



Cultivating Global Scholars: Delving into Chinese Doctoral Students' Integration Experiences at Finnish Universities Through an Institutional Logics Lens

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Received: 12 April 2023 / Accepted: 3 May 2023
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Abstract

International doctoral students are key actors in globalized knowledge society. While the value of international doctorates lies in the ability to develop and leverage knowledge across borders and cultures, such competencies can be acquired only when students successfully integrate into the host systems or universities in their international mobility experiences. However, international doctoral students encounter multiple challenges in integration, highlighting a mismatch between their expectations and the practices at the host universities. This article unpacks this mismatch and its causes from an institutional logics' perspective through interviews with ten Chinese doctoral students and four Finnish supervisors. We found that Chinese students' expectations of doctoral education were largely influenced by the institutional logics of profession, bureaucratic state, and family, whereas the contexts of Finnish universities were mainly informed by the logics of profession, democratic state, and corporation. The disparity in logic constellations led to the students' confusion about their role and relations with supervisors. Further, this study shows that reciprocal learning in intercultural supervision can mitigate logics conflicts and create opportunities for innovations in doctoral education in the host university. We call for more efforts to reconcile the logics conflicts that affect students' integration, as this could foster organizational innovation.

Keywords International doctoral students · Integration · China · Finland · Higher education · Institutional logics

Introduction

A sustainable knowledge society is characterized by globally interlinked research and innovation networks (van Der Wende, 2020), wherein knowledge flows and innovation processes take place in multiple geographical locations, often across national borders (Sotarauta et al., 2016; Zheng & Cai, 2022). In the process of globalization, these networks also constitute the grids of diverse cultural values

Extended author information available on the last page of the article

in which features of cultures from different societies may interact and generate a new cultural transformation (Kafka & Kostis, 2021). This demands that knowledge workers, typically doctoral students and their supervisors as global scholars (Rule et al., 2021), not only produce new knowledge but are also competent in transferring knowledge between different countries and cultures (Bilecen & Faist, 2015), thus contributing to global scholarship (Rule et al., 2021). Here, “global scholars” refer to scholars who are able to “straddle different localities in a variety of ways” (Rule et al., 2021, p. 1), which implies the importance of intercultural competency in adapting to the incremental changes of cultural background in global mobility (Kafka & Kostis, 2021). Achieving such competency and meeting the demands arising from mode 3 knowledge production (Carayannis & Campbell, 2012) in innovation ecosystems can be ensured or enhanced by successfully managing knowledge workers’ doctoral training across national contexts. Mode 3 knowledge production extends from mode 1 (discipline-based) to mode 2 (practical and interdisciplinary) (Gibbons, 1998), and it is defined as “the nexus or hub of the emerging twenty-first century innovation ecosystem, where people, culture, and technology meet and interact to catalyze creativity, trigger invention, and accelerate innovation across scientific and technological disciplines, public, and private sector and in a top-down, policy-driven as well as bottom-up, entrepreneurship empowered fashion” (Carayannis & Campbell, 2012, p. 4). While the transition toward mode 3 knowledge production implies the importance of training knowledge workers in a global and intercultural environment, it should not be taken for granted that doctoral students can develop their competency in mode 3 knowledge production to be able to cross borders and cultures smoothly by enrolling in an international training program (do Amaral et al., 2022; Xu, 2017).

When international doctoral students leave their home countries to study in host countries’ higher education systems, they face various challenges in integrating into the host system (Elliot et al., 2016a, b; Laufer & Gorup, 2019). Typically, integration occurs when students develop attachments with persons and environments in the host institutions (Weidman & DeAngelo, 2020a). The ability of international students to progress and integrate with their host universities is essential for doctoral students’ fulfilling their expected career development as well as realizing the economic and cultural added value to the host institutions (do Amaral et al., 2022). Unlike domestic doctoral students, international doctoral students are not familiar with the host institutions or their situated higher education systems, the external social context, culture, or language, and are more vulnerable to the hardships of the integration process, including academic challenges, financial problems, and social exclusion (Laufer & Gorup, 2019; Wang, 2019). Without sufficient understanding of international students’ cultural backgrounds, host supervisors may not even be aware of these hardships in the students’ learning process (Wang, 2019).

While the effective integration of doctoral students into host institutions can deliver competent, confident, and calm researchers (as opportunities) who can develop social networks, new friendships, and share knowledge and information (do Amaral et al., 2022), conflicts between different value systems tend to constrain doctoral students’ research progress, limit their professional identity development, and even lead to their

attrition or permanent departure from academia (challenges) (Interiano & Lim, 2018; Yang, 2019). While aware of this, we should also understand that the challenges and opportunities related to institutional differences (e.g., faced by international doctoral students) are two sides of the same coin (Cai, 2023). Considering doctoral supervision as a process of knowledge co-construction between doctoral students and supervisors, supervision across cultures may offer additional opportunities for generative border-crossing knowledge (Qi et al., 2021). The maximized outcomes of international doctoral education can be achieved only when the challenges are turned into opportunities. The disparity encountered by international students can enable them to develop intercultural competency in their learning processes (Yang, 2019).

