

Second, the doctors' motive for publishing either clinical research or basic research revolved instrumentally around professional promotion through publishing rather than conducting research to make meaningful knowledge contributions. With the adoption of this strategy, as discussed in section 6.2.2, the object of the research activity system was changed and redefined. Consequently, the ideal outcome of the research activity system was undermined, causing quaternary contradictions (Tensions Q4 and Q5 in Figure 6.3) between the clinical work activity system and the research activity system, and between the clinical work activity system and the scholarly publishing activity system. As a result, the ideally shared object of the three activity systems, as discussed in Chapter 5, was becoming misaligned. Consequently, the object of building the hospital's research capacity and developing doctors into knowledge-contributing clinician-researchers was compromised. Such tensions were felt acutely by Yang, Pang, Bo, Tang, and Xiang. Yang, for example, was "not satisfied" with his publications because he "had not too

much time to do the research and did not do well in the research" (Interview, 18 April 2021). He confided that:

> I think meaningful research should benefit clinical treatment greatly. However, you will find most papers do not have such contributions to clinical practices, including my own papers…. To some extent, there are not so many papers that inform clinical decision making. But doctors still need to do research to achieve a certain purpose [for promotion]. When your research cannot reach such [good] standards but you still have to do it, you are left with no choice but do something that is merely publishable. (Interview, 18 April 2021)

Yang also commented on whether basic research could help develop clinical practice:

> Publishing basic research, for example, is more about how some protein works. However, from the perspective of doctors, no matter how well you do basic research, it's actually meaningless as the results cannot directly be used to help medical diagnosis or treatment. (Interview, 18 April 2021)

His comment was that such research was "meaningless" for the development of clinical practice and discipline. Concurring with Yang, Xiang remarked that "so far, I feel that those papers are not of good quality. In other words, they are not helpful in developing the [clinical] field" (Interview, 2 January 2022). Hang provided an explanation for why the quality of the papers was not "high":

> In order to fulfil [the publication requirements] for the quantity of clinical research articles, some just use the data at hand to write up several papers. Consequently, the quality of such publications can be inferior. On the hand, if you spend three years to collect data, you can use the same dataset to only publish one very high-quality paper. In fact, it depends on how you want to achieve your goal. If you prioritise the quantity over the quality of your papers, you need to consider whether and how you can fulfil the publication requirements for the quantity first and then the quality…. I think doing and publishing research is necessary to develop the discipline and improve clinical practices. However, clinicians don't have time to focus on doing research. I think clinicians or doctors need to focus more on something that draws on their clinical experience, or the improvement of their clinical skills. (Interview, 27 March 2022)

In this regard, the participants (i.e., Yang, Liang, Bo, Xiang, Tang, and Liang) who published retrospective clinical studies admitted that they drew on the hospital's database at hand and write up papers without doing much data collection. However, such a database provided both affordances of and hindrances to the doctors' scholarly publishing practices. On the one hand, as discussed earlier, the database saved the doctors' time and facilitated fast publications. On the other hand, as junior doctors, it would be difficult for them to delve further or deeper into the clinical data due to their lack of extensive engagement with clinical practices. In the following extracts, Pang explained the relation

between quality and quantity of publication, what the quality of a publication meant in the institutional system, and what consequences would follow:

> It [the hospital's evaluation system] only emphasises the quantity of your papers, and the judgement of their quality simply depends on the IFs. It doesn't consider the doctor's real level of scholarship and what research s/he is actually doing. (Interview, 7 February 2021)

> Consequently, this "one size fits all" approach that only considers academic publications as the most important measure would do harm to the development of clinical disciplines and the treatment of patients. Moreover, doctors are very busy with patients' treatment and left with little time to do research. However, doctors are compelled to write such papers, which diverts their attention from the clinical work that makes them what they are [i.e., doctors]. What consequences are there if doctors have to publish to meet publication requirements? Doctors are just writing papers for the sake of writing papers. They are becoming just machines for producing papers and losing sight of the research proper. In other words, clinical work should be much more important than producing papers. However, it's the other way around now. That doctors who publish at the expense of their clinical work get their priorities mixed up. Some who do not do well in their clinical work but focus on publishing some papers…. Consequently, the quality of the scientific papers

produced by Chinese scholars will be greatly affected and not valued [in the international community]. (Interview, 14 March 2021)

It can be drawn from the doctors' accounts that high-quality research and publications need to be grounded in the well-aligned shared objects between the activity systems of clinical work, research, and scholarly publishing. As noted in Chapter 5, ideally, these activity systems should facilitate each other. However, the adoption of the strategy of playing the publication game in order to achieve the object and the "desirable" outcome of their professional work activity systems within a tight timeframe caused tensions between all its constitutive activity systems and then the transformations of each activity system to varying extents, thereby leading to misalignments between their objects. For example, Pang aspired to achieve all the objects of the constitutive activity systems in a well-aligned manner but only found himself, and other doctors like himself, "banished" by the rules (e.g., the publication requirements for promotion) and the division of labour (e.g., status in the hospital) in his professional work activity system. Pang moaned that:

Now I am forced to apply for the practitioner track of chief deputy physician…. For the academic track of associate professor, it has much higher requirements for papers and national grants for basic research. I have applied for national research funding for several years, but I failed. Now I'm over 35 and am not allowed to apply for national youth research funds. It would be rather difficult for me to be promoted to

> associate professor. I have to apply for the promotion track of chief deputy physician…. If a doctor only publishes clinical research, s/he will not be very likely to get promoted to associate professor. (Interview, 18 April 2021)

Furthermore, this could lead to dilemmas in their professional identity. Xiang questioned that:

> Apart from the 8-hour clinical work a day, I still need to find extra time to do research and publish papers. So am I a clinician or am I a researcher? This issue sparks controversy in China. So why do I accept [the publication requirements]? Because I have no choice but to work as the hospital requires. But I don't fully support such requirements. Just like I said, you are a researcher, and then you do your research work well. For a researcher, the evaluation criteria for their work should be the quality of their research papers and projects. But for a clinician, you need to do your clinical work most of the time. The evaluation criteria for their work should be patient-oriented. (Interview, 15 August 2021)

As discussed above, all the participants concurred with Xiang in one way or another, explicitly or implicitly. In summary, adopting the strategy of playing the publication game in the doctors' scholarly publishing activity systems could help the participants to deal with some contradictions related to their scholarly publishing practices. However, the strategy also caused tertiary and quaternary contradictions between their activity systems that could possibly hinder the attainment of the object of facilitating doctors'

professional development as clinician-researchers who were able to contribute useful knowledge. Yang confided that:

> Although the hospital invested a lot and provided resources, which I think is very good, it would still not be easy for junior doctors to do good research. All these need to be premised on a doctor's extensive engagement with clinical practices and profound clinical skills. I think it's hard to achieve both. (Interview, 18 April 2021)

6.2.4 Collaborating with Intradepartmental Members

In addition to the strategies discussed above, the doctors reported that as junior doctors, they needed to work on research projects under the leadership of a senior fellow (i.e., a medical team leader) in their respective department. Bo depicted the ecology of departmental collaboration succinctly: "The boss[11] [i.e., the senior fellow] is the one that gives you the resources, and the colleagues in your department are those who help you with the conduct of research" (Interview, 23 October 2021). Yang pointed out the importance of "the boss" for junior doctors' publishing endeavours: "for junior doctors, if we do not have the boss's research funding support, it is rather difficult to do research. Otherwise, we could only do retrospective clinical studies" (Interview,18 April 2021). Liang also mentioned that "if the reviewer asked for more data, I needed to ask for more

[11] The term, *boss*, was used metaphorically by the participants in the study to refer to the medical team leader in their respective department.

data from the boss or other senior colleagues in my department" (Interview, 25 March 2022).

Xiang talked about the effectiveness of collaborating with senior colleagues to expedite scholarly publishing efforts in his department: "in our team, the senior colleagues help us junior doctors because they are more experienced. Under their guidance to do research, it will be faster", and "you can directly seek the help from the colleague who is good at data analysis or image processing" (Interview, 30 October 2021). Yang provided a detailed description of the division of labour within such a research team:

> To conduct RCT involves many aspects, such as the follow-up and the recruitment of patients. It would not be possible to handle all these things by a single person. If you do RCT, you may need nearly 1,000 or 2,000 patients in your study. You don't have such energy to do this on your own. You need a team. Some colleagues help you with the research design and data collection. Others are responsible for following up with the patients or checking them up…. Still other colleagues keep records or act as contact persons. (Interview, 18 April 2021)

Similarly, Xiang, Lin, and Hang reported that they had been involved in experiment-based clinical research in colleagues' projects (e.g., RCT). Lin mentioned that "we [as a team] did the experiments multiple times before there were some results" (Interview, 28 December 2021). Notably, the participants mentioned that the manuscripts were drafted by the one who was listed as the first author. Xiang, for example, reported that "the write-

up of manuscripts was mainly done by myself, but the experiments were done by many colleagues" (Interview, 2 January 2022). More specifically, Hang mentioned that:

> In fact, as a team, many papers were produced based on our team's collective work on experiments, although sometimes I was not listed as the first author. We discussed and came up with the research design together before the experiments were conducted. It depended on how much you have contributed to the experiments…. Basically, if I was the first author, I wrote the manuscripts all by myself. (Interview, 23 March 2023)

In addition to collaboration in conducting experiments, the other participants also reported that the colleagues in their respective department would work as a team on their own research design, which facilitated their scholarly publishing activities, especially their efforts to conduct basic research as clinicians. Tang, for example, reported that "the colleagues in my department helped with some technical problems in my basic research…, which I think was quite useful" (Interview, 28 November 2022). Similarly, Yang acknowledged the effectiveness of intradepartmental collaboration: "I collaborated with a senior colleague in my department who helped with the research design, and I think it was helpful" (Interview, 18 April 2021). On the interpersonal plane (Rogoff, 1995; Yamagata-Lynch, 2010), the participants had close collaboration with other colleagues in their own department and provided coordination to facilitate each other's scholarly publishing efforts, which, according to the participants, offered learning affordances for

their development as clinical researchers and scholarly writers, as will be further discussed in Chapter 7.

Notwithstanding the effectiveness of intradepartmental collaboration, the participants also needed to consider carefully how far this collaboration could go because the hospital's evaluation/appraisal system only valued first or corresponding authorship, which hindered interdepartmental collaboration or even intradepartmental collaboration. For example, Yang and Bo understood well that high-quality clinical research required interdepartmental collaboration, but they would not seek such collaboration because as junior doctors, they needed to publish as first authors to secure promotion while the corresponding author was usually their bosses in their respective medical/research team. This explained in part why the participants in my study all tended to work with intradepartmental members or by themselves. For example, Bo mentioned that "I think two types of resources are the most useful. The first is the interdepartmental collaboration, and the second is the interdisciplinary collaboration. The two types of collaboration determine the quality of your publications" (Interview, 29 October 2021). However, he confided that he would not seek such interdepartmental collaboration:

> When I wrote my own papers, I would not let others be co-first authors, unless they really made very substantial contributions. Why? If there was another co-first author, it means that the appraisal scores of my research output would be chopped by half.… The corresponding author is usually the boss. Therefore, the boss doesn't care about

first authorship. If you want to collaborate with other departments and ask for their data and help, the boss would ask you to share first-authorship with colleagues from these departments. His own corresponding authorship will not be shared…. Therefore, this first-authorship issue greatly affects interdepartmental collaboration. Usually, such collaboration involves at least three departments. There will be great trouble if each department wants co-first authorship. "The cake" is then split, and each department gets so little. However, when you apply for promotion, you need "the whole cake". In such cases, you may only get a half of the cake. That means that two co-first authored papers equal only one first-authored paper. Consequently, this will affect the quality of your papers. Therefore, you need to consider whether you want to share co-first authorship with others. If you don't want, you need to write the papers by yourself. It is very likely that the quality of papers will fall, but there is no other choice. Although the quality of your papers may not be so good without collaboration, you are the single first author. However, if you want to improve the quality of your papers, you have to share the first authorship. Again, as a result, you may feel that your paper has been greatly improved, but can you take for granted that it will be eventually accepted by a very good journal? (Interview, 29 October 2021)

Additionally, the authorship issue also influenced interdisciplinary collaboration in Y Hospital. Yang confided that:

When you seek help for your research design, they may help you. However, I have not used this strategy because it involves the collaboration issue. If you seek help from these colleagues who specialise in statistical analysis, it leads to collaboration…. Once you collaborate with them, it involves the issue of first and/or corresponding authorship. This brings up the distribution of these two types of authorship. Within our own department, my other colleagues and I have already done a lot of work such as data collection that qualifies us as first/corresponding authors. If others get involved, the authorship need to be redistributed. This means that "your cake" needs to be made big enough. However, in reality, your cake is not big enough, but everyone needs a piece of the cake. This is a thorny issue. The cake is not enough to go round. If you cake is big enough, such collaboration is fine….

For instance, I work hard to collect and process my clinical data that can only be turned into one paper. If I seek help from a colleague, s/he agrees and then asks for co-first or co-corresponding authorship. Then, the single first or single corresponding authorship is "gone". However, if we collaborate and then produce very many papers, I think it's okay. Perhaps the hospital's original intention was to encourage collaboration. However, as far as I am concerned, the colleagues in my department and I myself have no such intention to collaborate with colleagues from other departments and disciplines. (Interview, 18 April 2021)

The two participants' accounts well explained why the participants in this study only reported their collaboration within their own department. Although this strategy could facilitate the doctors' scholarly publishing efforts, the performance appraisal system and the promotion requirements, which, as discussed in Chapter 5, injected competition among individual departments and doctors, prevented interdepartmental collaboration that could possibly result in high-quality publications and impeded the doctors' desire to optimise the resources to make meaningful knowledge contributions. Such tensions arose from the secondary contradictions between the object and the rules as well as between the object and the division of labour in the doctors' scholarly publishing activity systems, as will be discussed in the next section.

6.3 The Institutional Role in the Doctors' Scholarly Publishing Activity System

Figure 6.4 shows the schematic representation of the tension between the object of developing medical doctors into full-fledged clinician-researchers capable of contributing new knowledge and the division of labour concerning the hospital's role in instigating the doctors to deliver research output on a tight timeframe for promotion (Tension S2). The tension was rooted in the duality of the object of the doctors' scholarly publishing activity system, which was manifested as a secondary contradiction between the object and the division of labour. Specifically, it was reflected as the discrepancy between the institutional product-/outcome-oriented support for scholarly publishing and the doctors' quest or expectations for a rule-redefined scholarly publishing activity system that offers

a flexible/process-oriented framework for their professional development, or more radically, for the abolishment of publication requirements for medical doctors.

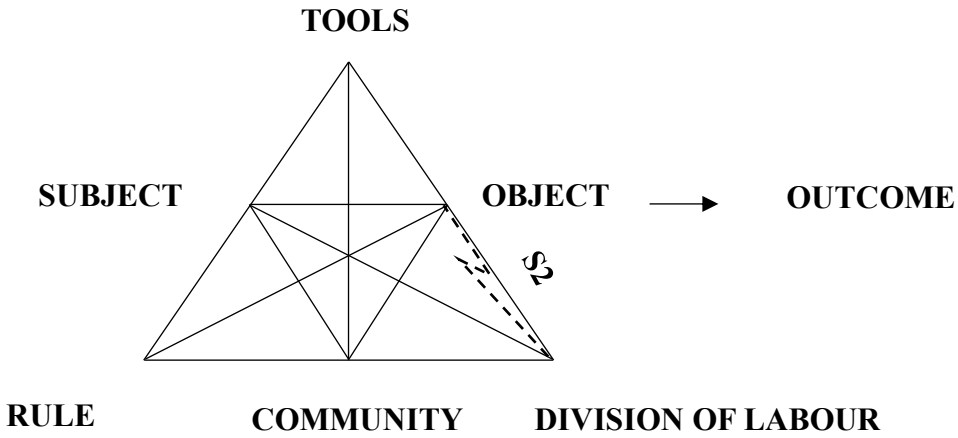

Figure 6. 4 Tensions Concerning the Institutional Role in Doctors' Scholarly Publishing Activity System

As revealed in Chapter 5, the university and the hospital stipulated that doctors who wished to get promotion must publish a required number of papers (mainly SCI papers) in certain categories of journals (mainly English-medium ones). However, the lack of guidelines for their research activity system, especially guidelines on how to achieve its object, evidenced the institutional product-oriented approach to doctors' scholarly publishing activities. Although the participants reported that the hospital provided some support for their research-related activities, such support was "merely a formality without much effect, and was intended to show that the hospital is trying to do something" (Xiang, Interview, 2 January 2022). This explained why the participants did not seek institutional support, although all of them were aware of it. Bo pointed out that:

> I think it [the hospital] provides different kinds of support. For example, if you publish SCI articles, you will get monetary rewards. It also provides support for your research activities. However, what you lack is time. It doesn't give the time you need. Without time, you are unable to do this stuff [conducting and publishing research]. (Interview, 25 December 2021)

Concurring with Bo, Pang described the doctors at Y Hospital as being "enslaved by the system":

> The hospital needs to give doctors free rein. This applies to not only the doctors at Y Hospital but also Chinese doctors in general. Doctors need to be given enough time rather than such tight [publication] requirements. Then, they will naturally

pursue higher career goals as long as there are resources. However, the system now pressurises doctors to publish, which seems to backfire. I think doctors need to be freed, but they are enslaved by the system. (Interview, 18 April 2021)

He continued to describe the hierarchical structure at Y Hospital in an ironical way:

It's difficult for the department too. The department can only act according to the administration's policy and the hospital's regulations. What they can do is only issue these indexes and requirements. For example, if you don't publish any papers this year, it would ask you to publish at least, say, three papers next year. However, if you publish some papers, it would then say that your treatment of patients is unsatisfactory or that you are irresponsible in your clinical work. It then claims that clinical work is the fundamental part of being a doctor, without which you are no good no matter how well you do in other tasks [such as scholarly publishing]. So, the leader of the department and the hospital impose the requirements on the doctors and hope that doctors work like sages. That's how the system works in China. (Interview, 18 April 2021)

The participants' accounts revealed the contradiction between the object and the division of labour as discussed earlier. Thus, despite the existence of some institutional support, the participants tended to depend on themselves without seeking such support. For instance, Lin reported that "Y Hospital provides some support, but what kind of research output you can produce all depends on yourself" (Interview, 27 March 2022).

Similarly, Xiang pointed out that "regardless of the hospital's support, the most important factor is self-learning and self-improvement" (Interview, 2 January 2022). Likewise, Hang mentioned that "Y Hospital is a good platform to do research" but when it came to the support to ease doctors' time pressure to do research, he declared that "so far, I only find my own problems and "it is pointless even if I put forward some suggestions" (Interview, 23 March 2023). When faced with the contradiction, Liang said resignedly that "anyway, I can get by…. Sometimes I think it is exhausting, but it seems that I've got by silently and slowly" (Interview, 7 October 2022). Unlike Pang and Bo, the other participants seemed to reconcile themselves to the contradiction, which will be discussed later.

The participants also shared their views on some specific support provided by the hospital. First, the hospital organised, for doctors, some talks and seminars on scholarly publishing given by experienced scholars or journal editors. These arrangements were intended to facilitate the doctors' attainment of the object of their scholarly publishing activity system. For instance, Tang reported that "there were some seminars on English academic writing. The hospital invited some experienced senior fellows to share their experience" (Interview, 7 November 2021). However, he hastened to add that "others' experience doesn't necessarily work in my own situation" (Interview, 7 November 2021). All the participants reported that there were no systematically designed courses of English for research publication purposes (ERPP) or English for academic purposes (EAP). This

lack of formal training in English academic writing had also happened in their master's and doctoral studies. Just as Hang pointed out, "the curricula gave us little chance to learn English [for research publication purposes] and was more exam-oriented" (Interview, 27 March 2022). As a result, the participants had to learn to navigate the publishing process on their own, as will be discussed in detail in Chapter 7. Hang remarked that:

> Apart from some English-for-specific-purposes courses, there were mostly seminars in which others shared their experiences…. These were not systematic. I only attended them online once or twice…. I didn't learn much from these courses or seminars. Mostly, I write up English manuscripts by modelling on published journal articles and other online tools. (Interview, 27 March 2022)

The participants' complaints about unsystematically held seminars and lack of ERPP or EAP courses pointed to the failure or ineffectiveness of institutional support that did not scaffold the doctors' process-oriented professional development as scholarly writer. This also suggested that the difficulties encountered by the doctors in their scholarly publishing efforts were a result of historically accumulated contradictions (e.g., lack of formal training in scholarly writing during their medical school years). Moreover, all the participants mentioned that the hospital provided no English editorial services. Bo, for example, told me that "within the hospital's system, there is no language support service" (Interview, 29 October 2021), but it allowed doctors to claim the fees paid for professional editorial services. Notably, this does not mean that the hospital provided monetary

support for such services but depended on whether the doctors or their bosses had sufficient research funds. Lin gave a more holistic picture:

> Although there is some support for your research, there is no direct support for English editorial services. They only provide some guidelines for the conceptualisation of a research design, which I have never used….
>
> It wouldn't be possible for the hospital to provide English language services. I think it's not realistic…. If there were such services, the hospital would need to finance them, and it wouldn't be financially viable to support such a unit. Right now, we just send our manuscripts [to professional editorial services], so there is no need for the hospital to run such a unit, which can be more cost-effective. The money we spend on editorial services can be claimed [if we have research funding]. (Interview, 27 March 2022)

Similarly, Yang reported that:

> As far as I know, there is no institutional support for manuscript writing or for dealing with difficulties concerning scholarly writing and publishing processes. It would be difficult for the hospital to provide such support, because the hospital would need to find some experts and pay them for their services. There would also be the question of how to assess these people's performance. If you find some experts from other departments who could provide editorial support, you need to offer something [i.e., authorship] to them. If not, why would they help you when

they themselves are burdened with heavy clinical work and are under great pressure to publish? I think these are realistic problems. (Interview, 18 April 2021)

Additionally, as junior doctors who did not have much research funding, the participants reported that they had to deal with language issues on their own or sought help from colleagues in their department. They would only seek professional editorial services at journal editors' or reviewers' request. Yang noted that:

> Although expenses on such language services can be reimbursed, they are expensive. So, I don't use editorial services unless the journal explicitly requests editorial polishing of my manuscript. In such a case, I will use such services. Usually, I write up and revise my manuscripts step by step…. On some occasions where I feel unable to write a manuscript well, I will seek help from senior fellows in our department. (Interview, 18 April 2021)

The participants' accounts revealed again the hospital's product-oriented approach to doctors' scholarly publishing activities without providing ongoing assistance to their writing process. Furthermore, because of the time pressure for promotion, the doctors themselves seemed to adopt a product-oriented approach to their scholarly publishing activities as well. This meant that the doctors' scholarly publishing practices were structurally shaped, and their agency could only be exerted in a limited way. As noted above, the effectiveness of the institutional support was undermined by the hospital's appraisal system placing a premium on order of authorship.

Furthermore, as noted earlier, the junior doctors needed to work under a medical leader in their respective department. This evidenced the structural hierarchy at Y Hospital, with junior doctors having very limited resources. Yang confided that：

> The patients … are all the boss's patients. We are just helping. At Y Hospital, there is a hierarchy. Although I received outpatients, most of those outpatients were treated by other senior doctors who conducted surgery for them…. If you want to treat them in a new way, it'll be rather difficult because you need first to seek the boss's approval. Generally speaking, you need to have your own patients [to conduct good research]. The patient problem persists [as long as you are a junior doctor]…. Although sometimes I offer good ideas, the implementation can be rather difficult…. In a word, you must have resources, such as human resources and funding, to do clinical research like RCT because the cost of such research is very high. (Interview, 18 April 2021)

The excerpt clearly identified the contradiction between the object and the division of labour in the doctors' scholarly publishing activity system, a contradiction also mentioned by Lin and Liang. In Liang's words, "to be a medical leader of a team, you must be promoted to the rank of associate professor" (Interview, 7 October 2022). Yang's comments also revealed the subject-related contradiction (e.g., lack of expertise in designing research) in the doctors' scholarly publishing activity system, as will be discussed in Chapter 7.

Another problem reported by the participants concerned the management of patient data, or the database referred to frequently in this thesis. The participants pointed out a systemic deficiency. Pang explained that:

> The quality of our clinical research is very low. Most of our papers are retrospective clinical studies that don't draw on systematically collected data. This is because there is no systematic management of patient data collection and follow-up. The data are not sufficient…. That's why our clinical research papers are not well recognised in the international community. (Interview, 18 April 2021)

Similarly, Liang mentioned the difficulty caused by the underdevelopment of the database to publish high-quality clinical research:

> Compared to hospitals in developed countries like the US, Chinese hospitals started late to develop their own databases. Thus, the former have monopolised important findings [in clinical research]. I know that the US databases are nationally interconnected [but ours are not so]. (Interview, 7 October 2022)

He added that "the size of a database will also affect what can be found in the clinical data" and, consequently, can influence the quality of research papers based on it (Interview, 25 March 2022). Furthermore, Yang pointed out that systemic deficiencies were also rooted in the underdevelopment of clinical practice in China:

> Most clinical work we have done falls far behind the western world, such as surgical operations…. So many new medical facilities and new medicines have been

> developed and used by hospitals in the developed countries before us – say three or four years before us. It has already taken several years for these newly developed techniques to be introduced to China…. Therefore, it is very difficult for Chinese doctors to publish original clinical research unless your approach is totally different from the western world…. However, in my field, the clinical practice is very standardised. (Interview, 6 February 2021)

What Yang said might explain why the doctors consistently reported that it was of great importance to find a niche in clinical research, but they found it most difficult to do so, as will be presented in Chapter 7.

To sum up, Y Hospital appeared to provide very superficial product-oriented support of the doctors' scholarly writing and publishing efforts without tacking the fundamental problems faced by them (e.g., the appraisal system's authorship requirements and their effects on interdepartmental collaboration). As noted in Chapter 5, the hospital was aware of the problems in the doctors' scholarly publishing activity system. However, its outcome-prioritising policy reflected in the publication requirements for promotion intensified, rather than alleviated, the various contradictions faced by the doctors. While there were gestures of institutional process-oriented support, the participants did not find it helpful due to the unbalanced, or even unfair, performance appraisal system (e.g., the weighting of the order of authorship and the assessment of clinical work and research work). Without essential conditions and given the insufficient attention paid to the

balanced development of clinical and research practice, doubts were cast upon the legitimacy for the scholarly publishing activity system to be embedded in junior doctors' or every doctor's professional work activity system, that is, whether a doctor must publish to gain professional titles, or whether junior doctors must publish before developing their clinical skills that make what a doctor is at the first place.

6.4 Discussion

This chapter revealed an inner contradiction in the object of developing doctors' clinical skills and scholarly publishing expertise to make knowledge contributions while institutionally expecting them to get promoted within a stipulated timeframe by publishing a required number of papers in designated journals. From the CHAT perspective, such an inner contradiction needs to be understood in terms of the relationship between individual and society (Roth, 2004; Roth & Lee, 2007). Specifically, this contradiction was inherent in the doctors' professional work activity system in an increasingly neoliberalised context and against the backdrop of the internationalisation of research, both of which has had profound effects on local and institutional research policies (Altbach & Knight, 2007; Huang et al., 2014; Rostan et al., 2014). For example, the hospital's publication requirements exerted great time pressure on the doctors, who needed to juggle multiple demands. As noted in Chapter 5, there were conflicting motives in the doctors' scholarly publishing activity systems, leading to a hierarchy of motives among which the most immediate and prioritised motive was professional promotion

within the stipulated timeframe ("first stimulus", Engeström & Sannino, 2020, p. 16). As a result, in order to break out of the conflicting motives and change their circumstances, the doctors tried to cope with the resultant problems by adopting strategies ("second stimulus") to "transform the problematic situation into one that is more understandable and manageable" (Engeström & Sannino, 2020, p. 16). Moreover, such a volitional action as adopting certain strategies in response to the conflict of motives experienced a process of transformative agency, that is, "a deliberately initiated conditioning process by an individual or a collective who resolves to learn a new way of working" (Engeström & Sannino, 2020, p. 18). However, primary contradictions in an activity system cannot be resolved completely (Cole & Engeström, 1993; Engeström, 1999, 2015), and the resolution, as pointed out by Engeström and Sannino (2020), could only make the problematic situation "less paralyzing" (p. 17) and "[entail] the involvement of a wide variety of actors at multiple levels – local, regional, national and possibly global" (p. 14). Given such partial resolution, the doctors' repeated use of strategies to resolve the object-induced secondary contradictions caused new tensions in their activity systems.

Specifically, the secondary contradiction between the object and the rule as discussed in section 6.2 was most evident in the impact of the tight timeframe that all the eight participants reported working within. The timeframe became problematic when the doctors were not given time within their working hours for research and scholarly publishing activities and, to make things even worse, had to simultaneously undertake

multiple competing and taxing tasks in their professional activity systems (Li, 2014b; Ye & Liu, 2013). Drawing on CHAT, Clouder et al. (2020) conceptualised academics' time as being "a socio-cultural commodity", in line with Engeström's (2001) theorising of "the essential contradiction between use-value and exchange-value of commodities" (p. 1970). This provides a perspective on the participants' repeated complaints about their lack of time to undertake research and scholarly publishing activities alongside their clinical commitments, their discussion on the value of their colleagues' time in supporting their publishing activities, and their criticism of the structural exploitation of their time. Such metaphors of time have been argued by Billot and King (2015) to denote value in the academic world. Thus, the participants' emphasis on time and its significance in their activity systems was value-laden. Such conceptualisation may explain why doctors participating in this study invested most time and energy in their scholarly publishing activity system because of the paramount value that its object, if achieved to gain a desirable outcome, can yield for their promotion. Also informed by CHAT, Warmington (2008) argued that employers (e.g., the university and the hospital in this study) "appear to buy labour but what they actually purchase is labour-power, the capacity of the employee to labour" (p. 11). This argument was borne out by the hospital's time allocation model, as reported by the doctors. Specifically, the use-value of (professional) labour-power was qualitatively associated with job tasks (i.e., clinical work, research, scholarly publishing, administration, etc.), and its exchange-value was concretised

quantitatively, for example, through an annual assessment (Warmington, 2008). Therefore, time invested in the doctors' professional activity system (e.g., clinical work, research, and scholarly publishing) is inherently contradictory, and this led to the doctors' identity dilemmas and struggles to establish a coherent professional identity (Clouder et al., 2020). For example, Xiang explicitly mentioned such a dilemma because the doctors engaged in various tasks but were appraised mainly in terms of their research output. Consequently, Xiang found himself uncomfortable with either a clinician identity or a researcher identity. This contradiction was intensified by the failure of the hospital's workload allocation policy to include all types of professional work (e.g., its exclusion of research labour) and its adoption of a product-oriented assessment approach to the output of research labour. This led to "serious under-estimates of the actual work-effort involved in undertaking any allocated … role" (Clouder et al., 2020, p. 1970; see also Papadopoulos, 2017). For example, there was no measure to assess the doctors' clinical work qualitatively, but there were unrealistic publication requirements for them, which resulted in a sense of unfairness, as reported by the participants. The time-related primary contradiction was manifested in a secondary contradiction between the object and the rule, that is, between institutional desires for the dual-role doctors to contribute to its research capability building and institutional needs for resources to be used efficiently in today's work environment (e.g., giving no time allowances to dual-role clinician-researchers but requiring them to publish for promotion within a tight timeframe). Given the high and

competing demands imposed on the doctors by the institutional system, the onus was on individual doctors to work harder and/or come up with various strategies to overcome the double contradiction (i.e., the primary and secondary contradictions discussed above) and, consequently, achieve the desirable outcome of their scholarly publishing activity systems.

To resolve the primary and secondary contradictions, the doctors employed strategies of investing extra time, playing the publication game, and collaborating with intradepartmental members, which addressed the tensions to some extent but caused new contradictions. To begin with, investing extra time was adopted by all the participants. This strategy was also reported by Chinese medical doctors in Li's (2014a) study as "'squeezing time' for research" (p. 438). For example, the Chinese doctors in Li's (2014a) study reported that "it is hardly possible to devote a generous chunk of time during the on-duty hours to research-related work" (p. 438). Like the Chinese doctors in Li's (2014b) study, research time was also not officially recognised as part of the workload for the participants in my study. Consequently, they squeezed their research and publishing activities into the workplace and off-work hours (Li, 2014a). While this study came up with findings similar to those of Li's (2014a, 2014b), it yielded a more nuanced understanding of and revealed the consequences arising from the doctors' adoption of this time-management strategy, which led to new tensions within and between their activity systems. From the CHAT perspective, the strategy of investing extra time in the research

and scholarly publishing activity systems constituted boundary-crossing (Akkerman & Bakker, 2011; Engeström et al., 1995; Li, 2014a; Tuomi-Gröhn et al., 2003; Walker & Nocon, 2007). Such boundary-crossing calls for horizontal expertise and "*dialogical, collaborative problem-solving approaches*", where "practitioners must move across boundaries between activity systems to … bring information, knowledge and practices from one system to another" (Konkola et al., 2007, p. 215, emphasis in orginal). However, the intrusion of research and scholarly publishing activities into the doctors' clinical activity system led the doctors to deviate from their clinical practices, as reported by the participants. Just as noted by Akkerman and Bakker (2011), boundary crossers not only connect various fields but also "simultaneously represent the very division of related worlds" (p. 140). Medical doctors in this study were found to be situated between their clinical work activity system and research/scholarly publishing activity system, which may constitute a space of "the ambiguity of boundaries" (Akkerman & Bakker, 2011). Some doctors (e.g., Pang and Yang) felt tensions in their dual role as clinician-researchers, and thus ran the risk of being seen as being at the periphery and not being accepted at institutional or departmental level. In the case of Pang, when he invested more time and energy in scholarly publishing, his department questioned his professional identity as a clinician; however, when he put more effort to clinical work as required by the department, his department started to emphasise his identity as a researcher that was more accepted at the institutional level. When the doctors' scholarly publishing activity system was

foregrounded and prioritised by their time investment, the ideally shared object among their different activity systems became misaligned and caused changes to the objects, the community, the division of labour, and/or rules of the other activity systems (see Section 6.2.2), because the constituent components of the different activity systems overlapped. For example, although the time-management strategy ensured the doctors' scholarly publishing activities, ethical concerns arose regarding professionalism in clinical practice, and self-criticism and resistance were invoked among the participants regarding the rules and consequences of the publication game (Duszak & Lewkowicz, 2008; Li, 2014c; Li & Flowerdew, 2009). The participants' accounts revealed that it was difficult, or even impossible, to cross the boundaries between the scholarly publishing activity system and the other three activity systems without undermining the functioning of the other activity systems. This dilemma resulted from a "double bind" (Engeström, 2015) wherein lay the doctors' "potentially unlimited workload and their own finite availability" (Clouder et al., 2020, p. 1970), as discussed above. Most notably, the strategies, or what Clouder et al. (2020) called "personally imposed rules", that the individual doctors brought to bear on their different activity systems, caused the transformation of the objects of these activity systems. As revealed by Section 6.2.2, the objects of the research and scholarly publishing activity systems were changed from producing intrinsically meaningful research to pursuing external career goals through instrumental publishing.

Similarly, the strategy of playing the publication game also changed the objects of the two activity systems. Scholarly publishing has been characterised as "a game that involves players and rules" (Butler & Spoelstra, 2020), or "something of a game" (McDaniel & Childers, 2011, p. 171). When researchers engage in a "publication game" (Martín, 2014) or "a research game" (Lucas, 2006), they need to follow "the rules of the game" (Gioia, 2019) to succeed. Thus, as pointed out by Butler and Spoelstra (2020), "publication game" has two connotations – one refers to "a set of institutional norms for developing one's academic career", and the other "a set of underhand techniques for cynically gaming the system to one's own professional advantage" (p. 414). Both are applicable to scholarly publishing in academic journals, in the form of "rule-following" or "rule-bending" (Butler & Spoelstra, 2020, p. 140). While "playing the publication game" has become a convenient metaphor to describe strategies of scholar publishing in institutional settings, often in connection with instrumental careerism and strategic publishing, it should be cautioned that this metaphor could "downplay the way academic performance metrics shape research practices" (Butler & Spoelstra, 2020, p. 425) or "the game masters the players" (Gadamer, 2013, p. 111). Thus, there is a need to unravel the play-mentality in scholarly publishing, with its various risks (e.g., contaminating the "real" research) and rewards (e.g., material and professional rewards) (Butler & Spoelstra, 2020). Specifically, in light of both the participants' accounts and Butler and Spoelstra's (2020)

conceptual deconstruction of "playing the publication game"[12], the strategy of playing the publication game was best understood in this study as the work and effort made to publish in order to gain professional prestige and promotion. Thus viewed, the publication game played by the doctors was a production/outcome-oriented activity par excellence since its dominant object was to generate publications in institutionally recognised journals to secure promotion, rather than pursue intrinsic interest or proper scholarship (with the exception of Pang). Conceptualised this way, it could help us grasp the damaging/performative effects and negative consequences that this play-mentality had on the production of knowledge (Butler & Spoelstra, 2020; Li, 2014c). For instance, as pointed out by the participants (e.g., Xiang and Pang), one negative consequence could be the international research community's questioning of the authenticity and quality of research produced by Chinese scholars in general.

In this study, the doctors' success in playing the publication game was found to depend on their comprehensive knowledge, explicit and/or implicit, of the rules of the research and scholarly publishing activity systems. This finding added further evidence

[12] According to Butler and Spoelstra (2020), taking "playing the publication game" metaphorically would cause ambiguities and difficulties in distinguishing between instrumental publishing and meaningful research. Consequently, scholars can be under the illusion that they have the "freedom" and "subjectivity" to play the game, but they may "become overtaken by the rules and lose [themselves] in the game" (p. 424). Approaching the publication game on a conceptual rather than on a metaphorical level offers chances for a critical analysis of instrumental professionalism and unravel its risks of contaminating "proper" research. As this theoretical underpinning was not the focus of the study, this thesis only introduced the connotations of this term on a conceptual level to situate the discussion.

to the literature (Li, 2013, 2014b) and contributed to this line of research by zooming in on and developing a nuanced understanding of the doctors' specific strategies for interfacing the two activity systems. First, to increase productivity, the doctors (except Pang) addressed the time demands for data generation and collection by utilising an existing but incomplete database, which reinforced their focus on existing practices instead of producing original knowledge that would require much time and effort (Tian et al., 2016). Second, the doctors shifted to basic research to increase their chances of winning national research funding to meet promotion requirements. Doing basic research was also more time- and cost-efficient than clinical research involving patient data over a wide span of time and requiring a large team of colleagues. Third, the doctors familiarised themselves with the explicit rules of scholarly publishing (e.g., journal scopes) and tuned in for the implicit rules (e.g., potential biases against Chinese medical doctors in the international publishing community) to manage the unpredictability of the seemingly rule-bound publication game (e.g., the assessment criteria adopted in the reviewing process).