According to Cai (2023), who drew on the insights of the concept of institutional arbitrage (Perkmann & Phillips, 2011) to better realize the challenge–opportunity conversion, the disparate value and belief systems that international students encounter during their mobility experiences must be identified and navigated. These differences may impede their integration into host country systems, specifically in relation to the discordance between their preconceptions and the actualities they encounter. As revealed by the literature analysis in the following section, little research has delved into the contrast between the expectations of Chinese doctoral candidates stemming from their prior experiences and the structural, social, and cultural milieu they confront in Finnish host institutions, nor the repercussions of these variances on their assimilation into the academic community.

This study examines such issues by focusing on the integration of Chinese international doctoral students into Finnish universities. This choice is based on three reasons. First, while there is a substantial body of literature scrutinizing the experiences of Chinese students in Anglo-Saxon countries, scant attention has been given to the emergence of Chinese students who opt to study in European nations that use less widely spoken languages, such as Finland (Li, 2020; Sakurai et al., 2014; Wang, 2019; Zheng, 2019). Second, in the last two decades, international doctoral students have become an increasingly important group in Finnish universities and deserve more research attention. According to the latest statistics, from 2000 to 2021, the number of international doctoral students in Finland increased from 834, accounting for 7.7% of the total population of doctoral students (10,767), to 4662, representing 25% of doctoral students (18,612) (Vipunen, 2022a, b). Although there were no available statistics showing accurate numbers of Chinese international doctoral students in Finland currently, China was the second most popular origin of international student mobility to Finland from outside Europe (EDUFI, 2022). In 2022, despite the impact of the pandemic, 212 new Chinese international students came to Finnish universities for either degree or short-term studies Finland (EDUFI, 2022). Third, since Chinese and Finnish doctoral education systems have demonstrated several differences in terms of system and institutional governance, supervisor–supervisee relations, and quality assurance (Zheng et al., 2019), they provide a solid testbed to investigate challenges and opportunities. Wang (2019) noted that Chinese post-graduate students may hold mismatched expectations regarding the supervision and learning processes in Finnish universities. Accordingly, we ask the following research question: how have the mismatches of expectation and reality affected Chinese doctoral students' integration into Finnish host universities?

The rest of the paper is structured as follows. We first review past studies that have contributed to our understanding of international doctoral students' integration experiences and define the knowledge gap that this study is aimed at addressing. We then present the theoretical and methodological approaches used in the study. Subsequently, we share the major findings of the study and conclude by discussing the implications for practice and directions for future studies.

Literature Review

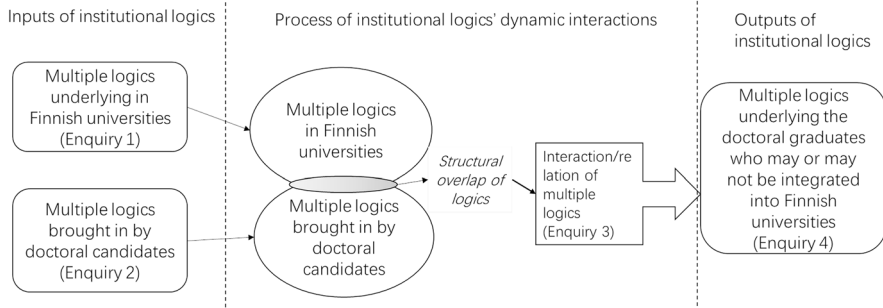
The abundant research on international doctoral students' learning experiences mainly covers three aspects: the acculturation of international doctoral students, intercultural experiences in doctoral supervision, and the international environment's influence on students' doctoral experiences. Initially, a number of researchers investigated doctoral students' motivations for choosing their host countries from an acculturation perspective (Zhai et al., 2019), their integration into the local cultural environment (Lynch et al., 2018), and their coping strategies in the acculturation process (Elliot et al., 2016a, b; Nomnian, 2018). Among them, only Wang (2019) explored the acculturation of Chinese international postgraduate students in Finland by interviewing 16 Chinese students at the University of Eastern Finland, including 9 doctoral students. The study indicated a mismatch between the Chinese students' inherited learning culture and the Finnish learning culture, and the configuration of the two cultures contributed to their development as intercultural learners (Wang, 2019). Further analysis of the acculturation of Chinese doctoral students in Finland suggested that later, becoming aware of the mismatches, Chinese doctoral students usually negotiated their original learning culture with Finnish academic expectations and gradually developed a new learner identity (Wang & Riih , 2021). Previous studies have confirmed that the differences between international doctoral students' expectations, inherited from earlier experiences, and the structural, social, and cultural reality that they encountered in host institutions should not be neglected—a conclusion that lends support to the current study.

Later, a smaller group of studies further interpreted these differences in the doctoral process and focused more on the intercultural or transcultural doctoral study process (Manathunga et al., 2023; e.g., Sillitoe et al., 2005; Singh, 2009; Winchester-Seeto et al., 2014). This stream of studies noted that an awareness of the cultural differences in the aspirations of international doctoral students and their host supervisors can promote effective intercultural supervision and reciprocal learning between supervisors and students, thus empowering doctoral graduates to reform their home countries' higher education systems when they return (Shen et al., 2016; Yang, 2017). In particular, Manathunga et al. (2023) study indicated that the Chinese cultures and Australian indigenous philosophies of time and histories can benefit policymakers and supervisors in Australia in rehumanizing doctoral education and meeting cross-cultural doctoral candidates' specifications in non-linear, back-and-forth research journeys. On the other hand, a lack of awareness of cultural differences could result in misunderstandings between supervisors and doctoral students, which may diminish the quality of doctoral supervision (Wu, 2017).

A third group of studies aimed to uncover the factors contributing to an effective intercultural learning experience by mapping the situated transnational environment (Lee & Elliot, 2020; Phelps, 2013; Rizvi et al., 2010; Shen, 2018). The situated international environment provides opportunities for international doctoral students to develop their international academic network, collaboration, friendship, and trust among academic peers, which may benefit their career development in the long term (Bilecen & Faist, 2015; Shen, 2018).

Despite the rich literature on international doctoral students' learning experiences, no study has yet explored the differences between Chinese doctoral students' expectations inherited from their previous experiences and the structural, social, and cultural reality they encounter in their host institutions in Finland. Furthermore, the impacts of these differences on students' integration process have yet to be explored. In the first stream of studies on doctoral students' acculturation, researchers were aware of the significant impacts of the differences, but they did not concretize why and how these differences contribute to the challenges faced by doctoral students. This is understandable because the acculturation approach tends to consider the broader social and cultural environments to which individuals adapt. An international doctoral student is embedded in an environment of not only the host university but also the local society. Such a broad perspective cannot provide direct knowledge support to the host universities or to the international doctoral students facing the challenges of the acculturation process. Wang's (2019) study is the closest to this research quest. However, without including Finnish supervisors' voices in the study, as acknowledged in its conclusion, it can only partially reflect the mismatched expectations. It also only unpacked what the mismatched expectations were and how Chinese students coped with them without explaining why and how the mismatches influenced their integration in Finnish universities. The second stream on intercultural supervision emphasized the doctoral supervision process and the interaction between supervisees and supervisors, but not doctoral students' interactions with other actors in the host institutions. The third stream of research covering environmental impacts on doctoral experiences sheds light on the environment's contribution to doctoral students' integration with disciplines rather than institutions.

Nevertheless, the findings from the literature shed light on our research in two respects. First, they imply two important factors when researching international doctoral students' institutional integration experiences: students' aspirations from their past experiences and the sociocultural realities of the host institutions (Rizvi et al., 2010). The factors under consideration are consistent with the theoretical underpinnings of the input-process-output framework of doctoral socialization (Weidman & DeAngelo, 2020b; Weidman et al., 2001). Furthermore, these factors highlight the importance of directing attention toward the intricacies of institutional structures, specifically the variations in value systems and belief structures between students' places of origin and their host institutions. All these factors provide information for developing an analytical lens for our research.



Source: The Authors

Fig. 1 Conceptualizing doctoral students' integration process from the perspective of institutional logics

Theoretical Framework

In this study, we propose to understand doctoral students' integration into host universities as part of their socialization process (Weidman & DeAngelo, 2020b), and further, we scrutinize this process from an institutional logics perspective (Thornton et al., 2012). In so doing, we propose a new analytical framework for understanding international doctoral students' integration into host universities (see Fig. 1). Next, we introduce both theoretical lenses and describe the construction of the analytical framework by combining them.

Input–Process–Output Framework of Socialization

According to the socialization framework proposed by Weidman and DeAngelo (2020b), the primary socialization process is understood as a process of interpersonal interaction, integration, and learning. "Integration" is a key concept of the doctoral socialization process, which "occurs as students develop attachments to persons and environments, both within and external to higher education institutions" (Weidman & DeAngelo, 2020b, p. 8).

Noticing the critique of the traditional, single-directional interpretation of integration in the past, which largely neglected students' cultural background as an important input, Weidman and DeAngelo (2020b) proposed that we understand the integration process as a bidirectional reciprocal relationship between the personal cultural capital of students and the social capital of the host universities. Here, personal (cultural) capital refers to individual factors from doctoral students' backgrounds, such as their aspirations for doctoral education before beginning their doctoral studies, which are important inputs for doctoral socialization brought to host institutions by doctoral students. After entering the host universities, doctoral students interact with other actors both within (institutional history and culture) and external to (disciplinary/professional communities and personal communities) the these universities, through which they accumulate social capital from the host universities—that is, the social relationships between doctoral students and other actors

in the institutions. Weidman and DeAngelo (2020b) remarked that the reciprocal and interactive agencies of the two capitals and their collective impacts contributed to the outputs of the socialization process (including integration); however, the reciprocal agencies remain a “black box” that needs to be explored.

Institutional Logics Perspective

In recent years, the institutional logics perspective has been increasingly used in higher education research (Cai & Mountford, 2022), particularly studies on issues of doctoral education (Gu & Luo, 2016; Mars et al., 2014; Zheng et al., 2018, 2019). Institutional logics refer to “the socially constructed, historical pattern of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality” (Thornton & Ocasio, 1999, p. 804). It seems to offer more accurate diagnoses of the interactions between elements/inputs from doctoral students’ backgrounds and from the context of the host institutions, which can be employed to unpack the “black box”.