These findings indicate that the doctors' play-mentality was a response to a performative culture and the institutional rules for promotion. Thus, this "play-mentality" can be summarised as follows: "all that matters is to play according to the rules that constitute this alternate reality; all other goals in life … are momentarily set aside" (Butler & Spoelstra, 2020, p. 418). This "play-mentality" was adopted to overcome the obstacles

and restrictions imposed by the institutional rules, which provided the doctors' very motivation to succeed in playing the game. On the one hand, the doctors' volitional actions showed that they played the game out of instrumental careerism; on the other hand, they were also played by "the game" itself, that is, enslaved by the play-mentality. As a result, the play-mentality shaped the scholarly publishing activity system and introduced new tensions within and between the activity systems. For example, the play-mentality had negative consequences for and damaging effects on knowledge production (e.g., low-quality but publishable research) and clinical practices (e.g., clinical professionalism). The doctors themselves questioned the meaningfulness of their research and publications for the sake of promotion and acknowledged the potentially negative impact of their prioritisation of scholarly publishing over their clinical practices (e.g., quality of outpatient treatment and their development of clinical skills).

More broadly, informed by fourth-generation CHAT, a set of connections could be established between the doctors' narratives of research and scholarly publishing practices, the institutional settings of the hospital and the university, and the larger forces that may have shaped knowledge production. One such larger force was the national policy orientations and the overall development of China's science and technology (e.g., as explicitly mentioned by Bo, Pang, and Yang). With China's revised *Law on the Progress of Science and Technology* being in effect, promotion of basic research to serve national needs stands as one of the main goals, with stable support of such research pledged by

the government (Poo, 2022). This national policy motivated Y Hospital's emphasis on basic research, which was also noted by the participants and influenced their research and scholarly publishing practices. For instance, the participants shifted to basic research because of the greater chances of such research to be funded. Poo (2022) also brought up the quality-quantity dilemma in China's research output, a dilemma also experienced by the participants. Specifically, despite the drastic increase in the total number of scholarly publications from China, "the results of many basic research studies were limited to the stage 'proof of principle', ended with publications in high-profile journals" but there was a need for "groundbreaking discoveries and inventions that result in paradigm shifts in various fields of S&T" (Poo, 2022, p. 1). Notably, high-profile journals are those journals with high IFs, but "not all high-quality research is reported in high-profile journals, nor do all the articles in high-profile journals necessarily represent high-quality research" (Hider & Pymm, 2008, p. 110). Although the participants were aware of the non-equivalence between high-profile journals and high-quality research, they all submitted to the hospital's list of journals ranked according to IFs. Poo's (2022) observation of the publishing situation in China was corroborated by the participants' accounts of their scholarly publishing experience. They turned to basic research partly because the IFs of basic research journals were much higher than those of clinical research journals. Thus, this study has contributed to the current scholarship by revealing the tensions caused by

such an overriding emphasis on the IF and the negative consequences of playing the publication game in a professional context.

In addition to their publishing efforts on the personal plane, efforts were made by the participants on the interpersonal plane (Rogoff, 1995; Yamagata-Lynch, 2007, 2010). All the participants reported adopting the strategy of collaborating with colleagues at their own department, albeit to different extents. Collaboration was commonly found in previous studies on researchers' scholarly publishing across disciplines (e.g., Becher & Trowler, 2001; Li & Hu, 2018; McDowell & Liardét, 2019). The doctors worked in a research team under the supervision of a medical leader, and the senior colleagues shared quasi-supervisory responsibilities as a way of collaboration. Such a collaborative relationship resembles an "apprenticeship", whereby experienced workers guide and support less-experienced apprentices so that the latter can achieve their goals (Collins et al., 1991; Rogoff, 1990, 1995; Stalmeijer, 2015). Although the role of apprenticeship has been emphasised in various educational contexts such as medical schools, its role in professional development in the workplace (e.g., for junior doctors in hospitals) has received little attention (Tsukube & Matsuo, 2020). In light of CHAT, apprenticeship that created learning spaces in the hospital (Billett, 2014; Tsukube & Matsuo, 2020) was a tool providing the junior doctors with access to part of the reality – the working environment for research – through intradepartmental collaboration defined by structural and institutional rules. Apprenticeship as tools in the doctors' research and scholarly

publishing activity systems had the potential to scaffold their higher-order problem-solving skills required by research and scholarly publishing (Collins et al., 1991; Tsukube & Matsuo, 2020).

Although collaboration was commonly found in previous studies on researchers' scholarly publishing across disciplines, there are barriers to research colloboration stemming from cognitive, organistional, social, and institutional factors (e.g., Becher & Trowler, 2001; Li & Hu, 2018; McDowell & Liardét, 2019). As reported by the participants (e.g., Bo and Yang), although they acknowledged the effectiveness of collaboration at the interdepartmental and interdisciplinary levels, they would not seek such collegial support beyond their own department, due to issues of authourship attribution and the hospital's appraisal system. Such institutonal factors were also found in Li and Hu's (2018) study to influence Chinese academics' authorship practices (e.g., listing authors in the byline) and underlie their prioritisation of publication over participation/colloboration in research. While Li and Hu (2018) focused on international collaboration, this study revealed that the institutional pressure on the doctors to publish SCI papers as first/corresponding author created thorny authorship issues (e.g., the contradiction between raising the quality of publications through interdepartmental/interdisciplinary collaboration and winning the publication game in a metrics-based system), thus discouraging collaboration across departmental or disciplinary boundaries.

Furthermore, the contradiction between the object and the division of labour was rooted in the tension between the object of developing medical doctors into full-fledged clinician-researchers capable of contributing to their professional development and the hospital's research capability building and the object of requiring the doctors to produce the required research output within a tight timeframe for promotion. This contradiction between the object and the division of labour was reflected in the inherent gap between institutional imperative and individual desire. The hospital's imperative followed from "institutional logics" (Alford & Friedland, 1985), characterised by the way in which contradictory practices and beliefs inherent in an institution influence and shape individuals' cognition and actions within an institutional context (Thornton et al., 2012). Specifcially, previous research has found the coexistence of and the power struggles between competing professional logics and managerial logics in hospitals[13] (Andersson & Liff, 2018; Fincham & Forbes, 2015; McPherson & Sauder, 2013). It could be drawn from the findings of this study that the managerial logics (i.e., using merics-based appraisal and evaluation systems) dominated the hospital and triumphed over the professional logics (i.e., facilitating meaningful research and making knowledge contributions). Thus, the hierachy of doctors in a highly institutionalised context like Y

[13] This does not necessarily mean that there are only two types of institutional logics in healthcare contexts. For instance, according to Fincham and Forbes (2015), there is a minimum of three competing logics continually at play in a healthcare context. However, this study focused only on the interplay between the competing professional and managerial logics.

Hospital could be attributed to the domanice of the managerial logics. Such dynamics were also refelcted on an individual actor level (Andersson & Liff, 2018; McPherson & Sauder, 2013). For example, they help us understand how professional actors (e.g., the doctors participating in this study) "align their actions and argumentation with the content of the managerial logic for strategic purposes" (Andersson & Liff, 2018, p. 72). As pointed out by McPherson and Sauder (2013), in a context with strong dominating logics, neogotiaons may not possibly happen on an individual actor level. Thus, doubts can be cast on whether efforts are to be made by professionals in a highly institutionalised setting like Y Hospital to "negotiate the meaning and enactment of elements of the dominant logic" (McPherson & Sauder, 2013, p. 187). Zooming in on the participants' responses to competing managerial logics, this study has provided further evidence that professionals did not strictly act within their "home" logics (e.g., professionalism) but also submit to other institutional logics (e.g., managerism) to gain desired outcomes (e.g., Andersson & Liff, 2018; Reay & Jones, 2016). For instance, the participants submitted to the hospital's managerial logics by adopting various strategies to manage scholarly publishing, evidencing "self-managerialism" through depending on themselves in their scholarly publishing efforts, as unanimously reported by the participants. In particular, Lin and Pang even explained from Y Hospital's management perspetive that it would not be realistic for Y Hospital to set up a department for English editorial sevices because of fianancial and appraisal concerns. While previous studies (e.g., Andersson & Liff, 2018;

McPherson & Sauder, 2013) revealed that such compliant actions showed no signs of professional threats, this study adopted a CHAT perspective and revealed the contradictions of the doctors' schoarly publishing activty systems, thereby providing evidence that the domiance of managerial logics over professional logics in a highly institutionalised context would pose threats to the actors' professionalism and professional identities. However, it should be noted that the individual actor has varying agency in relating to different institutional logics or a process of hierarchisation of competing logics (Arman et al., 2014). For instance, while most of the participants related more to the managerial logics than the professional logics, Pang was apparently inclined to follow the professional logics. How competing institutinal logics exert an influence on individual actors and how their agency is at play are issues worth further research (Andersson & Liff, 2018).

As for institutional support, this study demonstrated that although the hopsital provided learning opportiunies, such as workshops, seminars and talks, with a view to supporting and facilitating the doctors' scholarly publishing efforts, the particiapnts did not perceive such support as useful in general. As pointed out by Lee and Kamler (2008), such "masterclasses" (e.g., workshops, seminars, and talks) given by experienced schoarly writers, experts in the field, and journal editors and reviewers were "generally sporadic and mostly ad hoc" (p. 512). Additionally, there was no process-oriented writing support to facilite the doctors' publishing endeavours but only limited funding support

for an outcome-based approach to junior doctors' scholarly publishing (e.g., depending on the team leaders' funding allocations). Although the participants reported that there was institutional support for research-related activities, none of them sought such support. Clearly, such formal support was not effective due to the doctors' reluctance to utilise it. While previous research has reported varying effectiveness of textual interventions in EAL scholars manuscripts (Flowerdew & Wang, 2016a; Lillis & Curry, 2006a; Luo & Hyland, 2017, 2021), whether and how institutional support for research-related activities (e.g., research design) facilitates their scholarly publishing merits further research.

As noted above, a recurring theme reported by the junior doctors was lack of time and freedom to explore their own research interests. In particular, as Bo and Pang explicitly pointed out, all types of institutional support would be meaningless if there was "no time" to do "real" and "meaningful" research. According to Poo (2022), the latest version of the *Law on the Progress of Science and Technology* and other official policies in China place a strong emphasis on a fundamental aspect of research, namely "free exploration". He further noted this freedom carried different connotations in the Chinese scientific context because the Law pronounced that research "needs to be guided by the goal of meeting the country's needs" (Poo, 2022, p. 1). However, such predetermined goals (i.e., outcome-oriented) are contradictory to "free exploration" (i.e., process-oriented). Thus, to resolve the contradiction, as noted by Poo (2022), there is a need for "substantial reform in the S&T [Science and Technology] management system and

institutional evaluation mechanism, in order to encourage and provide room for free S&T pursuits" (p. 1). As stipulated in the Law, institutions are expected to ensure that S&T researchers "have the appropriate environment for innovative activity (with appropriate evaluation criteria and incentives)" (Poo, 2022, p. 1). Unsurprisingly, in this study, the macro-level state policies were echoed by the micro-level individuals' perceptions and practices of schoarly publishing. These findings suggest that the meso-level institution (i.e., X University and Y Hospital) needs to redefine the division of labour (i.e., elevating researchers' social status) as well as the rules (i.e., reforming its evaluation mechinism) concerning schoarly publishing. This resonates with the recurring calls in China to reform the evaluation systems (e.g., publication requirements) for medical doctors (Chen et al., 2014; Chen et al., 2013; Yuan et al., 2013).

Furthermore, the contradictions discussed in this section resulted from systemic deficiencies in the division of labour (i.e., lack of sufficient resources at the institutional level). For instance, the lack of advanced medical equipment, medications, and an efficient information management system were structural limitations at the institutional level as well as the national level. In this regard, Mu and Zhang (2018) found that one fundamental challenge faced by a majority of Chinese scholars is lack of resources (see also Li, 2013). As we have seen earlier, these deficiencies hindered the attaintment of the desirable object of the doctors' schoarly publishing activity systems. This study contributed to the current research by zooming in on the specific challenges faced by the

doctors and examining the role of broader contextual and institutional factors that could obstruct their scholarly publishing activities. The findings support the argument that contradictions in a local context pervade the objects of various activity systems embedded within it. Given the complexity and interaction of ever-changing individual, institutional, and national factors, the possibilities of systemic transformation lie in "coordination, co-configuration, boundary crossing, and communication among multiple … stakeholders and continuous development of context-specific, nested solutions" (Ko et al., 2022, p. 1005). As suggested by these findings, to resovle the contradictions inherent in the object of the doctors' professional activity system and its constitutive activity systems would require collective efforts at macro-state, meso-institutional and micro-individual levels (Engeström & Sannino, 2020).

6.5 Chapter Summary

This chapter presented findings about the object-related contradictions in the doctors' scholarly publishing practices in their busy professional work context. The object-induced primary contradiction was manifested in the secondary contradictions between the object and the rules, and between the object and the division of labour. These contradictions were triggered by the time pressure from multiple demands faced by the doctors to meet the hospital's publication requirements for promotion as well as by the insufficient and outcome-based institutional support. Furthermore, the study found that given the unchanged contextual situation, the primary contradiction remained unresolved,

although the doctors exerted their agency to varying extents to mitigate and solve the challenges associated with the secondary contradictions. The difficulty in fully resolving the primary contradiction lay in the consequences, or new contradictions, caused by the doctors' adoption of various strategies to resolve the secondary contradictions. These findings point to the need for collective agency at various levels to qualitatively transform the current activity systems and design an institutionally responsive support system.

Despite the difficulty in resolving the contradictions at the individual level, as will be revealed in the next chapter, the doctors took advantage of the resources available to develop context-specific, nested solutions to mediate their scholarly publishing efforts, and their problem-solving process offered learning opportunities.

Chapter 7 Tensions in Doctors' Dual Role: Cognitive Constraints and Mediational Effects of Resource Utilisation

The previous chapter reported the object-related contradictions – the primary contradiction arising from the duality of the object and its manifestations as secondary contradictions in the doctors' scholarly publishing activity system embedded in their professional activity system, as well as the strategies that they employed to resolve the contradictions. This chapter will present the subject-related primary contradiction arising from the junior doctors' dual role as fledgling clinician-researcher (still developing their clinical skills and scholarly publishing expertise) and expert/full-fledged contributors of scientific knowledge. This primary contradiction was manifested in a secondary contradiction between the subject and the tool – the junior doctors' lack of or limited grasp of some conceptual tools required for successful scholarly publishing. The chapter will then report the doctors' deployment of various mediating resources to resolve the contradictions, and the potential consequences following from their adoption of these strategies. The findings will be discussed with reference to the extant scholarship.

7.1 Subject-Related Challenges and Contradictions in Scholarly Publishing

Figure 7.1 depicts a CHAT schematic representation of the results of the activity systems and thematic analyses, and Table 7.1 summarises the results. The primary contradiction arose from the tension in junior doctors' developing but limited grasp of conceptual tools and signs needed to achieve the desirable outcome for scholarly

publishing, and was reflected in the junior doctors' challenges and difficulties in deploying an array of conceptual tools and signs (e.g., language, genre knowledge, and knowledge and skills of conceptualising research) that were critical for successful and effective scholarly publishing. To overcome this contradiction, junior doctors employed various mediating resources, which facilitated the cognitive amelioration of the subject-related tensions but also their expansive participation and learning in the scholarly publishing activity system. In the following sections, the challenges and difficulties faced by the doctors in their scholarly publishing activities will be reported, and the strategies adopted by them to navigate resources will be introduced, together with the effects and consequences of these strategies.

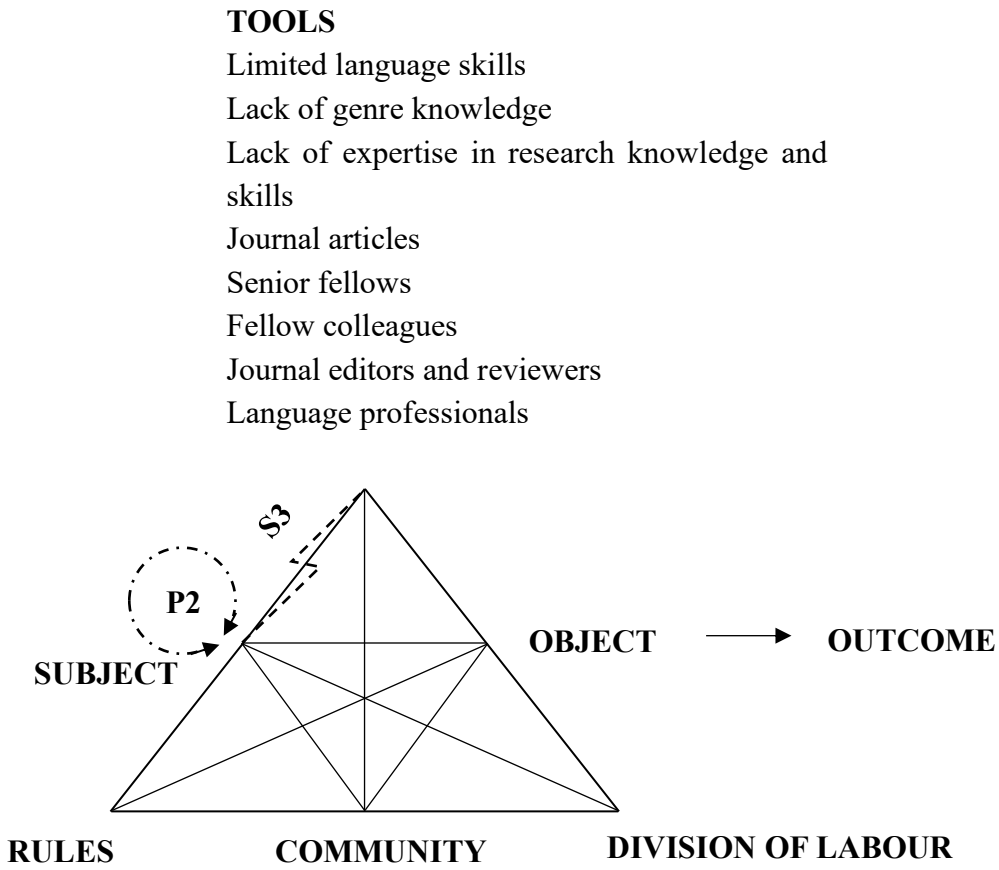

Figure 7. 1 Subject-Tools-Induced Contradictions in the Scholarly Publishing Activity System

Table 7. 1 Subject-Related Challenges and Contradictions in Scholarly Publishing

Thematic Analysis	Activity System Analysis	
Challenges/Difficulties	Manifested in Secondary Contradiction	Rooted in Primary Contradiction
Lack of grounding in scholarly publishing • Inadequate language skills • Lack of genre knowledge • Lack of expertise in conceiving and designing research	**Subject-Tools** The tension in junior doctors' developing but limited grasp of conceptual tools and signs needed to achieve the desirable outcome for scholarly publishing	**Subject-Subject** The duality of junior doctors' dual roles as fledgling clinician-researcher (still developing their clinical skills and scholarly publishing expertise) and as expert/full-fledged contributors of scientific knowledge

7.2 Lack of Grounding in Scholarly Publishing

7.2.1 Inadequate Language Skills

All the participants viewed their inadequate English proficiency as a significant obstacle to their scholarly publishing in English. Pang lamented that "To us, especially medical doctors in mainland China, English language is REALLY a very big obstacle" (Interview, 7 Feb 2021). His account of drafting English manuscripts captured the stumbling process and the language problems that he had with English scholarly writing:

> It was like my mind was in chaos. I cannot figure out the logic in the English language. I feel lost in the meaning I am trying to make. Now if you ask me to write up my manuscripts in English, I just do not know how to organise my language (Interview, 18 April 2021).