As shown in Table 1, previous studies have identified five noticeable institutional logics—state logic, profession logic, family logic, corporation logic, and market logic—that serve as sense-making frames for actors (e.g., doctoral supervisors, doctoral students, and heads of doctoral schools) in the context of doctoral education, aiding their decisions and actions within their social reality (Zheng, 2020; Zheng et al., 2018). The manifestations of these field-level logics, as instantiations of the ideal-type societal logics (Mountford & Cai, 2023), may vary across cultures and systems, thus breeding variants of a certain logic (Zheng, 2020). For example, depending on the context, a logic of state can be based on a democratic state, which extends popular control over human activities through voting and citizens’ participation, or a bureaucratic state that rationalizes and regulates human activity through legal and bureaucratic hierarchy (Friedland & Alford, 1991).

While previous research has reported the presence of state logic in both Finnish and Chinese doctoral education systems, the Nordic welfare state system in Finland entails a logic of a democratic state, while the Chinese system follows a bureaucratic state logic (Zheng et al., 2019). Similarly, variants of family logic may involve an extended family in China and a nuclear family in Finland, and a logic of profession may vary based on discipline-specific features (Zheng, 2020). The interaction of these multiple logics, including the variants, can be competing, complementing, exerting impacts equally, or with one dominating the others, which together constitute the complexity of the institutional environment and guide the development of the doctoral process (Zheng, 2019). The extent of the influence/power of a certain institutional logic may change (weaken or strengthen) in the process of interaction with other institutional logics, and such institutional change should be understood as correlational rather than causal, like the independent and inter-relational musical dimensions in an equalizer (Zheng, 2020).

Table 1 Ideal types of institutional logics in the context of a doctoral education system (source: Zheng (2020), p. 67)

Ideal type	Theoretical assumptions
State logic	In the doctoral education system that follows the state logic, actors with bureaucratic power, such as state governments and university administrators, exert the greatest influence. The system is developed through government policies and regulations, routine administration, and the redistribution of resources; doctoral education is regarded as a public good that represents the interests of the state and the government.
Profession logic	Profession logic in the doctoral education system dictates that an individual's status rests on their personal expertise in disciplinary research. Doctoral supervisors, who have greater expertise in the discipline and a more respected academic reputation, exert the most authority. Doctoral students, as apprentices of doctoral supervisors, attempt to enhance their personal expertise and status in the profession
Family logic	In the doctoral education system governed by family logic, a research family, which comprises a supervisor and their supervisees, becomes the basic unit of the system. A doctoral supervisor acts as the patriarchal leader of the supervision family, and supervisees become their academic children. The doctoral patriarchal leader and their academic children behave like family members, and the relationship between them is based on patronage and reciprocity.
Market logic	In the doctoral education system that follows the market logic, market and market-like activities are adopted in the system, and there is increased competition (for resources) and cooperation within the industry. Doctoral degrees and doctoral graduates are profitable commodities and valuable assets in the academic market. The pursuit of doctoral education is carried out with a desired to increase in actors' profits.
Corporation logic	In the doctoral education system governed by corporation logic, actors emphasize the efficiency of research resources and performance-based management. On-time graduation, academic publications, and other activities that demonstrate the effectiveness and efficiency of doctoral education management are encouraged. Doctoral students are managed through a contractual relationship, with universities or supervisors acting as employers and doctoral students acting as employees.

Analytical Framework

Following the institutional logics perspective, we attempted to understand the integration of doctoral students from the input–process–output model, as shown in Fig. 1. When prospective doctoral students enroll in universities and become doctoral students, the integration process begins formally. The institutional environment for doctoral students' integration into host institutions is underpinned by multiple institutional logics from the environment of the host universities and from doctoral students' positions and backgrounds (Zheng, 2019). At this critical point, multiple institutional logics from doctoral students and host institutions undergo a structural overlap and begin to form the constellation of multiple logics that underlie doctoral students' integration experiences. After structural overlap, the relationship between multiple logics may be competitive or complementary (Zheng, 2020). These interactions may affect the doctoral students' integration process either by introducing challenges in reconciling the logics or by ushering in new institutional change that

provides opportunities for innovation. The newly constituted logics constellation will continue the reconciling process until a relatively stable structure is achieved among multiple logics, which provides sense-making frames for doctoral students inside the host institutions, thereby affecting their integration.

Upon successful integration, doctoral students are integrated into the context of the host institutions formally and informally, guided by multiple logics reconciled from the integration process. If they fail at integration, they will find themselves marginalized or considered outsiders in the host universities, which reflects a termination of the institutionalization of multiple logics from the previous stage. To better comprehend the integration experiences of Chinese doctoral students in Finnish host institutions, and in accordance with this conceptual framework, we have broken down the main research question into four specific inquiries that we aim to explore.

Inquiry 1: What were the multiple logics contributing to Chinese doctoral candidates' anticipated integration experiences?

Inquiry 2: What were the multiple logics in the Finnish universities that affected the international doctoral students' integration?

Inquiry 3: What were the conflicts of logics that affect the process of Chinese doctoral students' integration into Finnish universities?

Inquiry 4: In what ways can the logics affecting the integration process of Chinese doctoral students be reconciled so that they lead to integration?

Research Methods

Since this study explored an under-researched phenomenon, we employed a qualitative research approach, which is suitable for understanding “the contexts in which participants in a study address a problem” (Creswell & Poth, 2018, p. 46). More specifically, case study was chosen as a research strategy for this study, because it allows us to gain an in-depth investigation of a contemporary phenomenon within its real-life context (Yin, 2014), in the situation of this study: the integration of international doctoral students within a cross-cultural context. Thus, we define the analysis unit of this study as a group of international doctoral students in a cross-cultural context, within which they integrate with the supervisors, universities, situated doctoral education system and other actors in the context. The Chinese international doctoral students in Finnish universities was chosen as a case to explore their integration within their real-life context: the Finnish universities. Semi-structured interview data were the main data source for the case study, complemented by documentary data, including the host universities' rules and regulations, and related academic literature of Finnish doctoral education. Semi-structured interviews were used as the main data collection method for two reasons: they allowed us to preplan interview protocols following the guidance of the analytical framework, while also allowing us to “generate free-ranging conversations about research topics” (Roulston & Choi, 2018, p. 233) and collect new information in a wider frame. We developed the interview protocols to guide the data collection, as shown in Appendixes 1 and 2. Because the interviews with Chinese doctoral students were carried out in Chinese, which was the students' mother tongue,

the interview protocol for the Chinese doctoral students (Appendix 1) was originally designed in Chinese, and the English translation was added later for the readers' reference in this article. The interviews with the Finnish supervisors, which was conducted in English, is shown in Appendix 2.

Through semi-structured interviews, we collected research data on Chinese doctoral students' expectations about doctoral education, their observations of the practices and phenomena in their situated Finnish doctoral education systems, and their reflections on their integration into the host institutions. As shown in Table 2, we conducted 14 interviews. Each interview lasted from 1 to 1.5 h. The interviews were recorded after obtaining consent from the participants and were later transcribed.

In June 2017, we sent out an interview invitation via the WeChat Group-Chat of Chinese Students in Finland, with the assistance of the Chinese Embassy in Finland. Based on the voluntary responses and a snowballing strategy, we managed to interview 10 Chinese international doctoral students studying in five different Finnish universities, including University of Helsinki, Aalto University, University of Jyväskylä, University of Oulu, and University of Turku. We stopped using the snowballing recruitment strategy when we noticed that the data collected from the last participant barely produced any new information. The participating doctoral students belonged to different disciplines, including sciences, social sciences, and engineering. Based on the participants' preferences and convenience, we conducted interviews in person by traveling to their cities or through online WeChat audio calls. To protect participants' confidentiality, their details were anonymized in the study, and in the data analysis, they are referred to as A1 to A10.

After a preliminary analysis of the data from Chinese students, realizing the importance of supervisors' perspectives to complement students' perceptions, we interviewed one doctoral program coordinator and supervisor (B4) and three Finnish

Table 2 Interview information (source: the authors)

Name	Role	Time of interview	Mode of interview	Discipline	Gender
A1	Doctoral student	June 2017	Face to face	Natural sciences	Male
A2	Doctoral student	June 2017	Online	Medicine	Female
A3	Doctoral student	June 2017	Face to face	Social sciences	Female
A4	Doctoral student	June 2017	Face to face	Social sciences	Female
A5	Doctoral student	June 2017	Online	Engineering	Male
A6	Doctoral student	June 2017	Online	Natural sciences	Female
A7	Doctoral student	June 2017	Online	Social sciences	Male
A8	Doctoral student	June 2017	Face to face	Natural sciences	Female
A9	Doctoral student	June 2017	Online	Natural sciences	Female
A10	Doctoral student	July 2017	Online	Social sciences	Male
B1	Doctoral supervisor	September 2020	Online	Social sciences	Female
B2	Doctoral supervisor	September 2020	Online	Social sciences	Female
B3	Doctoral supervisor	September 2020	Online	Social sciences	Female
B4	Program coordinator and doctoral supervisor	September 2020	Online	Social sciences	Female

doctoral supervisors (B1 to B3) in September 2020. By searching the Internet, we discovered that B4 was a program coordinator for a Sino-Finnish joint doctoral training project and contacted her for an interview. Besides the role of coordinator, B4 participated in doctoral supervision indirectly as a facilitator for other supervisors. Introduced by B4, we interviewed the other three Finnish doctoral supervisors in their project who had experience supervising Chinese doctoral students. Due to the impacts of the pandemic in 2020, all the interviews with supervisors were conducted remotely via Teams. It was not planned, but later in the data analysis, we discovered that B2 was the doctoral supervisor of A4. We asked for and obtained confirmation from both interviewees regarding this later. Except for A4 and B2, there were no corresponding relationships between the interviewed doctoral students and supervisors.

We were aware that the different modes of data collection, such as face-to-face meetings and online video/audio calls, could have an impact on the quality of interviews, thus affecting the robustness of the research (Khan & MacEachen, 2022). While online interviews allowed us to include more participants by breaking down barriers of geography, time, and space or delimiting the impacts of the pandemic, there were challenges in developing rapport and building trust, avoiding technological disruptions, capturing nonverbal expressions, providing instant emotional support, and similar (Khan & MacEachen, 2022). To reduce the impact of these challenges, we sent the interview protocols to interviewees in advance so they could prepare for and familiarize themselves with the research topic. We also prepared a backup online meeting link (e.g., in Zoom) and proactively invited the participants to turn their video cameras on during interviews if they felt comfortable.