He shared his specific language difficulties in scholarly writing, such as "poor

vocabulary and grammar knowledge" (Interview, 18 April 2021), and admitted that nearly all his manuscripts had language problems, as evidenced by some reviewers' blunt comments on the unintelligibility of his writing. Much to his frustration, "s/he [the reviewer] simply commented that s/he could not understand your English" (Interview, 14 March 2021). Likewise, Yang confided that "language is a big problem for me when writing up English manuscripts" (Interview, 14 March 2021):

> I think I'm not equipped with the capacity to think in English. In most cases, I have to do the thinking in Chinese first and then translate it into English. (Interview, 14 March 2021)

Yang mentioned his difficulties with metadiscourse markers (e.g., hedges and boosters) to support and construct his argument:

> When I got some evidence that was not particularly strong, I may have used words indicting a higher evidential value than the evidence warranted. (Interview, 14 March 2021)

Yang's language difficulties stemmed partly from his restricted store of English phrases and sentence structures and resulted in his practice of "borrowing" the needed vocabulary and sentence structures from published articles:

> If you ask me to write up a manuscript on COVID-19, I don't think I can do a good job because there are not so many published journal articles from which I can learn the phrases and sentence patterns. It can be a great challenge to me. (Interview, 14

March 2021)

He explained that his inadequate command of English impeded an in-depth discussion on central issues in his manuscripts. Despite these language difficulties, Yang said that his manuscripts were rarely rejected because of language-related issues. However, he did acknowledge that nearly all his manuscripts had some spelling and grammatical errors identified by the journal editors and reviewers.

Bo also encountered numerous language problems in writing up his manuscripts. He presented one example of the language problems he had. In his own words, "one funny thing was that I didn't know what 'control' meant in the journal articles. I only knew what it means as a verb…. There are quite a lot of similar mistakes made in my manuscripts" (Interview, 23 October 2021). Like Yang, he also reported that "There are several ways to express the meaning in a sentence. You may choose the strongest way or the most adequate way. However, I didn't know what and how to choose" (Interview, 23 October 2021). The other doctors also reported similar language issues in their manuscripts, as shown in the following excerpts:

> It was a big problem for me that my manuscripts were not idiomatic enough, though I endeavoured to make my manuscripts intelligible to some extent. There were still some language mistakes which became a laughingstock. For instance, I made tense mistakes and had difficulties with the subject, predicate, and object. (Xiang, Interview, 15 August 2021)

There are lots of problems in my English writing…. First, English is not my native language, so I have difficulties in English grammar. The stuff I write turns out to be Chinglish. On the grammar level, my writing is not so native. For example, when we submitted our manuscripts that had not been proofread by editorial services, reviewers always pointed out our grammatical errors…. So English grammar is a big problem for me, and it can't be solved in a short period. (Lin, Interview, 29 August 2021)

Generally speaking, my use of English grammar is still problematic…. As my English is not very good, I still make grammatical errors…. I use AI tools to check my grammar, but there are still remaining errors, for example, in the use of the articles. (Hang, Interview, 27 March 2022)

When translating my manuscripts from Chinese to English, I also make mistakes in the singular or plural form of nouns, or the tenses. Because a sentence in Chinese tends to be very long, this sentence, if literally translated into an English sentence, can be very long and unorganised…. Also, because my field is Chinese medicine, I find it quite difficult to translate the terminology into English. (Hang, Interview, 23 March 2023)

When writing up my manuscripts, I find it difficult to use adequate grammar to convey my meaning clearly. I think there are mainly grammatical problems. (Liang, Interview, 25 March 2022)

> I find it difficult to use some transition words to show the logic of my manuscripts, and to use different sentence structures to avoid repetition…. Sometimes reviewers also mentioned that my language needed to be improved and recommended that I found some native speakers to revise my manuscripts. (Tang, Interview, 28 November 2022)
>
> It is difficult for Chinese scholars to write complex sentences in their manuscripts. You can also tell that from my manuscript, which is full of simple sentences…. Another problem concerns the use of English words…. One Chinese word may correspond to many English words, and vice versa. It's important to choose the right English words. But I often select the wrong ones. (Bo, Interview, 23 October 2021)

Like Pang and Yang, all the other participants also mentioned that journal editors and reviewers identified language issues in their manuscripts, which needed to be revised to meet the language standards. For instance, Liang mentioned that "the journal editors told me that there were some grammatical errors and typos in my manuscripts" (Interview, 25 March 2022). Tang also reported that "the journal editors requested that my manuscripts be further revised and proofread by some language professionals from editorial services" (Interview, 7 November 2021). Xiang also received similar requests: "In general, nearly half of my manuscripts were requested by the journal editorial assistants to be proofread [before being sent to the editors]. In other cases, the reviewers made such requests" (Interview, 30 October 2021). Journal editors' and reviewers'

comments on the language of the participants' manuscripts provided corroborating evidence. For instance, Bo's manuscript was just rejected by two international journals successively. The following excerpts were typical of comments on the language of his manuscripts:

> The text has not been edited and is still very hard to read which is disappointing. (Reviewer #2; Bo-EMS1-Submission1)

> "N cases didn't appear abnormal X in normal-appearing regions." Please rephrase as this sentence is meaningless. (Reviewer #1; Bo-EMS1-Submission1)

After the rejection by the first journal, Bo revised the manuscript and submitted it to the second journal to receive the following comments:

> Do not use "decreased" for cross-sectional metabolite level comparisons, but rather say "lower". (Reviewer; Bo-EMS1-Submission2)

> The Results reporting (both descriptive and quantitative) can be significantly shortened. Please have a native English speaker proof-read the manuscript. (Reviewer; Bo-EMS1-Submission2)

The language difficulties presented above concern not only sophisticated language features such as metadiscourse but also basic aspects of lexicon and grammar. These problems highlighted the doctors' lack of adequate English language skills to meet the high linguistic demands of scholarly writing. As further reported by the participants, the language-related difficulties made their scholarly writing very time-consuming. For

instance, Bo pointed out that:

> To write an English sentence may take ten minutes but to revise this sentence may take even an hour to express the meaning clearly. The whole writing process is then prolonged, and the thought process is interrupted. So English academic writing takes a very, very long time, which is a big problem. Throughout the writing process, you will encounter various kinds of problems. Sometimes, I insert Chinese [into my English writing] to express my ideas and keep the writing flow. I then need to spend more time deliberating over the part, which may later be deleted completely. The whole process is too annoying. (Interview, 8 August 2021)

Due to his inadequate language proficiency, Pang also felt that "English academic writing is a very time-consuming process" (Interview, 7 Feb 2021). He further explained that:

> The difficulty lies in the expression on the word and sentence levels. I tried to write down my manuscripts directly in English before, but I needed to structure the flow of ideas in the language, which was rather difficult. On most occasions, I was not satisfied with the English sentence structures and revised them again and again. Then I decided to write up the manuscripts in Chinese first and then translated them into English, though I learnt from the literature that this way of writing was not recommended. (Interview, 7 February 2021)

The participants, journal editors, and reviewers tended to emphasise the language

difficulties as a result of the non-nativeness in the doctors' manuscripts. However, just like Yang, the other doctors noted that their manuscripts would not be rejected merely because of the language problems in their manuscripts. For instance, Hang pointed out that "if your research is not good enough, your manuscript will be rejected no matter how good your language is" (Interview, 23 March 2023).

7.2.2 Lack of Genre Knowledge

Another difficulty perceived by the doctors was their lack of explicit genre knowledge. While they had some implicit genre knowledge as manifested in their references to the "logic in writing", the participants acknowledged their struggles with different types of writing (i.e., genres or sub-genres) because their manuscripts reported either basic or clinical research. As reported in the previous chapter, the doctors' basic research was mainly based on biomedical experiments conducted in laboratories, whereas their clinical research consisted of patient-oriented retrospective and prospective clinical studies (Rubio et al., 2010). Some participants (e.g., Yang, Pang, and Tang) reported that conducting and reporting basic research was more challenging due to their insufficient training in such research and scholarly writing during their medical school days. It is important to note that the doctors also reported that they found it quite challenging to write up clinical research papers. Although the doctors were familiar with the components of different types of research articles (e.g., Introduction, Method, and Discussion), their perceived difficulties revealed their lack of sophisticated genre knowledge to achieve the

desired rhetorical effects in their writing. Pang reported that "it is more difficult for doctors to write up a manuscript on basic research", especially when it comes to reporting experimental findings in basic research, and that "my specific difficulty in writing up the Results section has to do with presenting the results in a coherent way" (Interview, 18 April 2021). He found it difficult to accentuate the most relevant details and findings of his studies (Interview, 14 March 2021). Tang shared his recent experience of publishing basic research for the first time:

> I think the most difficult part to write is the Results section. When you write up papers reporting basic research, the most important thing is to present them logically, or tell a complete story, which is rather difficult. I wrote mainly clinical research papers before, and the writing style is different from that of basic research papers. For me, it is easier to write up clinical research papers, and I'm not good at writing up basic research papers that involve large datasets. (Interview, 28 November 2022)

Lin talked about similar difficulties based on her own experience:

> Among all the sections, I think the Results section is the most difficult, because this relates to the logic problem. Specifically, because there are a lot of data generated from the research, the different ways that you organise the data and present them will have different effects. Accordingly, the persuasiveness is also different. For instance, sometimes the way you present your data will reveal the incoherence of your research, and then you need to adjust how your data are presented…. However,

> my way of adjusting my data presentation was quite linear, which didn't work well to produce evidence in response to my research questions. (Interview, 28 December 2021)

Of all the sections, Yang found it easier to write the Methods and Results sections but admitted that the Discussion section was a headache:

> The difficult task for me is how to discuss what my results mean, instead of merely summarising and repeating them and the related conclusions, and what contributions they can make to clinical practice. (Interview, 14 March 2021)

When reflecting on his experience of publishing his first basic research paper, Yang said that:

> I was not sure what the logic should be. I just did not know what points I should put down and in which parts I should include these points. (Interview, 18 April 2021)

Liang also emphasised the difficulty of writing in a well-organised and logical way:

> Your writing must be coherent. Why you do the research, what is the significance of your research, what your findings are – you have to connect all these issues in a clear and logical way, which I think is difficult. (Interview, 25 March 2022)

Similarly, Lin emphasised that "another very difficult part for me is to write up the Discussion section", explaining that "the data produced by basic research is unlike that collected through clinical research…. There can be a vast amount of data in basic research, which I find it difficult to organise in my writing" (Interview, 28 December 2021).

Likewise, Liang commented that:

> The most difficult is the Discussion section. The difficulty is that in the Discussion section, you need to present your results with reference to the previous research. From your conclusions to the results and their scientific significance, you have to connect all these aspects and elucidate the unsolved problems and research limitations. All these issues have to be well integrated into the Discussion section in a clear logical way by using clear language. Thus, I think it is a great challenge to present a good discussion when writing up a manuscript. (Interview, 25 March 2022)

Journal reviewers' comments on the doctors' manuscripts provided further evidence of the above-mentioned issues. For instance, as confided by Lin, the reviewers constantly pointed out inconsistencies between the Results and the Conclusion sections. Below are excerpts from the reviewers' comments:

> Several results and conclusions in the abstract could not be supported by the data in the main text. (Reviewer #1; Lin-EMS1-Submission1)
>
> The conclusion … is lack of supporting data. (Reviewer #1; Lin-EMS1-Submission1)
>
> The conclusion … could not be well supported by the findings of the manuscript. (Reviewer #1; Lin-EMS1-Submission1)

Likewise, reviewers' comments centred on the Results section of Liang's manuscript:

> In result 3 section, it was not well described about the method for determining the X. Please provide more details. (Reviewer #1; Liang-EMS1-Submission1)

In result 3 section, it was not clear about time effects of X on Y. (Reviewer #1; Liang-EMS1-Submission1)

I suppose that the … analysis was performed on another series of mice. This is not clear in the methods if these results were from another group of mice. (Reviewer #2; Liang-EMS1-Submission1)

Similar reviewers' comments were also made on Yang's manuscript:

In Figure…, with respect to X, the Y did not reduced after Z. Authors should explain it. This result is not supporting the data in A. (Reviewer #1; Yang-EMS1-Submission1)

In figure B, they showed the expression of X with different Y. Which one … was used for further studies? In figure … and result section, they should indicate it. (Reviewer #1; Yang-EMS1-Submission1)

Other excerpts of reviewers' comments revealed the doctors' difficulties in writing up the Discussion section. Some comments were made on Yang's manuscript:

Whether downregulation X upon Y directly affects the Z function or it could be mediated through dysfunction of X, this should be elucidated. (Reviewer #1; Yang-EMS1-Submission1)

Liang had a fair share of similar comments on his manuscripts:

The author has demonstrated X ameliorated Y was modulation of mitochondrial function and preservation of Z. However, it was not well described about the

relationship between X and Y function. Please include more detail in the discussion section. (Reviewer #1; Liang-EMS1-Submission1)

X group (Author C et al.) worked on A well before the article cited [13]. It would be best if you mentioned this article. Also, in Author C et al. (D. 2015), the accumulation of X was performed. You should discuss this point in the discussion section. (Reviewer #2; Liang-EMS1-Submission1)

In the discussion, the authors indicated that Author B et al. (line 58) reported X reduced Z size and improved Y function in a N model of rats [13]. This is not the reference because Author B used a L model. (Reviewer #2; Liang-EMS1-Submission1)

As revealed by the excerpts presented above, the reviewers often pointed out the "missing points" in the Discussion sections of the doctors' basic research papers, while the doctors reported that they tended to provide more information than needed in the Discussion sections of their clinical research papers. For instance, Pang confided that:

They [editors and reviewers] often pointed out that in the Discussion section, my explanation of a certain phenomenon was not well supported by my results. I think this is a common problem among Chinese scholars, including myself. Chinese scholars tend to discuss stuff that doesn't come from their own research. I think Chinese scholars infuse too much of their subjectivity in their discussion. It's like that your discussion of the results in your manuscripts is based on your own

subjective opinions rather than your data. (Interview, 14 March 2021)

This issue was also noted by Bo:

> Your discussion must focus on your own research questions, and you should not talk about other stuff.… Chinese academic papers tended to discuss other stuff. Actually, I found my own discussion suffering from this problem, which was like writing up in a Chinese way and discussed much more about others' stuff than my own stuff [my own research results].… For instance, in the Discussion section, you talk about what and how a clinical problem can be solved, or that your stuff is advanced. If you just simply talk about the stuff by comparing others' stuff, it would be a big problem. (Interview, 23 October 2021)

Additionally, the doctors found that the difficulty in writing up the Discussion section of a clinical research paper was that they tended to just "describe" the results but fail to provide a deeper analysis of them. For instance, Xiang confided that:

> I think it's more difficult for me to write up the Discussion section, like how to discuss the results. My discussion tends to be a simplistic description of the results. I don't delve deeper into the essence of the results and simply conclude that the results represent a certain phenomenon. For instance, I wrote that X can relieve Y. However, they [the journal editors and reviewers] wanted to see how X worked and what its mechanism was.… They were more interested in something deeper than the phenomenon. But my discussion was merely a descriptive account. (Interview, 30

October 2021)

Yang mentioned similar issues in his writing:

> The main difficulty was what contributions or significant directions my research could offer to the clinical field. Perhaps I had some ideas of this aspect before I wrote up the paper. However, the difficulty was how I could discuss my results more deeply than they appeared to be without repeating my results. Sometimes I felt that my discussion was merely a repetitive summary of the results without providing any insights. (Interview, 14 March 2021)

The following excerpts of reviewers' comments on Bo's manuscript reporting a retrospective clinical study attested to the difficulties encountered by the participants.

> The text lacks an appropriate and smooth structure (just an example, limitations are reported in 2 different parts of the discussion. The summary at the beginning of the discussion is the repeated elsewhere and it also contains a comment related to patients' age that was not included in the aims etc.). (Reviewer #2; Bo-EMS1-Submission1)

> In the cases presented here, follow-up (performed on all patients) did not show any progression of the disorder or the onset of new lesions. How do authors interpret this discrepancy? (Reviewer #2; Bo-EMS1-Submission1)

> Before this method can be touted to have clinical value in differential diagnosis, the authors have to demonstrate that X is not related to Y from Z. This is critical for

support of the main conclusion of this paper. (Reviewer #2; Bo-EMS1-Submission2)

The above accounts both demonstrated some genre awareness in the doctors and attested to their lack of nuanced genre knowledge and familiarity with the discourse conventions of their target academic communities (Martín et al., 2014; Muresan & Pérez-Llantada, 2014). The doctors' candid sharing revealed that they were cognizant of the rhetorical and social functions of different genres but found it challenging to integrate these two dimensions of genre knowledge in a particular research paper (Driscoll et al., 2020; Tardy, 2009). Despite their keen sense of the need to highlight the novel contribution of their research to disciplinary knowledge, their lack of genre expertise prevented them from doing so effectively. Their struggles with the Results and Discussion sections stemmed largely from their unfamiliarity with the discourse conventions of the international disciplinary community whose membership they were seeking (Negretti & Kuteeva, 2011). The greater difficulties they had with basic research seemed to have also resulted from their unfamiliarity with the norms and conventions of the disciplinary genre that instantiates and embeds the epistemological assumptions underlying such research (Berkenkotter & Huckin, 2016).

7.2.3 Lack of Expertise in Conceiving and Designing Research

Another major difficulty perceived by the doctors was their lack of expertise in spotting novel research topics, developing strong research designs, and achieving rigour in data collection and analysis. The participants admitted that their manuscripts were

mostly rejected for a lack of novelty and relevance as well as the inappropriate methods used in their research. In Bo's words, "it is very difficult to develop scientific research thinking, without which doing research is impossible…. When you have research ideas, another problem emerges – you may not know how to operationalise the research" (Interview, 23 October 2021). Pang confided that "on quite a few occasions, the journal editors and reviewers directly pointed out that others have already done similar research before" (Interview, 18 April 2021). When talking about the difficulty in publishing high-quality papers, Hang also reported that "it depends on the novelty of research design. Thus, it is rather difficult to publish pure clinical research or pure basic research now…. This is rather complex and difficult" (Interview, 23 March 2023). Tang also mentioned that "the specific difficulty concerns the novelty of your idea, which will determine the quality of your paper - whether your paper has novelty and how you operationalise this novelty. Then, you need to design the methodology of your research" (Interview, 28 November 2022). He shared some specific difficulties in conducting basic research and clinical research:

> Although I have written many clinical research papers, I find spotting and conceptualising a new idea most difficult. As for basic research, you need to find a novel methodology. If your statistical tools are quite old-fashioned, it is meaningless…. [As for clinical research], we can't mechanically replicate others' studies but need to do some studies that others have not done, such as unexplored

clinical problems that need to be solved…. Sometimes, I may have some good ideas, but it can be difficult to operationalise these ideas, and the feasibility can be quite low. (Interview, 28 November 2022)

Yang made similar comments:

It is rather difficult to publish in a prestigious international journal because this means you need to find a very interesting aspect of a specific clinical practice that not so many researchers in your field have noticed. (Interview, 18 April 2021)

Liang also pointed out this issue in publishing clinical research papers:

The main challenge for me is to have a good idea. For instance, researchers write about the same topic. However, some can publish high-quality papers, while some can't. I think it's the conceptualisation of research ideas – the ability to grasp the key points – that makes the difference. For instance, in our field, some researchers can publish papers in *The New England Journal of Medicine*, but we can only publish "small papers". Their research perspective is cutting-edge, but ours can't reach such a level. (Interview, 25 March 2022)

The doctors attributed their difficulty in coming up with novel research problems to their inexpertness in clinical practice/research as junior doctors. As both Yang and Liang noted, unique clinical research problems that promise novel breakthroughs can only be spotted by those doctors with an in-depth understanding of their field because of their extended engagement in clinical practice, and it would be difficult for junior doctors to

find such a niche because of their lack of such in-depth knowledge and extended clinical practice. Furthermore, as noted in the previous chapter, this issue was amplified by the junior doctors' lack of resources, the systemic deficiencies in the management of clinical data, and the underdevelopment of clinical science in China in general (see Section 6.3 in Chapter 6).

While the participants were well aware of the importance of methodological rigour and robust research design for publishing in international journals, they shared the methodological problems that they found Chinese medical doctors were likely to have. Pang emphasised the importance of research methodology, as he said that "the more difficult parts for me are the methodology and the results, which are the soul of a paper" (Interview, 14 March 2021). He provided a candid account of such problems:

> The comments [from editors and reviewers] were often aimed at my research design. They pointed out that my manuscript reported a retrospective study, but I did not include the adequate number of medical records, and that my cases and samples were too few. Or they commented that my follow-up period was too short. Moreover, they also pointed out that my research lacked methodological novelty. (Interview, 14 March 2021)

Hang thought likewise:

> The experiment design is the key issue. If journal editors and reviewers find your research design flawed, they won't consider your paper for publication at all. Your

paper will be immediately rejected…. However, I'm not very good at writing up the statistical part of methodology. (Interview, 23 March 2023)

After his clinical research paper was rejected by two international journals for lacking methodological robustness, Bo observed that "the methodology directly determines the quality of your paper. If your methodology has problems, your paper will be directly rejected" (Interview, 8 August 2021). He further explained that:

One fatal issue has to do with the methodology and conclusion of your research. If your paper has problems in these two respects, it will most likely be rejected…. The reviewers' comments on my paper basically revolved around the methods and the conclusion drawn from the results…. Your research design may have no problems, but the conclusion has no implications for clinical practice. The verdict is "reject". Or your research has great significance for the clinical field, but your research design has problems. The verdict is also "reject". (Interview, 23 October 2021)

The reviewers' comments on the methodology led to the rejection of Bo's manuscript. The identified problems concerned the inclusion of patients and the follow-up.

Finally, the new figures raised some concerns about the methodology as the position of X with respect to Y looks different in the different categories. (Reviewer #1; Bo-EMS1-Submission1)

Which is the truth? For X, Authors claim that the diagnosis was made according to symptoms and imaging. However, given the overlapping between Y and Z at onset,

more specific criteria should be set. The description of the N classes of patients should be more detailed and clear…. However, M was not performed on all patients. This should be made clear. (Reviewer #1; Bo-EMS1-Submission1)

A major possible bias emerged when looking at the new images provided…. Please provide statistics about the distance between X and Y for the 3 groups. (Reviewer #1; Bo-EMS1-Submission1)

Similar issues were also reported by the participants for their basic research papers. For instance, Lin told me that the reviewers' comments on her basic research paper focused mainly on the methodology part. The following are some examples of the reviewers' comments:

The strategy for searching biomarkers from a limited number of subjects is inappropriate. The obtained candidate biomarker should be evaluated by a sophisticated method (for example X). (Reviewer #1; Lin-EMS1-Submission1)

A description of correlation analysis is absent in the materials and methods section, which is essential for supporting the main findings of the manuscript. From the words in the figure legends of figure X, it is inferred that Pearson correlation was applied for the correlation analysis. However, Spearman rank correlation should be a better choice for the relative quantitative data of Y. (Reviewer #1; Lin-EMS1-Submission1)

Multiple testing correction is in need for the observed between-group differential metabolites to control the false positive rate. (Reviewer #2; Lin-EMS1-Submission1)

A brief description of how X samples were obtained is required … spontaneous defecation or by enema? (Reviewer #2; Lin-EMS1-Submission1)

A similar concern about the kind of X sample. Y or Z? (Reviewer #2; Lin-EMS1-Submission1)

When discussing what contributed to the doctors' difficulties in designing basic research, Pang explained that:

Conducting basic research is the most difficult. As clinician doctors, we have not received training in doing basic research…. Those who are good at basic research usually major in chemistry, biology, or physics. They are thus very familiar with different methods … for conducting basic research experiments and can present their experimental results well. However, we find these things quite difficult. (Interview, 18 April 2021)

Likewise, Yang reported the various unexpected problems that he encountered when designing his first basic research study leading to an English-medium publication. He described the process as one of "twists and turns" (Interview, 18 April 2021).

As for the basic research design, there are a lot of difficulties…. It depends much on the researcher's own research abilities…. For instance, if you are a junior doctor, it then depends on your medical team leader's research abilities because it is s/he that

assigns you a certain project. If s/he asks you to explore the function of a certain protein in a disease, which, however, is not related to this disease at all, you will never get the results no matter how many experiments you conduct…. I recall that the process of my first basic research project was so difficult and tough, because my medical team leader didn't specialise in basic research. If s/he had been an expert in basic research, my research design would not have been that simple. No one provided any guidance, and I was totally in the dark and blundered on with my research (*xia gao*, literally doing something blindfolded). (Interview, 18 April 2021)

As a result, the reviewers directly pointed out the weaknesses in Yang's research design:

The lack of in vivo evidence on … expression in the N model is a weakness. (Reviewer #1; Yang-EMS1-Submission1)

Activation of X should be determined by measuring the ratio between Y and total Z rather than to F. (Reviewer #1; Yang-EMS1-Submission1)

Yang admitted that when he obtained the results of this 2-year study, he found himself unable to interpret them. This issue was raised by the reviewers:

In Figure ..., with respect to N in …, the … did not reduced.... Authors should explain it. This result is not supporting the data. (Reviewer #1; Yang-EMS1-Submission1)

From an activity theoretical perspective, the various difficulties and challenges recounted by the doctors were concomitant with several primary and secondary

contradictions (Engeström, 2015) in their scholarly publishing activity system. Among them were the primary contradiction between their status as junior clinician-researchers and their expected status as expert knowledge contributors (Lei & Hu, 2019), and the secondary contradiction between their expected expertise in scholarly publishing and the absence of tools concomitant to such expertise (Engeström, 2015). The doctors resorted to an array of strategies to resolve the contradictions.

7.3 Strategies for Mediating and Resolving Structural Tensions

To address the above difficulties and challenges, the doctors turned to various mediating resources, namely cultural artefacts, individuals, and relationships that could be capitalised on as tools to facilitate their scholarly publishing activities. The effectiveness of these tools varied and depended on the intersection of the doctors' own publishing experience and learning history with a range of factors.

7.3.1 Addressing Inadequate Language Skills

The doctors reported that to compensate for their inadequate English proficiency they imitated and borrowed linguistic expressions and sentence templates from published journal articles. Another strategy frequently employed to overcome the negative impact of inadequate English language skills was drafting a manuscript in Chinese before translating it into English. As Tang pointed out, "when I was an undergraduate student, I didn't know what SCI articles were. I only knew what SCI meant when I was a graduate student. I then started learning to write SCI articles based on published journal articles"

(Interview, 7 November 2021). He added that "I first modelled my texts on published journal articles, and then used some translation tools" (Interview, 28 November 2022). Liang reported that "From the very beginning, I wrote up my manuscripts by imitating the journal articles in my field" (Interview, 25 March 2022). Lin "imitated others' published journal articles" (Interview, 29 August 2021) and "would insert [into my manuscripts] some sentences from the journal articles I read before" (Interview, 28 December 2022). Bo described his writing and revising processes as follows:

> At the beginning, it was quite simple because I just copied others' sentences. The purpose was not to plagiarise the writing but to learn how to write. I would then replace the words and phrases…. I would also note down some sentences in an Excel document and then take a look at it when writing up manuscripts…. I also learnt the terminology from the journal articles…. Usually, the first draft was rather terrible, but after multiple rounds of revisions, the manuscript was improved in both language and content. (Interview, 25 December 2021)

Xiang also copied sentences from other journal articles but made revisions to avoid plagiarism:

> You can't use others' words and sentences without making changes. You need to make revisions. I translated them first into Chinese, and then translated them into English again…. This was to change the original way of expression. For example, "X can treat Y". I would change it into "X has a great advantage in the treatment of

Y". Their meanings are the same, but the expressions are different. (Interview, 15 August 2021)

Liang rarely wrote his manuscripts directly in English: "I wrote my manuscripts first in Chinese and then translate them into English by using translation tools" (Interview, 30 October 2022). Pang used Baidu (an Internet search engine widely used in China) and Google to search for unfamiliar words and phrases. Similarly, Bo turned to Baidu to translate the sentences that he had written in Chinese:

> It was even difficult for me to write some simple sentences in English. Then I just put the sentences I wrote in Chinese into Baidu Translate. The English translations sounded still quite Chinese. I then revised them to make them more like English because I was able to notice some wrong expressions. I came up with my English manuscripts by translating sentence by sentence what was originally written in Chinese. (Interview, 23 October 2021)

Yang often used Google Translate to do the initial translation and then revised the translation, as illustrated by the extracts below:

> … most of the … is … ~~are in a static state~~ quiescent fibroblast-like … responsible for maintaining … homeostasis,~~ mainly secreting moderate extracellular matrix to maintain … homeostasis;~~….
>
> We therefore design ~~The purpose of the present study is to provide~~ a novel method for…. (EMS2-First Draft)

As the excerpts show, Yang's revisions were not restricted to linguistic expressions and syntactical structures but also concerned the construction of authorial voice and identity by using the first-person pronoun. Hang used Grammarly to check his writing. In his own words, "I think this tool is rather good. One more interesting thing is that it reminds you that you have used the same words too frequently and asks you whether you need to replace them with their synonyms" (Interview, 27 March 2022). Most recently, his colleague introduced ChatGPT to him and showed him how it worked. He shared his observations:

> Now you can use a lot of advanced tools to assist your English academic writing. For example, ChatGPT can translate our manuscripts written in Chinese and summarise journal articles for us very quickly…. You can just ask it to tell you what a paper is about, which is very convenient. Also, it can translate your manuscripts in a quite logical way, compared to [traditional] machine translation tools such as Youdao, Baidu, or Google, whose results can be quite mechanical. (Interview, 23 March 2023)

Like Xiang, Hang used the strategy of back-translation to double-check that the meaning was unchanged:

> My manuscript was written in Chinese and then translated into English. After some revisions and adjustments were made, I turned the English version again into the Chinese one. This was to see whether the English translation altered the meaning I

was trying to convey…. All these efforts were to make sure my manuscript would follow the English way of expression. (Interview, 27 March 2022)

Additionally, the doctors turned to colleagues/fellow researchers, language professionals, and/or editorial services for language support. All the participants enlisted the help of members in their local community (e.g., senior colleagues in their respective departments) to proofread and revise their manuscripts, which eliminated many language problems. Hang, for instance, said that "I drafted the manuscript, and other senior fellows revised the manuscripts" (Interview, 23 March 2023). Unlike the Chinese doctors in Li's (2013) study, who reported that they rarely used editorial services, the doctors in this study put a premium on such editorial services. They reported that their manuscripts were mostly free of language problems after they were edited by the paid editorial services. Pang remarked that of all the mediating resources, "the editorial services are the most useful, as long as you pay the fees" (Interview, 14 March 2021). Despite his positive experience with such services, Pang reported that "half of his manuscripts were accepted without using English editorial services" (Interview, 14 March 2021). He explained that he endeavoured to tackle the language problems himself so as to develop his English competence. In addition to improving the English language quality, the doctors also mentioned that such editorial services saved them a lot of time and the expenses could be reimbursed (see also Section 6.3). Lin mentioned that she only started using editorial services recently and found that "the services were okay and quite fast" (Interview, 28

December 2021). Liang also made a comment on the editorial services that he had used: "I was satisfied with the editorial services, although I only used them once or twice" due to limited research funding (Interview, 30 October 2022). When there were funds available, Xiang once "paid a lump sum for 'a package of editorial services'" because "the fees could be reimbursed and the services saved much time" (Interview, 30 October 2021). He added that "the package consisted of proofreading manuscripts, letters to editors and 'responses to comments' letters, sparing me the trouble" (Interview, 30 October 2021).

These findings revealed that the doctors sought support from various mediators to navigate their academic text production. Despite the perceived usefulness of these mediators, there were also some limitations. First, while the doctors were generally positive about the usefulness of paid English editorial services, some of them expressed reservations about such editorial services. For instance, Yang reported that in some cases, the quality of English editorial services failed to meet his expectations because only minor revisions were made to his manuscripts. One possible reason, as Yang explained, was that he paid only for "basic editing service" due to his lack of funding as a junior doctor. He further noted that "different rates are charged for different types of editorial service" and that "if you want to have your manuscripts substantially revised and polished, it will cost a bomb" (Interview, 18 April 2021). When evaluating the editorial services, Tang said that: "I didn't follow all their revisions, which mainly focused on the language. Anyway,

it depends. Sometimes I thought their proofreading was good, and I would then accept their revisions. Otherwise, I would reject their revisions" (Interview, 28 November 2022). As it was difficult for junior doctors to obtain funding as discussed in Chapter 6, they could only depend on their respective boss's funding availability. Some doctors (e.g., Yang, Bo, Hang, and Tang) said that they would pay for editorial services only at the journal editors' or reviewers' requests. In this regard, some doctors mentioned that although their manuscripts had no obvious language problems, some reviewers still requested their manuscripts should be proofread by professional editorial services before the manuscripts could be finally accepted and published. Bo surmised that this was a strategy adopted by the reviewers to avoid and shift responsibility:

> Some reviewers required that our manuscript be proofread before publication. Actually, they did not ask us to make the revisions because, in their opinion, what we could do was not enough. What they needed was a certificate from a qualified editorial services company…. This was because they may not be so sure whether the language was good enough or not. So they asked for such a third-party guarantee that the language had no errors…. In my own experience, one reviewer even asked us to submit a certificate of proofreading with the revised manuscript. So we spent like 6, 000 RMB [832 US dollars] for an urgent editorial service…. The manuscript came back with only corrections of five punctuation marks and several words, together with an attached certificate. (Interview, 8 August 2021)

Hang shared a similar story:

> Some reviewers may not be able to raise some critical flaws in the research, so they may focus on the language problems. Actually, they just want to see a certificate of editorial services…. For instance, a reviewer once requested that our manuscript be proofread by editorial services, but we had enlisted such services before our submission! We then presented the certificate to them, and they stopped questioning the language. (Interview, 23 March 2023)

Hang and Yang suspected that some journals collaborated with professional editorial services to benefit financially from recommending the latter to submitting authors. Furthermore, the doctors learnt from their publishing experiences that language problems were not the litmus test for the fate of their manuscripts and usually opted to solve such problems themselves or by seeking collegial support. They would turn to editorial services only when they felt that the language issues were beyond themselves/their colleagues and when they had the financial resources. They explained that while having no language problems would enhance the chance of publication, it was the quality of research (e.g., the appropriateness of the research design adopted) that would be the most important determinant of the fate of their manuscripts. They knew from their experience that the effectiveness of textual mediation by language professionals depended very much on their possession of relevant disciplinary knowledge (e.g., Luo & Hyland, 2021; Willey & Tanimoto, 2015). While acknowledging the great improvement made by a language

professional on his manuscript, Bo also reported that “I didn’t accept all the revisions, some of which altered the meaning, and I kept my expression” (Interview, 8 August 2021). Pang also noted that English language teachers as mediators were unlikely to deal effectively with specialist knowledge, and “their help often turned to be limited and superficial” (Interview, 14 March 2021). The limited usefulness of the textual mediation may also have resulted from a mediator’s reluctance to “give *pro bono* discursive support, reflecting the time and effort involved for little return to the mediator” (Luo & Hyland, 2021, p. 14). Reflecting on his experience with various mediators, Pang concluded that “I have learned that I need to depend on myself for the revision and polishing of my manuscripts” (Interview, 14 March 2021). Other doctors also believed that for long-term devolvement as scholarly writer, they could only depend on themselves to learn and acquire English academic writing skills. Yang said that textual mediation “was only for short-term purpose. For a long-term goal, I still need to learn English by myself” (Interview, 6 February 2021). Lin also reported that “the only solution to grammatical issues is that I keep reading more journal articles and master the ways of writing by imitating them” (Interview, 29 August 2021).

7.3.2 Overcoming Inadequate Genre Knowledge

To grapple with their lack of genre knowledge about English research papers, the doctors reported that they learned “the logic of writing” from reading published journal articles. Yang explained that:

> Academic writing has some rules. If you read enough journal articles, you will just learn the "framework", and can then write up the manuscripts step by step. (Interview, 14 March 2021).

When encountering difficulties in organising his manuscripts, Pang "referred to some books, such as *How to Write and Publish a Scientific Paper*, checked and revised the manuscripts, following the guidance of the books" (Interview, 14 March 2021). He found "these reference books very useful" in improving the quality of his academic writing, as evidenced by the publication of those manuscripts written and revised solely by himself. According to Bo, "you need to follow the English journal articles' 'structure' [*taolu*]. You read them and learn how others structure their papers…. Then you will learn how to write up a manuscript, such as where to put the most important points" (Interview, 25 December 2021). Likewise, Lin mentioned that "the solution to the logic problem in writing is reading more journal articles" and seeking advice from colleagues in her department. When struggling with reporting the results in her first basic research paper, Lin sought help from the medical team leader. She mentioned that:

> The boss helped us by adjusting the way the results were presented and revising the logic of our papers. He provided his own insights. For example, he put some results at the very beginning, which we had put in the middle. He explained that this set of results introduced one research question of this paper, and your supplementary data could then help answer this question. (Interview, 28 December 2021)

Reflecting on her writing experience, she also explained why she did not find the Discussion section a problematic one because of the guidance from her boss:

> My boss required that the first paper must be a review article. This forced me to read journal articles and build up a database of the relevant literature. This made my writing of the Discussion section quite easy because I have read, summarised, and categorised different journal articles. All I needed to do was only to update my database. (Interview, 28 December 2021)

Hang also sought help from members of his research network to write up the Results sections: "because there were different advanced statistical methods, which were beyond my scope of research, I then asked them to write up this section" (Interview, 23 March 2023). Similarly, Xiang asked for advice from the senior colleagues in his team to improve the logic of his writing from a reader's perspective:

> The same paper can be viewed from different perspectives. They [senior colleagues] may provide a broader view [of the organisation of writing]. When they provide their points of view, I would consider them and see whether and how these points of view could be integrated into my writing. (Interview, 2 January 2022)

The participants also relied on journal reviewers' comments for the improvement of their scholarly writing. For example, Xiang reported that reviewers' comments improved the logic of his writing and provided learning opportunities:

> The reviewers were particular about every detail in the manuscripts. This made the

quality of my subsequent manuscripts better and better because I have learnt a lot from their comments, such as those on the structure of a paper. Thus, I improved the manuscripts by restructuring them. (Interview, 30 October 2021)

To deal with the challenges in writing up his first English manuscript reporting a basic research study, Yang turned to a senior colleague for help when he could not decide how to organise his paper. Despite his endeavour to construct the logic of scholarly writing, Yang confided that the journal editors and reviewers still raised questions about the logical organisation of his writing but also provided him instructive comments:

Sometimes I didn't know what the problems were. They [editors and reviewers] told me what and how I should write in a certain section. I made the requested revisions accordingly. (Interview, 18 April 2021)

Similarly, Pang spoke highly of the journal editors' and reviewers' comments because they helped him improve his Dissuasion section greatly. In his own words, "their comments were really helpful in deepening my understanding of the results", and "it was then much easier for me to structure the discussion when I was able to think clearly about the results" (Interview, 14 March 2021). In Bo's case, a reviewer even helped to rewrite the Discussion section of his manuscript because s/he was very interested in the topic and consider it significant for the clinical field.