In the next stage of data analysis, we transcribed all the interview data into text. Some quotations from the participant doctoral students were translated into English, which was needed to report the research findings. With the assistance of Atlas.ti 8, we coded the data according to the four core questions listed in the previous section. The coded data were interpreted by referring to the ideal types of institutional logics in the context of a doctoral education system (see Table 1). Relevant academic literature on Chinese international doctoral students in Finland was also included in the study to supplement the interview data analysis. Subsequently, we summarized the underlying logics in the inputs, processes, and outputs of the doctoral students' integration process and the changes in the multiple logics underlying doctoral students' positions in this process. The results of the analysis are presented in the next section.

Analysis

As shown in Fig. 2, the beginning of the integration process was marked by a constellation of logics of profession, bureaucratic state, and family, brought into the institutional environment by the Chinese international doctoral students from their previous experiences and observations. Meanwhile, Finnish universities offered another important input to the institutional environment for integration: the dominant institutional logics of profession, democratic state, and corporation. Clearly, the two sets of multiple logics are not identical or fully compatible. Thus, the beginning of the integration process was characterized by an incompatibility between the two logic

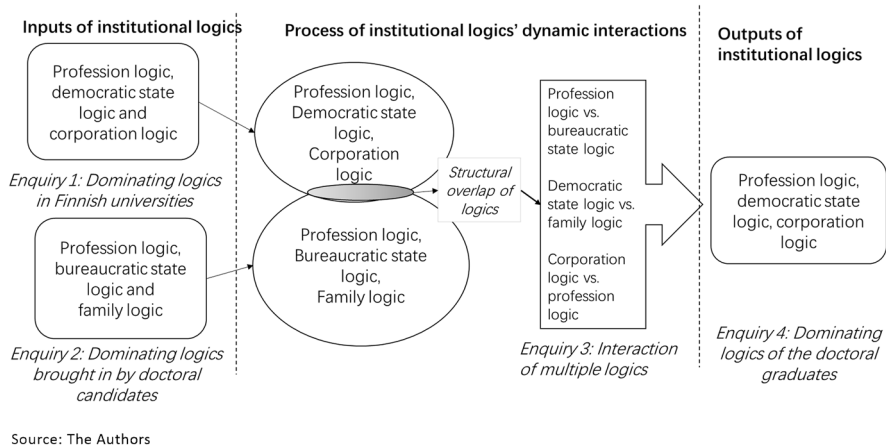


Fig. 2 The change in institutional logics in Chinese doctoral students' integration into Finnish universities

constellations, which provided different and sometimes conflicting sense-making frames to the Chinese international students and possibly contributed to their confusion about building relationships with the host supervisors and universities.

To be more specific, three pairs of conflicting logics were clearly noticeable in the integration process: the profession logic in Finland and the bureaucratic state logic from China, the democratic state logic in Finland and the family logic from China, and the corporation logic in Finland and the profession logic from China. Throughout the integration process, these multiple logics continued to interact and reconcile. Consequently, they aligned with the underlying logics in the Finnish universities. This implies that the interviewed Chinese doctoral students were eventually integrated into the local context to a large extent, despite the challenges in the process. Next, we present our analysis in detail, in line with the four inquiries and inputs from the analytical framework.

Inquiry 1: What Were the Multiple Logics Contributing to Chinese Doctoral Candidates' Anticipated Integration Experiences?

The data analysis showed a strong influence of profession logic, family logic, and state logic on Chinese international doctoral students' expectations of doctoral studies, while market logic and corporation logic exerted a minor influence.

First, a strong influence of profession logic was reflected in Chinese doctoral students' expectations of doctoral supervision and mainly in their process of choosing supervisors. Half of the interviewed Chinese doctoral students (A3, A5, A6, A7, and A10) had selected their future supervisors based on their academic merits and research interests. A10 shared a story about how he found his future supervisor by reading academic literature:

At that moment, I didn't even know about X University (the host university). Suddenly, I read a paper written by my current supervisor, and then I noticed that he was from X University in Finland. That's when X University came into my field of interest. At the time, my supervisor was overseeing a research project that was exactly what I wanted to continue research on. So, I wrote him an email, and asked him if there was a chance for me to do a PhD here. I also explained that I would apply for CSC funding to secure financial support for my PhD. He replied and said that if I could get CSC, he would send me the acceptance letter. That's how I came to Finland.

Second, a strong influence of family logic was evident in Chinese doctoral students' expectations of doctoral education. B2 noted that Chinese students not only expected to learn from the "*experiences of [their] supervisors,*" but also hoped to receive some kind of "mentorship in life" from their supervisors. This reflects the concept of academic parents and children in keeping with family logic. The interviewed Chinese doctoral students also expected a close-knit supervisor–supervisee bond. For instance, A3 said, "I thought there would be a research family or a research community where we can communicate more with one another. But when I came, I realized most of the time I was working on my own, alone." Some interviewed Chinese doctoral students also expected a hierarchical relationship between supervisors and supervisees, like between fathers and sons in Asian society. "Because in China it is often hierarchical...I often placed myself in a humble position," A3 explained.