The above accounts indicated that the doctors turned to artefacts, sought informal help from their social networks (e.g., senior and fellow colleagues), and drew on journal

reviewers' comments to cope with their unfamiliarity with "the logic" of scholarly writing. This further revealed that scholarly publishing is a socially embedded activity that has the potential to provide socially constructed learning opportunities for novice researchers.

7.3.3 Tackling the Lack of Expertise in Conceiving and Designing Research

The doctors adopted several strategies to overcome their inexpertness in identifying novel research problems, developing strong research designs, and making sense of their empirical results. The doctors emphasised the importance of extensive and close reading of journal articles in their own fields. Liang said that "by reading journal articles, I could learn about cutting-edge research and the frontiers in my field" (Interview, 7 October 2022). Xiang also pointed out the importance of keeping abreast of research in the frontier by reading journal articles published most recently:

> The ideas from journal articles published much earlier may be outdated from today's perspective and current research directions. The journal articles you read need to be published within three years or no more than five years. (Interview, 30 October 2021)

Tang shared similar strategies for searching for new research ideas:

> I think it's most important to read some review articles. They usually talk about some controversial issues, which means that such issues haven't been figured out. They are the topics that we can explore and write about. So I usually read these journal articles to see whether, how, and to what extent some issues have been dealt with by the current scholarship. Also, I consider the feasibility of exploring such issues. This

is how I come up with some ideas for research. (Interview, 7 November 2011)

Pang did similar things in search of research ideas:

When I select a topic, the first and foremost is to read journal articles very carefully and thoroughly to understand its research background. I'll then consider whether this topic has any significance or can yield new contributions. (Interview, 14 March 2021)

The doctors also talked about the usefulness of reviewers' comments in helping them to conceive and design research. Although he expected his manuscripts to be rejected for a lack of novelty, Yang still submitted them to prestigious journals just to obtain the journal editors' and reviewers' comments: "The reviewers and editors sometimes raise questions about my methodology, which is useful feedback for improving my research" (Interview, 18 April 2021). He explained that:

The more highly ranked the journals are, the greater research expertise the editors and reviewers have. I wanted to learn from their original views about research in my field, even though I knew my manuscripts were not of a high quality. (Interview, 18 April 2021)

Their comments made me notice some research problems I had never thought of, and these research problems had the potential to yield novel findings. (Interview, 14 March 2021)

For similar reasons, Tang targeted certain journals not only because his manuscripts stood better chances to be accepted by them but also because "their reviewers were able

to provide some constructive suggestions that were quite useful" (Interview, 28 November 2021). Likewise, Liang reported how journal editors' and reviewers' comments benefited his research: "I will then pay more attention to some 'points' mentioned by them in my future research. This will make my research more robust and more novel" (Interview, 25 March 2022). Hang also appreciated the usefulness of reviewers' comments:

> As we specialise in traditional Chinese medicine, we may not be updated with the latest indicators in Western medicine. The reviewers mentioned such key information and provided some constructive suggestions for further revisions. (Interview, 23 March2023)

For similar reasons, Pang valued the feedback from journal reviewers and editors. Despite multiple rejections of his manuscripts by top journals mainly due to their lack of novelty, he revealed that:

> I have never submitted my manuscripts to journals such as *Scientific Reports* with an expectation that they would be easily accepted…. I only nominated as my reviewers the most influential scholars in my field and the corresponding authors of the papers I cited. (Interview, 14 March 2021)

According to him, their comments enabled him to access their in-depth understanding of the existing research and learn about the disciplinary frontiers. Pang shared the story of receiving a reviewer's recommendation of "Accepted as it is. No

revision needed" after one of his manuscripts was submitted to the seventh journal (Interview, 14 March 2021). He attributed this success to the helpful comments that he had received from the editors and reviewers of the journals that the manuscript had been submitted to. These comments greatly improved his "skills in conceiving and designing research" because they made his research methods "more rigorous and better aligned with the scientific paradigm" (Interview, 14 March 2021). Although Pang benefitted greatly from such comments, he admitted that "the more comments I received from the journal reviewers and editors, the more likely they were to reject my paper" (Interview, 14 March 2021).

Like Pang, Lin appreciated reviewers' comments for improving the methods of her basic research design:

> I think the reviewers' comments on the methodology part were very good. In my original research design, I set a quite high threshold value and got so many results. Following their suggestions, I tried the statistical methods they mentioned and then was able to narrow down the scope of my results. Thus, I think their comments were rather constructive. (Interview, 28 December 2021)

Bo provided a detailed description of how reviewer comments improved the methodology of his retrospective clinical study:

> One reviewer mentioned that the inclusion criteria of … patients were not uniform … and suggested that we delete that part of our data and then do the

> statistical analysis again…. What the reviewer meant was that for a retrospective clinical study, there was little room for perfection. S/he advised that it may yield better results when we removed those confounders…. We then followed his/her suggestion. It turned out that our study did yield better statistical results. From this experienced reviewer, I have learnt how to deal with similar problems. (Interview, 29 October 2021)

The perceived effectiveness of journal editors' and reviewers' comments depended on how individual doctors responded to them. Sometimes, the doctors did not take up the comments due to time considerations and limited funding, even though their manuscripts were at risk of rejection. Yang said that:

> Take as an example the manuscript I sent to you. I found that I was unable to explain the phenomenon observed…. The thing has not only affected the protein but also the genes…. Theoretically, it should not affect the gene expression … but it did in my study probably due to other influencing factors. However, if I followed the reviewers' suggestions and continued to explore this issue, it would not be possible for me to obtain significant results within a short period of time. It would take much longer and much more funding. However, I just wanted to turn my results into publishable papers quickly, so I didn't want to explore further…. Based on the research design and the results I had, this paper was publishable. Although the quality of the journal may not be very high, I would submit my manuscript to it. (Interview, 18 April 2021)

The following experts from Yang's response letter to the editor and reviewers illustrated Yang's strategy:

Reviewer #1's comment:

In Figure A, with respect to X in Y, the Z did not reduce after hypoxia. Authors should explain it. This result is not supporting the data in B.

Yang's Response:

In previous experiments, we mainly focused on the differences between Y and Z groups…. The contradiction between Figure A and B might be relevant to the overexpression method…. It urges us to conduct follow-up studies on this point in the future.

In a similar situation, Tang reported that he was "left with no choice but try my luck" due to limited funding and time:

When their comments mentioned some critical points that I was unable to deal with, I could only honestly admit that my research had those flaws, and promise that I would improve my research in the future. Then it depended on how they responded. Although I knew well that their comments were correct, I was just unable to solve the problems. There were many practical constraints…. Anyway, I tried my best to revise my manuscripts accordingly. When I was unable to follow the editors' or reviewers' suggestions, I admitted the flaws of my research design due to insufficient funding and time constraints. Generally, they would not force you to

comply. However, if you have some particularly harsh reviewers, they would most probably reject your manuscripts. (Interview, 28 November 2022)

Unlike Yang, despite the high time-cost, Lin and Hang chose to follow the editors' and reviewers' comments to conduct further experiments to improve their research design and obtain supplementary results. Lin reported that:

Last time, the reviewers commented on the experimental design of our study. They thought that it was not complete and requested us to do another experiment…. We followed their advice and did additional experiments. Usually, they would give you 3-6 months to do the experiments. (Interview, 28 December 2021)

She pointed out that the process of responding to the journal reviewers' and editors' comments offered learning opportunities:

That they requested additional experiments made our research methodology and the logic of the whole study more robust and complete. In general, their comments were meaningful. Moreover, when responding to their comments, I learnt quite a lot because I had to read more literature to learn new or unfamiliar stuff. (Interview, 28 December 2021)

Despite the generally perceived usefulness of the reviewers' comments, the doctors also reported that some reviewers did not specialise in their field. In this regard, the paradigm conflict between basic and clinical research in medicine can render the peer review process less desirable and effective. For instance, Bo explained that:

> If the reviewer of my manuscript is a clinician-researcher, they understand that some flaws in clinical research are unresolvable and then ignore them. Instead, they'll put much emphasis on the clinical significance of my research…. However, if the reviewer specialises in basic research or experimental clinical research, they'll insist that my research design be perfect. This is a paradigm conflict. A fundamental aspect of basic research is rigour. A retrospective clinical study is indeed not rigorous enough. But that's how clinical retrospective research is. (Interview, 23 October 2021)

Other doctors also shared relevant experiences. For instance, Liang noted that "some reviewers' comments were not so relevant to your research" (Interview, 25 March 2022). Yang also mentioned "although most reviewers' comments raised many good points, some were not relevant or useful" (Interview, 14 March 2021). Hang provided more details:

> Of course, there were some reviewers who were not from your field…. They may find it difficult to understand your manuscript and end up commenting on the order of sentences or language problems. Or they merely got the review out of their way by making some comments. But you were still expected to revise the manuscript accordingly. (Interview, 23 March 2023)

Lin's experience echoed what Hang said above:

> Some reviewers' comments were not so useful because they didn't specialise in my

field. The comments they put forward were probably related to their own fields, but they still wanted me to integrate their stuff into my manuscripts. (Interview, 28 December 2021)

However, even unpleasant experience with the peer review process brought along learning opportunities and facilitated the doctors' writing identity construction and entry into the target disciplinary community. When sharing his view of peer reviewers, Pang said that "I think we are equal because I was able to discuss the issue with them" (Interview, 14 March 2021). Tang "rejected reviewer comments very tactfully when they made no sense" to him (Interview, 28 November 2022). Lin also shared the transformation of her attitudes and actions towards peer review:

When taking an initial look at some comments, my first reaction used to reject the comments. Then I realised that it was unproductive to do so and that I needed to try to solve those problems mentioned by them…. if their comments were correct. However, if they happened to be wrong, I needed to respond to their comments quite tactfully rather than reject them flatly. (Interview, 28 December 2021)

She concluded that "now I don't think my manuscripts are perfect. I will revise my manuscripts very carefully according to reviewers' comments, which provide opportunities for improving my manuscripts" (Interview, 28 December 2021).

Besides journal editors and reviewers, the doctors also learned novel research designs and methods from published journal articles. For instance, Yang reported that "I

read journal articles on basic research and learn how other researchers designed the methodology, which also improved my research abilities" (Interview, 18 April 2021). The doctors also turned to their own local community members (e.g., their senior colleagues and fellow researchers) for methodological advice to compensate for their lack of research expertise. Lin reported that "our community members offered some help and guidance on my experimental design" (Interview, 28 December 2021). Bo related that:

> I usually asked my fellow colleagues to help me with some statistical tools and deal with the data…. Finally, I sought advice from the boss in our team…. To conduct high-quality research, you need to learn from others, leverage their resources, and seek their help when necessary. (Interview, 29 October 2021)

He underscored the importance of consulting senior colleagues, especially the medical team leader:

> I sought advice from my boss, who knows much more about the research area and research design…. The boss is really an expert who can provide very useful suggestions. He evaluated whether the research problem I talked about was worthy of further scientific research. He helped me with the translation of clinical problems into research problems, and evaluated whether my research design was appropriate. (Interview, 8 August 2021)

Hang reported similar strategies:

> Our team members including the boss made collective effort to design the research

methodology…. In particular, the boss is an experienced researcher who has a broader outlook for research and is thus able to provide much assistance and insights which I didn't notice before. According to their suggestions, I then revised my research design. (Interview, 23 March 2023)

As discussed in Chapter 6, corresponding authorship was granted to the boss of the whole team because s/he was the one who had the resources (e.g., patients and funds) to provide research support for junior doctors. More importantly, as noted in Chapter 5, at a top-tier hospital like Y Hospital, research output is the determining factor in a doctor's income, status, and promotion as well as a department's funding to be allocated by the hospital. It was then not surprising that the medical leader/boss was actively involved in supervising these junior doctors' research work.

Just as Yang mentioned earlier, the boss, or the medical team leader, was usually an expert in clinical research, but did not specialise in basic research. The other participants who talked about the important role of the boss in their research also admitted that the boss was more able to provide general research directions and assess the value of their research topics but did not usually pay attention to the nitty-gritty (e.g., revising the language). Pang confided that:

To be honest, most senior fellows and teachers are not so good at English as we are. Their ability to write academic papers is also not so good. So they are only able to provide some guidance from a professional perspective. (Interview, 14 March 2021)

Bo concurred with Pang:

> Generally, I consulted my boss on the "big" research directions. I sought help from fellow colleagues to deal with some "small" problems. The boss didn't pay attention to the details, but fellow colleagues helped me solve those specific problems. (Interview, 23 October 2021)

Like Bo, Lin pointed out that her boss's help was more about providing guidance on the content and the logic of her research, especially the general scientific research ideas:

> Before I conducted experiments, the research design had been discussed and validated by various parties…. My boss has done research on Y for decades, but my basic research focused on X field, which my boss is not familiar with…. My boss could provide guidance on Y field and the logic of my "results" presentation but not on the experimental design. Then I needed to consult other experts in X field, and I had to learn by myself. (Interview, 28 December 2021)

In view of the doctors' accounts above, it was not surprising that they tended to turn to colleagues for specific methodological assistance. For instance, when Yang was designing his first basic research project, he consulted senior colleagues about its research design and methodological procedure. He also used some new, sophisticated statistical tools to "enhance the validity" and "improve the quality" of his research (Interview, 18 April 2021). Similarly, Tang mentioned that "I sought help from my colleagues with expertise in basic research methods and asked for their advice" (Interview, 28 November

2022). Xiang also said that “I directly contacted some of our community members who are experts in statistics to help me deal with data analysis or image processing” (Interview, 30 October 2021).

Instead of seeking help from members of his local disciplinary community, Pang sought advice on his research methodology from the overseas scholars that he had met during his short stint at the American university. In his own words, “it would be best if you can find native English-speaking scholars to help polish your manuscripts and provide some specialist guidance on your research” (Interview, 14 March 2021). Xiang attended a three-month overseas programme that provided no training in English academic writing but facilitated “communications among researchers in my research field…. I have learnt how they designed their research and then conducted my study” (Interview, 30 October 2021).

To alleviate his weaknesses in interpreting empirical results, Yang made strategic use of linguistic resources such as hedges in the Discussion sections of his papers. When he found it difficult to interpret some results, he would write in “a relatively humble voice” (Interview, 18 April 2021). He used modal auxiliaries (e.g., *could* and *might*) to hedge his claims and modulate his confidence in them, as illustrated by the following excerpt:

… implying increasing … activation could constitute a promising strategy….

… in understanding how … might regulate … were made…. (Yang, EMS1-Final Draft)

He went on to explain that "if the reviewers and editors did not question my writing in this part, it means that I was using the right tone" (Interview, 18 April 2021). Although this strategy was somewhat opportunistic, it seemed to work well for Yang.

In summary, the doctors engaged with mediating artefacts (Engeström, 1987; Roth & Lee, 2007), such as published journal articles and linguistic devices, and interacted with social others (e.g., colleagues, manuscript reviewers and journal editors) to address their insufficient research skills. These coping strategies sustained their scholarly publishing endeavours and helped them (re)construct their scholarly identities (Russell, 1997).

7.4 Discussion

This chapter has further examined, through the conceptual lens of CHAT, the challenges faced by Chinese medical doctors in their English-medium publishing endeavours and the various strategies employed by them to tackle the challenges. The challenges and strategies emanated from several contradictions, or structural tensions, inherent in the doctors' scholarly publishing activity system (Engeström, 2015). As discussed in Chapter 6, some of these contradictions centred on Y Hospital's publication policy. Chief among them was the secondary contradiction between the policy as rules of the game for the subjects (i.e., the doctors) and the institutional as well as the subjects' object of engaging in research. The rules represented a product-oriented approach that valorised quantities (e.g., numbers of publications and impact factors) and drove the

doctors to publish SCI-indexed articles. Such an approach was at tension with the subjects' object of developing themselves into well-rounded clinician-researchers capable of producing new scientific knowledge and the hospital's object of enhancing its clinical and research capacity, both objects calling for a more process-oriented approach. Another secondary contradiction was the structural tension between the institutional publication policy as rules and the mediating resources needed to comply with the rules. Y Hospital directed the doctors' attention to the expected outcome (i.e., publications in high-impact SCI-indexed journals) but did not provide the tools and signs that they would need to achieve the outcome. This contradiction led to the multiple challenges faced by the doctors in this study and EAL researchers in previous studies (e.g., Ferguson et al., 2011; Lei & Hu, 2019; Phillipson, 2009) and necessitated the coping strategies adopted by the doctors.

Underlying the structural tensions discussed above was a primary contradiction within the subjects in the scholarly publish activity system. The contradiction was inherent in the dual role of the subjects as fledgling clinician-researchers (still developing their clinical skills and scholarly publishing expertise) and as expert/full-fledged contributors of scientific knowledge in their professional context. In other words, although the doctors were junior clinician-researchers in the process of developing their clinical skills and scholarly publishing expertise, they were institutionally expected to be expert contributors of scientific knowledge (Lei & Hu, 2019). This primary contradiction

played out in the secondary contradiction between their institutionally shaped object of scholarly publishing and their lack of grounding in research and scholarly publishing needed to achieve the object. This contradiction was manifested most prominently in the junior doctors' lack of or limited grasp of conceptual tools and signs for effective scholarly publishing, including their lack of language skills, genre knowledge and expertise in conceiving and designing research.

Regarding their inadequate language skills, all the eight doctors reported their difficulties in English academic writing due to insufficient English proficiency. Their language difficulties impeded their meaning-making and knowledge production. Specifically, these difficulties concerned not only basic linguistic elements such as words and sentences, but also advanced linguistic skills needed to express meaning precisely and accurately. Their language problems were also noted by journal editors and reviewers, who commented on the unintelligibility and non-nativeness of the language of their manuscripts. The language problems notwithstanding, the doctors reported no rejection of their manuscripts merely due to their inadequate language skills. These findings are consistent with those of previous research (e.g., Hanauer & Englander, 2011; Hynninen & Kuteeva, 2017; Martín et al., 2014; McDowell & Liardét, 2019; Muresan & Pérez-Llantada, 2014; Pérez-Llantada et al., 2011). The journal editors' and reviewers' comments on the "non-nativeness" of the doctors' manuscripts echoed those on other EAL researchers reported in previous studies (e.g., Huang, 2010; Hyland & Jiang, 2020;

Muresan & Pérez-Llantada, 2014). Similarly, journal editors and reviewers requested the doctors and other EAL researchers to turn to native speakers of English to address the problem of non-nativeness in their manuscripts (Flowerdew, 2015; Lei & Hu, 2019). This may have reinforced self-perceptions of non-nativeness as a linguistic limitation or disadvantage (e.g., Flowerdew, 2008; Lillis & Curry, 2006b; McDowell & Liardét, 2019; Muresan & Pérez-Llantada, 2014). The doctors' perceptions of how the quality of language would influence the fate of their manuscripts also echoed the findings of previous studies (e.g., Belcher, 2007; Gosden, 2003; Hewings, 2006; Kourilová, 1996; Mišak et al., 2005; Muresan & Pérez-Llantada, 2014; Pérez-Llantada et al., 2011).

The doctors experienced the linguistic disadvantage most intensely when performing the complex rhetorical functions of different sections of a research paper due to their lack of explicit knowledge of norms and conventions of different genres. This finding was in line with those of previous research (Curry & Lillis, 2010; Martín et al., 2014; Muresan & Pérez-Llantada, 2014; Pérez-Llantada, 2013; Pérez-Llantada et al., 2011; Uzuner, 2008) that reported EAL researchers' lack of nuanced genre knowledge and unfamiliarity with the discourse conventions of their target academic communities. Furthermore, the doctors emphasised their lack of expertise and skills in conceiving and designing research, such as highlighting the novelty of their studies and developing robust research methodology. Previous studies have also found that EAL researchers found it difficult to justify the significance of their research and convince the reviewers of the relevance of their research

for the international disciplinary community (Hyland & Jiang, 2020; Martín et al., 2014; Muresan & Pérez-Llantada, 2014; Pérez-Llantada et al., 2011) and encountered methodological problems (e.g., Lei & Hu, 2015, 2019; Mungra & Webber, 2010; Muresan & Pérez-Llantada, 2014). These content-related issues are the main reasons reported for the rejection of manuscripts (Hyland & Jiang, 2020; Lei & Hu, 2019; Mišak et al., 2005; Mungra & Webber, 2010; Muresan & Pérez-Llantada, 2014; Pérez-Llantada, 2012; Pérez-Llantada et al., 2011; Salager-Meyer, 2008). This study showed that the doctors encountered similar difficulties faced by EAL researchers elsewhere, and that scholarly publishing required not only English competence but also research competence and skills.

To resolve these difficulties rooted in the contradictions discussed earlier, the doctors leveraged various mediating resources available in their community ranging from cultural artefacts (i.e., published articles, sophisticated statistical tools, and linguistic resources) to significant social others (i.e., journal editors, manuscript reviewers, colleagues, fellow academics, and paid editorial services). These findings corroborated those of previous research (e.g., Burgess et al., 2014; Curry & Lillis, 2010; Flowerdew & Li, 2007a; Flowerdew & Wang, 2016a; Li, 2007, 2014b, 2015; Luo & Hyland, 2017, 2019; Payant & Belcher, 2019; Pérez-Llantada et al., 2011) that reported EAL scholar's various strategies to cope with difficulties in their scholarly publishing efforts. However, the strategy of translating Chinese manuscripts into English and then back-translating them into Chinese, deployed by Xiang and Hang to avoid loss of meaning in translation, has

not been reported before. This might have to do with the disciplinary uniqueness of Chinese medicine that the two doctors specialised in. Further research can be conducted to explore this and other writing strategies adopted by Chinese doctors specialising in Chinese medicine and aspiring to join the international medical community dominated by western medicine. Furthermore, the strategy of writing a manuscript by using L1 and L2 interchangeably, which was used by Bo to facilitate the meaning-making process, has received little research attention. Therefore, the transformative potential of translanguaging in academic writing is worthy of further research.

Notably, although the mediating resources generally facilitated the doctors' scholarly publishing process, they also had their respective limitations. Previous research has yielded similar findings on the limitations of various mediating resources adopted by EAL researchers (Burgess et al., 2014; Lei & Hu, 2015; Li, 2014b; Luo & Hyland, 2016, 2019, 2021; Willey & Tanimoto, 2015). Specifically, senior colleagues (e.g., the bosses) were reported to focus on the content only but did not tackle language problems, and/or lacked academic writing competence. Additionally, the limitations of language professionals' support arising from their lack of specialist content knowledge were mentioned by the participants, and the high cost and low effectiveness of editorial services were also noted by some doctors.

The doctors' accounts of their experience of editorial services cast doubts on the integrity of the peer review process and the legitimacy of editorial services required by

journal editors and reviewers, an issue that has rarely been reported in the literature. In Bo's opinion, peer reviewers, who might be EAL researchers themselves, were unable to evaluate the language quality of the manuscripts. From Hang's perspective, the problem might be just another manifestation of neoliberalism in scholarly publishing, reflecting profit-motives and commercialism in publishers' institutional logics and organisational decision making (Ghamandi, 2018; Sanders, 2012; Thornton, 2004). To understand this macro-social order from individual actors' perspectives and experiences deserves further research. This study has also revealed whether, to what extent, and why the journal editors and reviewers' comments were enacted or rejected in the doctors' revision process, and what consequences might follow. All these issues have received little attention in the literature and merit exploration in the future.

Notably, many of the coping strategies adopted by the doctors created valuable learning opportunities and contributed to bridging the gap between their dual status, their identity construction as scholarly writer, and their socialisation into their target disciplinary community. According to Yamagata-Lynch (2010), CHAT has been criticised for focusing on observable activities but ignoring "individual cognitive development and its relationship with human activity, cognition, psychology, and cultural settings" (p. 28). This study has overcome this potential drawback and yielded a contextualised understanding of the structural tensions in the activity system where learning affordances for the doctors emerged (Engeström, 2001). The findings have shown that the

contradictions not only created difficulties and impediments but were also potential "sources of change and development" (Engeström, 2015, p. 137). Drawing on Engeström's (1987, 2015) theorising, the activity system analysis conducted in this study helped to make explicit the more implicit or tacit elements in and of an activity. For example, this study has revealed that the doctors were relatively disadvantaged or advantaged in relation to specific mediating tools and prevailing rules, and experienced different levels of development and learning, depending on how they responded to the structural tensions in their scholarly publishing activity systems (Engeström, 2015). Furthermore, this study has shown that individuals and relationships could be drawn on as resources to facilitate the doctors' scholarly publishing activities, corroborating the findings of previous studies (e.g., Canagarajah, 2018; Lillis & Curry, 2010) that EAL researchers' scholarly publishing is not merely the enactment of individual competence but a networked activity and, consequently, goes beyond discursive issues to include the strategic mobilisation of relevant social and material resources.

Thinking through my findings with CHAT has also helped to reveal that activity systems are experienced differently by individuals, though "the general structural characteristics" (Engeström, 2001, p. 140) remain stable. Individuals inevitably embed an activity in their history (Engeström, 2015), and such historical embedding will shape their attitudes towards rules, tools, and the way these are deployed. For example, the doctors' previous experiences shaped the tools available (e.g., resources of textual

mediation) and how they were utilised. This individualism reflected a sense of personal agency and allowed the doctors to develop their own strategies, or personally imposed rules, to deal with the institutionally sanctioned rules for scholarly publishing. For instance, Yang focused strategically on increasing the number of his English-medium papers by publishing in SCI-indexed but relatively low-impact journals, whereas Pang put a premium on the quality rather than quantity of his scholarly publications and targeted prestigious journals. Such individual motives also influenced their attitudes and actions concerning the mediational resources (e.g., their shared and differentiated attitudes towards and response to reviewers' comments), which in turn determined the extent of their learning potential. Taken together, these findings indicate that scholarly publishing is an artefact-mediated, socially distributed, and historically embedded activity. Despite the doctors' product/outcome-oriented approach to scholarly publishing as discussed in Chapter 6, these findings suggest that their contradiction-solving process was imbued with their individual agency, which created learning opportunities and facilitated their writer development.

7.5 Chapter Summary

This chapter has presented findings on the subject-related contradiction that was rooted in the junior doctors' dual status as fledgling clinician-researcher (still developing their clinical skills and scholarly publishing expertise) and as expert/full-fledged contributors of scientific knowledge within their professional context. The findings revealed that this primary contradiction was further manifested in the doctors' lack of or

limited grasp of conceptual tools and signs for effective scholarly publishing, and, consequently, gave rise to various challenges in their scholarly publishing activities. In response, a range of coping strategies were deployed by the doctors to tap the resources available, the most important of which were cultural artefacts and social others. These findings indicate that scholarly publishing is an artefact-mediated, socially distributed, and historically embedded activity which can offer rich learning opportunities when novice researchers actively exercise their individual agency. Together with the findings reported in Chapter 6, the findings presented in this chapter illuminate the root cause of the contradictions, that is, the duality of the object of the doctors' scholarly publishing activity system, and attest to "the object-oriented and contradiction-driven character of activity"(Engeström & Sannino, 2020, p. 4).

Chapter 8 Conclusions

This purpose of this study was to explore Chinese medical doctors' scholarly publishing practices in their professional context. It was hoped that this study could contribute to a better and more nuanced understanding of Chinese medical doctors' scholarly publishing practices by adopting a contextualised perspective on scholarly publishing and inform the formulation of more realistic and appropriate policy and support. Specifically, this study was guided by the following overarching research questions:

1. What are the institutional contexts and motives for Chinese medical doctors' scholarly publishing activities? How do they impact on doctors' scholarly publishing practices?
2. What difficulties or challenges do Chinese medical doctors face in their scholarly publishing activities? How do they impinge on their publishing practices?
3. What strategies do they develop and employ to address those challenges? How do these strategies shape their scholarly publishing practices?

To answer these research questions, this study adopted a multi-case study research design informed by CHAT and collected multiple types of data from eight Chinese medical doctors who worked in a top-tier hospital in mainland China and were engaged in scholarly publishing activities. The collected data were analysed using thematic and activity systems analyses, the results of which were then synthesised and presented in the

doctors' narratives, together with the schematic presentation of CHAT diagrams, to describe each doctor's experience with scholarly publishing.

The three preceding chapters reported the findings in relation to the research questions. This chapter begins briefly recapping the main findings, presents conclusions drawn from these findings, highlights the contributions of the study, and discusses the implications derived from the study. Following that, it acknowledges the limitations of the study and outlines additional directions that deserve further research.

8.1 Summary of Main Findings

8.1.1 Settings and Motives: Shaping Power of Contextual Factors in Scholarly Publishing

Given the focus of the present study, the activity settings for the doctors' scholarly publishing activity system included but were not limited to its neighbouring activity systems of research and clinical work embedded in their professional work activity system. Despite varying individual participation in the different activity systems, these activity settings were found in this study to have interacted and interconnected with their scholarly publishing activity system most prominently. As revealed in Chapters 6 and 7, individual doctors viewed the focal activity system of scholarly publishing differently and exercised their agency to varying extents, though the general structural characteristics of the activity systems remained stable. Further, in each participant's case, the relationships of the three activity systems varied but remained sufficiently stable to allow analysis.

With regard to the interlocking network of systems, the activity systems of clinical work, research, and scholarly publishing within the doctors' over-arching professional work activity system were interconnected and had partially shared objects (see Chapter 5). Ideally, the course from the object of the clinical work activity system (e.g., patient treatment) to that of the research activity system (e.g., data collection) and then to that of the scholarly publishing activity system (e.g., scholarly publication as knowledge production) was an evolutionary process transforming from the specific into the more abstract. However, the partially shared objects between the three activity systems did not automatically lead to a doctor's full participation in all the activity systems. Specifically, a doctor's participation in one activity system (e.g., scholarly publishing) to achieve its object (e.g., fast publications) may not contribute to the attainment of the other two activity systems' objects or even cause undesirable outcomes in these two activity systems (e.g., clinical work and research) or the overarching professional work activity system (e.g., knowledge production and professional development) (see Chapter 6). For instance, while all the doctors participated in the three activity systems, the pressure of timely promotion originating in the object of their professional work activity system caused tensions between the activity systems. This further generated object-related contradictions in the doctors' scholarly publishing (see Chapter 6). Moreover, the doctors' less than desirable participation in the activity systems of clinical work and research obstructed the transformation of their specific objects into the more abstract ones of the

scholarly publishing activity system, which consequently gave rise to subject-related contradictions (see Chapter 7). These findings will be summarised and discussed in the next section.

The findings of this study revealed that the major stakeholders had a mixture of shared and conflicting motives for the doctors' scholarly publishing activities. Broadly speaking, these motives centred around research capacity building, involving the production of knowledge and the cultivation of quality researchers (Beran et al., 2017; Curry & Lillis, 2017a; Pickstone et al., 2008). Despite all the stakeholders' apparently process-induced/long-term collective motives for scholarly publishing, their discourses and practices evidenced a product-oriented approach to scholarly publishing. For instance, the university and the hospital prioritised research output and set quantitative publication requirements in their evaluation system for doctors. This revealed a performative audit culture in the health system/sector in mainland China in line with the global infiltration of neoliberal forces into health systems (see Keshavjee, 2014). Given such contextual factors, the major stakeholders were found to place a premium on English-medium publication, though some doctors were critical of and resistant to the institutionally imposed objects and/or rules into their scholarly publishing activity systems, which were at odds with their self-construal of these components in their activity systems.

As revealed in Chapter 6, a product/outcome-oriented approach reconstructed the objects, rules, community, and division of labour in the activity systems of scholarly

publishing, research, and clinical work. Thus, this study offered empirical evidence that changing the object that defines an activity system would naturally cause changes in the other components of the activity system and its interacting activity systems (Engeström, 2015). Consequently, the reconstructed object generated new contradictions in the doctors' multiple activity systems. As a result, research capability building, the goal desired by the major stakeholders, was contracted and undermined. Additionally, as revealed in Chapter 6, the doctors adopted a play-mentality in their scholarly publishing activities for instrumental careerism rather than meaningful knowledge production. Consequently, as noted in Chapter 5, the hospital admitted that despite the drastic increase in the quantity of the SCI publications authored by its doctors, the quality of those publications needed to improve. As shown in Chapter 7, the doctors' motives for getting their research published and/or for improving the quality of their research led them to navigate and tap various mediating resources, thereby providing valuable learning opportunities and facilitating their participation and socialisation in their target disciplinary community. Drawing on these findings, it could be concluded that the major stakeholders' motives for scholarly publishing, especially the doctors' motives, could offer affordances for and/or pose constraints on doctors' scholarly publishing endeavours.

8.1.2 Challenges: Engaging with Contradiction-Laden Activity Systems

Drawing on CHAT, this study uncovered two types of primary contradiction that arose from the doctors' scholarly publishing endeavours - the object- and the subject-

related primary contractions. The object-related primary contradiction was rooted in the dual object of the scholar publishing activity system, that is, developing doctors' clinical skills and scholarly publishing expertise to make knowledge contributions while institutionally expecting them to get promoted by having their knowledge contributions published within a stipulated timeframe. As shown in Chapters 5 and 6, the doctors' instrumentalist publishing resulted from the dominance of an outcome-prioritising motive over a process-oriented one, due to the combinations and interactions of factors at the macro-level state policies (e.g., influenced by the global trend of internationalisation of research), the meso-level institutional roles of the hospital (e.g., the performance and audit culture), and the competing demands in the micro-level professional context for individuals (i.e., the doctors' career aspirations). This was illustrated by the doctors' deployment of various mediating resources to solve the subject-related primary contradiction. This primary contradiction was related to the junior doctors' dual role as fledgling clinician-researchers (still developing their clinical skills and scholarly publishing expertise) and as expert/full-fledged contributors of scientific knowledge. While the doctors' outcome-based attempts were to get the manuscripts published, the process of their scholarly publishing scaffolded their writer development, albeit as a byproduct of this process.

From the CHAT perspective, the primary contradictions were manifested and reflected in secondary contradictions and could not be completely resolved (Engeström

et al., 2015; Roth & Lee, 2007). Moreover, contradictions were at once impediments to and sources of development of an activity (Engeström, 1995; Leont'ye, 1981). This study has provided supporting evidence of these principles and characteristics. First, the object-related primary contradiction was found to be manifested in the secondary contradictions between the object and the rule, and between the object and the division of labour, respectively. The subject-related primary contradiction was reflected in the secondary contradiction between the subject and the tool. Second, the doctors' strategies for resolving the object-induced primary contradiction caused new tensions between the constituent components of an activity system and between the activity systems. These object-related contradictions could not be completely resolved on the individual actors' level. In a similar vein, the doctors' employment of mediating resources would ideally narrow the distance/gap between their dual status, but in practice the gap persisted because of the evolutionary nature of the activity system itself and its new emerging contradictions. In her discussion on scholarly writing expertise, Casanave (2019) argued that "perhaps true experts never get there" since expertise in any field develops "over a lifetime of deliberate effortful practice of progressive problem recognition and problem solving" (p. 60). Third, although the contradictions were not resolved completely, they could offer learning opportunities depending on the doctors' agency. For example, to resolve the subject-related contradictions, the doctors actively engaged with cultural artefacts and enlisted the help of social others, which offered great learning opportunities.

8.1.3 Strategies: Breaking Out of Contradictions as a Learning Process

To resolve the contradictions as discussed above, the doctors employed various strategies to deal with structural constraints on their scholarly publishing activities rooted in the object-related contradictions, and address their conceptual constraints on knowledge production stemming from the subject-related contradictions. Specifically, to resolve the object-related contradictions, the doctors adopted the strategies of boundary crossing, reconstruction and transformation of the object, and utilisation and toolisation of social relationships, which, as noted in Chapter 6, caused new tensions and affected their development as clinician-researchers and scholarly writers. For instance, the "play-mentality" adopted by the doctors in their scholarly publishing efforts had negative consequences (e.g., identity dilemma and ethical concerns). To cope with the subject-related contradictions, the doctors employed various mediating resources (i.e., cultural artefacts and social others) "situated at different hierarchical levels" (Engeström & Sannino, 2020, p. 15), for example, fellow/senior colleagues, journal editors and reviewers, and were both independent (e.g., self-learning from artefacts) and interdependent (e.g., community members). These mediating resources embodied the norms and conventions of scholarly publishing in various disciplinary communities, thereby providing learning opportunities and facilitating the socialisation of junior professionals and researchers (e.g., Engeström, 1993; Flowerdew, 2000; Hakala, 2009; Kobayashi et al., 2017; Zappa-Hollman & Duff, 2015).

This study has also revealed that junior researchers do not automatically acquire the expertise that is expected of them, and that they need various types of assistance when they try or are required to *perform* like experts in scholarly publishing, because they are still developing knowledge, experience, and discoursal competence (see also Casanave, 2019). Taken together, the doctors' adoption of strategies to resolve the contradictions evinced "a process by which human beings can intentionally break out of conflicting motives and change their circumstances" and "in turn strengthens the longitudinal 'rope' of the expansive learning process", fuelling the transformation of both the activity system and the subject (Engeström & Sannino, 2020, p. 16).

8.2 Contributions and Implications

Findings of this study have theoretical implications that could inform the ongoing development of fourth-generation CHAT and practical implications that can inform policy and institution-level strategies for facilitating publication efforts in a professional context, a context that has received little research attention, as previous studies have mainly focused on scholarly publishing in various academic contexts and the influences of geolinguistic and geopolitical contexts.

8.2.1 Theoretical Implications

First, the study contributes to the ongoing efforts to the development of fourth-generation CHAT by investigating Chinese medical doctors' scholarly publishing practices in the local, social, cultural, and institutional contexts. Specifically, informed

by fourth-generation CHAT, the findings regarding the scholarly publishing activity system and its neighbouring activity systems embedded within a professional activity system indicated that these activity systems could not be understood as a simple constellation of multiple-interconnected activity systems (constituting the third-generation unit of analysis with partially shared objects), but evinced a need for a fourth-generation unit of analysis that comprises "a web of coalescing heterogeneous work activities" (Sannino, 2020, p. 167). Thus, as the findings of this study made clear, the contradictions inherent in the doctors' scholarly publishing activity systems could not be resolved by themselves alone; effective solutions would call for the establishment of "novel heterogeneous coalitions toward the next steps of the strategy", requiring collective and combined efforts that can essentially counter stigma or problem situations (Engeström & Sannino, 2020, p. 19). The findings of this study thus provide supporting evidence for Engeström and Sannino's (2020) theorising that the resolution of contradictions depends on a radical expansion of social relations that needs to be involved and built among a wide range of actors (e.g., the institutional administrators, the national apparatuses, and the global academic community) from different activity systems across boundaries both horizontally and vertically.