Third, a relatively strong bureaucratic state logic was evident in Chinese doctoral students' expectations of greater regulations on the processes and outputs of doctoral education. The interviewed doctoral students (e.g., A1, A5, A9, and A10) mentioned that they had expected a regulated doctoral journey based on their experiences as master's students and their observations of other doctoral students in China. A5 described his experience of acquiring a master's degree in China in the following words:

From Monday to Friday, of course, you had to work hard. Usually from 8 a.m. in the morning to 9 p.m. in the evening, we had to be in the lab. There was a check-in form, and we had to check in every day. We usually went back to the dorm around 11 p.m. or midnight.

Besides process-based regulations, the candidates also expected more output-oriented and task-driven doctoral study. A9 stated:

I thought doctoral study was to complete a series of tasks. Like my experience in my master's program, I was in a research project, I was supposed to finish some tasks. After I completed those (set) tasks, I could graduate. So doing a PhD is to complete the pre-defined tasks.

Finally, Chinese students' preconceptions of doctoral study showed hints of corporation and market logics. Influenced by market logic, A3 shortlisted her future university based on global university rankings, and she wanted to attend a university with high international competitiveness, believing it would enhance her employability in the Chinese academic market. On the other hand, driven by

corporation logic, A6 tried to avoid developing employment relations with the host university by applying for external funding:

I was worried at that point. If I got the position, I would have to work on the project related to the position, which I did not want to. So I thought I should have my own funding.

Inquiry 2: What Were the Multiple Logics in the Finnish Universities That Affected International Doctoral Students' Integration?

We found that the logics of profession, corporation, state, and market in the Finnish doctoral education system may have affected the relations between doctoral students, Finnish host institutions, and Finnish supervisors. A slight influence of market logic was observed in Finnish universities' expectations of doctoral students applying for funding for their doctoral research. No influence of family logic was detected in the data. However, we do not claim that this logic was absent; rather, its effects were more subtle.

First, profession logic governed doctoral supervisors' expectations that (1) doctoral students would become independent researchers and (2) the relations between doctoral supervisors and students should be formal, structured, and professional. The influence of profession logic was also evident in their views on the nature of international doctoral supervision. B3 said:

I think we (Finnish doctoral education system) have a more structured (professional) system in our supervision and doctoral studies because traditionally, it has always been like this. We have this idea that when a person has a master's degree, he or she already has quite good research qualifications. Then, doctoral students are more like independent researchers.

By "research qualifications," the supervisors interviewed were mainly referring to research methods or skills. In the interview, B2 shared the same expectations of doctoral students as B3. Influenced by profession logic, B2 added that "curiosity" was the key to providing good supervision to doctoral students from different cultures.

If you are a researcher curious about how the other person thinks and what their perspectives are from other cultural approaches, you would also be interested to hear more about the background and understanding of the international students. This is why these issues are important for you (students from other cultures).

Second, relations characterized by equality between doctoral supervisors and doctoral students were frequently mentioned by the interviewed supervisors and students, which reflected the logic of democratic state, rooted in the Nordic welfare state ideology of Finnish society. In the interview, B1 recalled Finnish universities' fight to achieve equal supervisor–supervisee relations:

You've perhaps heard already from the other Finnish people about what the cost has been for us (to fight for equality). It was very hierarchical before. A

very, very deep hierarchy between students and professors that we really had to fight with the tradition that our students wanted to serve us.

Recounting the hardships, B2 reflected on her perception of a supervisor's role in this manner:

You are now in the role of a supervisor, and you can demand something academic related (from the students), and then the human relationship can be something different. But besides that, there should be no hierarchy. I think a good supervisor should be like that.

Interestingly, many of the interviewed students mentioned that they were surprised when their supervisors treated them equally rather than hierarchically. A2 said:

I think the best thing that I discovered here is the equal relationships between people, especially between supervisors and students. If it were in China, I would be very afraid of the supervisors, but here, you don't need to call them 'Professor' or 'Doctor,' and you can call them by first names, right? I think this is pretty good. You know what? When I arrived, I told my supervisor about my flight information, and he said he would come and pick me up. At that moment, I was not so familiar with him. I wasn't even courageous enough to ask him whether he would come in person or if he would ask some students to do that (like in China), because I knew in China it wouldn't happen, that a professor would come in person. When I arrived, I saw it was him there holding a card with my name to greet me. I was so shocked! Oh my god! It was a professor waiting for a student! It was really shocking for me.

Third, a strong corporation logic was apparent in the corporate-like management practices of Finnish universities regarding doctoral students. Following corporation logic, doctoral students with and without contractual relations were managed under different tracks, such as employed doctoral researchers, grant researchers, or self-funded doctoral students. Employed doctoral researchers entered into contractual relationships with the university and were incorporated into the university staff management system, while others, such as grant doctoral researchers, signed a facilities agreement with universities to gain access the research facilities. The contractual relationship influenced Finnish supervisors' perceptions of the role and workload of doctoral students. A10 explained how he tried to be involved in teaching and project research but was stopped by his supervisor:

Finnish supervisors treat you as a colleague or an employee. Therefore, when they think about giving you some work (outside your PhD), they need to think about the salary and contract first.

While Chinese doctoral students perceived a project opportunity as learning or experience accumulation, Finnish supervisors considered it a job and evaluated the funding required before developing a contract.