Second, the findings of the study also suggest that formulations of fourth-generation CHAT need revision. According to Engeström and Sannino (2020), changes can be made at the local level toward a large, societal transformation, which requires the actors

involved within and across heterogeneous activities to "learn to operate on the basis of concerted initiatives rather than by top-down orientations" (Engeström & Sannino, 2020, p. 14). Thus, more emphasis needs to be placed on processual relations in addition to structural relations (Engeström & Sannino, 2020). For instance, the learning cycle of the doctors' scholarly publishing needs to be directed and supported by the work of the university and its affiliated hospital, whose learning cycles are in turn directed and supported by the national initiatives that could have been influenced and directed by the global trend of internationalisation of research. An ideal reciprocal process should be as follows: the work within doctors' scholarly publishing activity systems could feed developments and reorientations at the institutional, national, and possibly global levels. However, the findings of this study revealed that a bottom-up reciprocal process did not happen. This study has found that the doctors seemed to be subjugated to the problem situation (e.g., lack of time and resources and instrumental publishing), although they were well aware of such systemic deficiencies and tried to cope with them individually. Further, some doctors found themselves left with no choice but had to depend on themselves by squeezing the time to publish, while other doctors saw it pointless to put forward any suggestions or bottom-up initiatives because the institutions would not care. These findings suggest negotiations, or a qualitative transformation of an activity system, could not possibly happen, or be initiated on an individual actor level in a highly institutionalised setting where individuals are subdued by the system. The reason could

be that Engeström and Sannino's (2020) theorising of fourth-generation CHAT has been based on their empirical studies in a Finnish context. While Finland is one of "the Nordic countries [that] have been perhaps the most distinguished representatives of liberal democracies anywhere" (Herkman, 2019, p. 264), China has been characterised by its state bureaucracy and authoritarianism that embody privilege and hierarchy, and its authoritarian power is a stand-alone variable that directly dominates its social formations in various sectors (see Ren, 2023). Thus, this study has demonstrated that local institutional and social factors, or structural relations, need to be carefully considered and favourably established before processual relations can be formed, that is, before any qualitatively different activity coalitions that focus on a runaway object can be built to effectively solve the problem situations. By providing an empirical counterpoint from a heterogeneous context (i.e., the Chinese context), this study has offered insights into and made contributions to the ongoing development of fourth-generation CHAT.

Third, CHAT has been criticised for investigating mainly observable activities but paying insufficient attention to "individual cognitive development and its relationship with human activity, cognition, psychology, and cultural settings" (Yamagata-Lynch, 2010, p. 28). This study contributes to the current scholarship on CHAT by yielding a contextualised understanding of the structural tensions in the activity system where individual agency and cognitive development emerged (Engeström, 2001). Specifically, according to the latest CHAT (Engeström & Sannino, 2020), the process of emergence of

transformative agency by double stimulation is observed through actions taken by individuals in a problem situation. While this study has provided supporting evidence of this process by examining the doctors' strategies for dealing with the object-related contradictions (see Chapter 6), the activity system analysis conducted in this study has further revealed that such an emerging process of transformation agency by double simulation can also be "observed" through individual actors' efforts (e.g., drawing on mediating resources and taking advantage of learning opportunities for cognitive development) to cope with cognitively challenging problems induced by subject-related contradictions (see Chapter 7). However, the findings of this study raise questions about whether and to what extent actions responding to the conflict of motives experienced by an individual subject is essentially "volitional", as argued by Engeström and Sannino (2020), while they were appearing so at first glance. Moreover, according to Engeström and Sannino (2020), individual actors exerted their agency in initiating and shaping a new mode of activity, and sustained expansive learning are expected to result. After taking a closer look at the doctors' strategies, this study revealed that the actions taken by the doctors were predominantly influenced and shaped by contextual institutional factors, and their "volitional" actions were mainly instrumental and could contract their long-term learning (see Chapters 6 and 7). Thus, while fourth-generation CHAT tends to emphasise the positive impact of learning potential, this study has found that there can be negative ramifications. The negative consequences included but were not limited to issues

concerning research and professional ethics, identity crisis and dilemma, individual development as clinical researchers and scholarly writers, and global knowledge production. As discussed earlier, the discrepancies between the findings of this study and those of Engeström and Sannino's (2020) research might have arisen from contextual differences. Notably, in their call for "heterogeneous work coalitions", Engeström and Sannino (2020) seemed to ignore the contextual differences that may exist at local, regional, national and possibly global levels, and how such contextual factors might impinge on individuals' self-conditioning process of "break[ing] out of conflicting motives and change their circumstances" (p. 16) or the collective agency achieved and exercised at multiple levels.

8.2.2 Implications for Policy and Institutional Support

This study has revealed the strenuous challenges faced by early-career, dual-status practitioners who need to conduct multidisciplinary translational research that intersects with basic and clinical science (see Rubio et al., 2010). It has also raised questions about the rationality of implementing assessment-oriented institutional policies without providing the resources and institutional support needed to achieve the policy goals. The findings of this study have several practical implications.

First, although structural tensions in the scholarly publishing activity system bring along rich learning opportunities, the findings indicate that these contradictions cannot be fully resolved by the subjects' personal agency alone. This points to a need for

institutional policies and initiatives to support doctors aspiring for international publication. As attested by the participants' perceived difficulties, these policies and initiatives should make process-oriented and capacity-building support available to enhance their development as clinician-researchers. Furthermore, the performance appraisal system solely based on first and/or corresponding authorship need to be reformed to recognise various types of contributions made to the publications, given the highly collaborative nature of scholarly publishing. This can encourage interdisciplinary/interdepartmental collaboration and enhance the quality of the resultant research output.

Second, institutional support can take the form of in-service professional development programmes designed to enhance a wide range of discursive competencies and research skills (Smirnova et al., 2021). For instance, skills in conceiving and designing research for international publication and explicit knowledge of different academic genres (e.g., basic research and clinical research articles) are desiderata to include in these programmes. The programmes should also introduce the various mediating resources that junior clinician-researchers can draw on and effective ways or successful examples of tapping on these resources.

Third, since scholarly publishing is a social practice (Lei & Hu, 2019; Luo & Hyland, 2019) and because members of one's community and their relationships can be valuable mediating resources, institutions could scaffold their staff's publishing endeavours by

instituting mechanisms that help them form peer groups. Such peer groups would not only allow their members to leverage socially distributed cognition (Cole & Engeström, 1993) and learn from each other's expertise but could also facilitate the effective division of labour (Engeström, 2015) to enhance research productivity. More broadly, as noted by Engeström and Sannino (2020), a wide variety of actors at multiple levels – local, regional, national and possibly global – need to be involved to exert concerted efforts that "can realistically counteract stigma and suffering associated with conditions of deep disadvantage" (Engeström & Sannino, 2020, p. 14). As revealed by the findings presented in Chapter 6, one systemic deficiency that obstructed the doctors' scholarly publishing activities was the general underdevelopment of Chinese medicine in the global community. According to Beran et al. (2017, p. e567), there are still "huge gaps in infrastructure, management systems, and human capital remain for health systems, government and governance structures, and research institutes" in low-income and middle-income countries (LMICs) (see also Byass, 2013; IJsselmuiden et al., 2012). Thus, to bridge those gaps for the betterment of global health systems, it is necessary to create more funding opportunities and partnerships between the LMICs and those developed countries, reform local/institutional governance systems, and adopt a more accommodating approach to scholarly publishing (e.g., providing fee waivers, prioritising publications from health research done in LMICs, and mentoring authors in LMICs) (Beran et al., 2017). In this study, only one doctor had overseas experience in a high-

income country where medical science is developed globally. In view of his benefits from this experience, X University/Y Hospital can take initiatives to establish partnerships with a global network of prestigious medical schools and create more opportunities for global collaborations.

Lastly and most importantly, the policy makers may need to consider whether each doctor should be required to publish for promotion, given the heavy load of clinical duties and other work (see Chen et al., 2014; Chen et al., 2013; Yuan et al., 2013). According to the participants' accounts, the university and the hospital need to make allowances for the doctors who aim at only improving their clinical expertise and draft a more accommodating framework for a fair evaluation system. For instance, equal status shall be granted to each doctor, no matter which professional track s/he is willing to undertake.

8.3 Limitations of the Study and Directions for Future Research

The findings of this study should be interpreted with caution given its several limitations which, in turn, point to potential directions for future research in the field.

First, given its focus and design, this study mainly drew on self-reported experiences and perceptions, and focused only on the clinician-researchers' scholarly publishing activity system and their professional work system. This led to the lack of a chronological perspective on the participants' ongoing engagement in scholarly research and publishing. Future research may collect observation-based data to corroborate self-reported data with

actual practices and explore the possible influences of other (sub)activity systems on doctors' scholarly publishing practices.

Second, the study did not delve further into the influences of the ecology of a local research team, the departmental (sub)culture, and the specific (sub)disciplinary culture on the doctors' scholarly publishing practices. Future research may explore collaboration in research and writing within a local (sub)culture of a hospital. This line of research has the potential to provide a holistic picture of the influences of institutional policies by investigating possibly shared and divergent responses from different departments. While the study involved doctors from different medical subdisciplines, it did not zoom in on the influences of each subdiscipline's particularities on the doctors' scholarly publishing practices. Future research can examine (sub)discipline-specific challenges and adopt a contrastive approach to investigating cross-subdisciplinary influences.

Third, this study did not probe deeply enough into the text production process. In particular, text-based interviews were mainly used to corroborate the doctors' self-reported experiences and practices, given the focus of the study on scholarly publishing experiences and practices. For instance, although the study touched on how the doctors used their first language (i.e., Chinese) in the process of writing for publication, it did not delve further into their translation and translanguaging practices in scholarly writing. Future research may take textual analysis and text-based interviews as primary data sources and pay more attention to specific textual actions. Additionally, given the finding

that the doctors drew heavily on translation tools, further research on software-assisted, or AI-assisted, scholarly writing could provide new insights into ERPP, especially in view of the current controversy over the role of ChatGPT in knowledge production and scholarly publishing.

Fourth, this study did not explore the dimension of emotional labour that permeates doctors' scholarly publishing experiences and practices and is closely connected with burnout, although it did reveal that some doctors experienced negative emotions in their scholarly publishing endeavours (e.g., multiple rejections of their manuscripts, harsh comments from journal editors and reviewers, and publication pressure). Further research may explore this emotional dimension and provide insights into ways of reducing emotional traumas associated with researchers' scholarly publishing experiences.

Appendix A: Information Sheet and Informed Consent Form

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

INFORMATION SHEET

信息表

Chinese Medical Doctors' Scholarly Publishing Practices: A Multiple-Case Study

中國醫生的學術發表行為：多案例研究

You are invited to participate in a study conducted by REN Songsha (Student ID: 2003), who is a post-graduate student of the Department of English in The Hong Kong Polytechnic University. The chief supervisor of REN Songsha is Professor HU Guangwei. The project has been approved by the Human Subjects Ethics Sub-committee (HSESC) (or its Delegate) of The Hong Kong Polytechnic University (HSESC Reference Number: HSEARS20210122006).

您好！現邀請您參加由任宋莎（學生編號:2003 ）開展的一個研究項目。任宋莎是香港理工大學英文系的博士研究生，其導師為胡光偉教授。該項目已獲香港理工大學人類學科倫理小組委員會（HSESC）的批准（編號：HSEARS20210122006）。

The aim of this study is to examine Chinese medical doctors' scholarly publishing practices. The study will involve 4-5 interviews, each of which will take you about 30 to 40 minutes. It is hoped that this information will help to understand Chinese medical doctors' scholarly publishing experiences.

此研究的目的在於探究中國醫生的學術發表行為。您將被邀請參加四至五個訪談，每個訪談大約持續三十至四十分鐘。您所提供的信息將幫助增進現有對中國醫生的學術發表經驗的理解。

The study should not result in any undue discomfort. All information related to you will remain confidential and will be identifiable by codes only known to the researcher. Specifically, all the data collected will be coded by REN Songsha, and any identity-related information therein will be removed. Therefore, the participants in this study will be identifiable only to REN Songsha through the codes. Hard copies of the data will be kept in a locked cabinet that only REN Songsha has access to, and soft copies of the data will be kept in a pass-word protected laptop that only REN Songsha can access. Back-up hard/soft copies of the data will be kept in a separate locked place that only REN Songsha has access to. Thus, all information related to you will remain strictly confidential. The results of the study may get published but you will not be individually identifiable in these publications.

此研究不會對您產生任何不適與傷害。所有與您相關的信息都會嚴格保密，且僅研究者知悉相關數據代碼。具体而言，收集的所有數據將由任宋莎進行編碼，其中所有與身份相關的信息都將被刪除。 因此，本研究的參與者只能由任宋莎通過代碼來識別。 數據的硬拷貝將保存在只有任宋莎有權訪問的上鎖儲藏櫃中。數據的軟拷貝將保存在只有任宋莎可以訪問的受密碼保護的便攜式計算機中。 數據的硬/軟備份將保存在單獨的上鎖位置，僅限

任宋莎可以訪問。 因此，與您有關的所有信息將嚴格保密。 研究結果可能會被發表，但在這些出版物中您個人將不会被識別。

You will get free English editing services as compensation for your participation in this study. It should be made clear that by editing the investigator means checking grammar, clarifying meaning at the sentence level, and other language related assistance that does not contribute substantially to the content of your paper. Likewise, for ethical concerns, the investigator will not be able to rewrite or translate your paper. You have every right to withdraw from the study before or during the measurement without penalty of any kind. If you would like to obtain more information about this study, please contact REN Songsha (Email: songsha.ren@_____).

作為參研回饋，您將獲得免費的英文編校服務。此英文編校服務僅限於檢查語法，修改句法使文意貫通，或其他不會對您的論文內容做出實質貢獻的相關語言編校服務。在此，需要特別說明的是，出於研究倫理考慮，研究者將不會重寫或翻譯您的論文。在項目開始前以及項目過程中，您完全有權利無條件退出此項目。若您想知悉研究相關的更多信息，請聯繫任宋莎（郵箱：songsha.ren@_____）。

In the event you have any complaints about the conduct of this research study, please do not hesitate to contact Ms. Cherrie Mok, Secretary of the Human Subjects Ethics Sub-Committee of The Hong Kong Polytechnic University in writing (c/o Research Office of the University) stating clearly the responsible person and department of this study as well as the HSESC Reference Number.

若您對此項目的執行有任何不滿，請書面聯繫香港理工大學人類學科倫理小組委員會的秘書 Cherrie Mok 女士，並附上項目負責人以及項目編號。

Thank you for your interest in participating in this study.

感謝您參與此項研究。

REN Songsha 任宋莎

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THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

CONSENT TO PARTICIPATE IN RESEARCH
參與研究同意書

Chinese Medical Doctors' Scholarly Publishing Practices: A Multiple-Case Study

中國醫生的學術發表行為：多案例研究

I _____ hereby consent to participate in the captioned research conducted by REN Songsha (Student ID: 2003).

本人_____同意參與由任宋莎（学生编号：2003 ）開展的上述研究。

I understand that information obtained from this research may be used in future research and published. However, my right to privacy will be retained, i.e. my personal details will not be revealed.

本人知悉此研究所得的資料可能被用作日後的研究及發表，但本人的私隱權利將得以保留，即本人的個人資料不會被公開。

The procedure as set out in the attached information sheet has been fully explained. I understand the benefit and risks involved. My participation in the project is voluntary.

研究人員已向本人清楚解釋列在所附資料卡上的研究程序，本人明瞭當中涉及的利益及風險；本人自願參與研究項目。

I acknowledge that I have the right to question any part of the procedure and can withdraw at any time without penalty of any kind.

本人知悉本人有權就程序的任何部分提出疑問，並有權隨時退出而不受任何懲處。

Name of participant 參與者姓名 _____

Signature of participant 參與者簽署 _____

Name of researcher 研究人員姓名 _____

Signature of researcher 研究人員簽署 _____

Date 日期 _____

Appendix B: Interview Guide

Sample questions for the first round of interviews

1. Could you please share with me your Chinese and English learning experiences, respectively?
2. Could you please share with me your experiences of learning Chinese and English writing, respectively?
3. Have you ever taken any Chinese or English writing courses? If yes, please share your views on it/them.
4. Have you ever taken any Chinese or English academic writing courses? If yes, please share your views on it/them.
5. Do you think there are any differences between Chinese and English writing, both academic and general? If yes, please specify.
6. What do you think are the advantages and disadvantages of writing in English compared with Chinese writing? Why?
7. What are your main problems with Chinese and English academic writing, respectively? How do you cope with them?
8. Could you please describe your usual processes of writing in Chinese and English, respectively?
9. How would you rate your English-language competence? (e.g., making presentations in English, reading and writing English research article)
10. What do you think of your university/hospital's publication requirements for its medical doctors? What do you think are the possible driving forces behind them?
11. Does your department have any additional publication requirements for you? If yes, what do you think of them?
12. Do you think doing research is important for medical doctors? Why (not)?
13. What do you think of the relationship between medical research and clinical practice?
14. Are you interested in publishing your research? Do you think scholarly publishing is important for medical doctors? Why (not)?
15. Do you like writing and publishing your research in English or in Chinese? Why?
16. Do you have anything else to add?

Sample questions for the second round of interviews

1. Could you please share with me your experience of working on your manuscripts in English? What is the typical process when you prepare for an English manuscript? What struck you most?

2. Could you please tell me about the research on which your manuscripts report?
3. How did you choose the outlet for your manuscript? How did you figure that out?
4. What difficulties do you think Chinese scholars may experience in writing English manuscripts? Why?
5. What difficulties did you face in writing manuscripts in English?
6. What difficulties did you face in writing manuscripts in your field? Why?
7. Which sections of research articles (e.g., Introduction, Methods, Results, Discussion, Conclusion, etc.) do you think more difficult or easier? Why?
8. What do you think of the editors' and reviewers' comments on your manuscripts?
9. Do you think the editor/s of the international journal/s to which you submit your manuscript/s has/have a bias against Chinese scholars? Why?
10. Which section(s) of your manuscript/s is/are often required to be revised by the reviewers or editors? Why?
11. Did you have any difficulties in understanding/responding to the editors' and reviewers' comments? What were the difficulties?
12. How did you deal with the difficulties? Who/What kind of resources did you turn to when you attempted to deal with the difficulties? How useful did you find each kind of resources? Did any of your earlier experiences (e.g., in your Master/PhD studies, your overseas experiences, etc.) happen to be helpful?
13. How did you respond to the editorial decision (e.g., accept, major/minor revision, reject)?
14. What do you think can help your manuscript/s be accepted by the journal/s you submit to? Why?
15. What do you think you have learned from the editors' and reviewers' comments?
16. Did you co-author manuscript/s in English? What role did you play in this process? What do you think you have learned from this process?
17. Do you have any advice for other scholars about writing and publishing journal papers in English?
18. Is there anything else you'd like to add?

Sample questions for the third round of interviews

1. Could you please share with me why you aspired to publish your research?
2. How do you like your experience as a medical doctor so far?
3. Could you please fill in me on your clinical practice? How was that related to your scholarly publishing?
4. Could you please share with me your experience of writing your medical notes? How was it related to your scholarly publishing?
5. How would you rate your academic writing ability?

6. What role do you think English scholarly writing has played in your career as a doctor? What role do you think it will play in your future career?
7. What do you think you could have done better in terms of your whole professional experience, especially your clinical practice/scholarly publishing/medical research experience/medical teaching practice?
8. What do you think the university/the hospital could have done better to facilitate your professional development, especially your scholarly publishing efforts?
9. What do you think your department could have done better to facilitate your professional development, especially your scholarly publishing efforts?
10. What suggestions would you give to new medical doctors to help them with their professional career, especially their scholarly publishing efforts?
11. Is there anything else you'd like to add?

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