Inquiry 3: What Were the Conflicts of Logics That Affect the Process of Chinese Doctoral Students' Integration into Finnish Universities?

A comparison of the multiple logics—from Chinese doctoral students' expectations and from Finnish universities—highlighted that the two sets of institutional logics were different, even though they had some logics in common. While family logic was prominent in Chinese students' perceptions of doctoral study, it was barely noticeable in the context of Finnish universities. The influence of corporation logic dominated the management of doctoral students in Finnish universities, but Chinese doctoral students' expectations were barely affected by it. The data analysis further clarified that the major source of conflicts between the institutional logics pertained to the above two logics: the family logic of Chinese students' previous experiences and the corporation logic of the Finnish system.

The major challenge for Chinese doctoral students at the beginning of the integration process was the mismatch between their expectations and the social reality of Finnish universities—at the root of which was the conflict between China's family logic and the logic of the welfare state in Finland. The interviewed doctoral students (except A2 and A5) considered themselves the “academic children” of their supervisors and placed themselves in a lower position. However, driven by the democratic state logic of the Finnish doctoral education system, Finnish supervisors expected supervisor–supervisee relations to be more equal. This mismatch and the conflicting logics underlying it were a source of confusion for the Chinese students at the beginning of the integration process. A5 captured this as follows:

Since I came, I still haven't gotten used to it. The supervisor treats you with respect. It seems like an equal relationship between us, but (unlike close relationships in China), he doesn't ask about your daily life. If you think you are important to him, he doesn't check on your work very often. Do you think you are not important to him? I wouldn't say that either. I haven't figured it out. You know what? I only know that it is different from that in China.

It should be mentioned here that if the supervisors and students were not aware of these logics conflicts, they would find it difficult to develop trust or mutual understanding in their supervisor–supervisee relationship.

The second noticeable challenge was the difference between Chinese doctoral students' expectations of a regulated, monitored doctoral learning process—behind which is the bureaucratic state logic that governed their experiences in the Chinese educational system—and the advocated autonomy, endorsed by the logic of profession in the Finnish universities. At the beginning of their integration process, some Chinese doctoral students did not realize that they should manage their doctoral studies autonomously. They considered the given autonomy to be excessive and “*too risky*” (A5). Finnish supervisors were also cognizant of this difference. B1 learned this after supervising the first Chinese student:

For Chinese doctoral students, you really need to provide a demand for them and have a clear system. I think I missed this point, to be more systematic, also regarding shelter and timetables. And what has also been very important is

that you have to be informed about different funding instruments for students so that you can at least encourage them to apply.

The third major challenge lies in the varied interpretations of roles in Finnish universities, beneath which is the conflict between the profession logic in Chinese students, who expect universities to act as academic hubs for knowledge provision and transmission by researchers, and the corporation logic in the Finnish system, which views universities as employers of researchers. In this regard, A7 said:

I know that for employed doctoral students, they have the positions (employment contracts), and they need to submit a work plan to universities, which states that 5% to 10% of their workload should be spent on teaching. However, even though it's not written in any work plan, I am doing the same workload. Because we are in the same lab, we share the same responsibility to do research and pass on knowledge, and help supervise the master's students.

Interviewed doctoral students took time to learn about this difference in the integration process and found it even harder to accept the corporation logic behind it, especially because they felt it went against their professional values. In this context, A9 discussed her injury during data collection:

Because it was an injury due to work, I asked the faculty assistant if I could go to the university-contracted clinic. The faculty assistant told me I could not. Because I didn't have a contract with the university, I was not entitled to the employee healthcare benefits.

Colleagues of A9 believed that the injury should have been covered under occupational healthcare; however, the university management system, which was based on contracts, could not be changed. Ultimately, A9 had to visit the public hospital at her own cost.

Inquiry 4: In What Ways Can the Logics Affecting the Integration Process of Chinese Doctoral Students Be Reconciled so that They Lead to Integration?

From the interview data, we found that the conflicting logics continued to reconcile during the integration process, and finally, the democratic state logic, the profession logic, and the corporation logic of the host universities came to dominate Chinese doctoral students' perceptions and practices of doctoral study. Enabled by these dominating logics, Chinese international doctoral students learned about the Finnish norms of doctoral studies and adjusted their expectations and practices accordingly. In most cases, the interviewed doctoral students developed equal, professional relationships with their supervisors and corporate-like relations with the host universities. In some exceptional cases, the family logic influencing Chinese doctoral students was strengthened in the integration process, and new institutional changes were introduced into supervision practices and Sino-Finnish collaboration in the host universities.

The data indicated that all the interviewed doctoral supervisors and supervisees developed a relatively equal supervisor–supervisee relationship, indicating

that the logic of the democratic state may have prevailed over family logic. A7 described the process of adjusting to the Finnish equal supervisor–supervisee relationship as follows:

At the beginning, of course I didn't get used to calling my supervisors by their first names. I always called him Prof. XX or Dr. XX. Later, I changed it because my supervisor insisted that I do so. The same in other respects too. At first, I was distant from my supervisor and too timid to talk to him, but now sometimes I tell my supervisor, 'Look, you can do this now.' I became bolder and bolder in front of him.

Through such changes in behavior and actions, A7 was able to move to a supervisor–supervisee relationship marked by a sense of equality during his integration process. Thus, the democratic state logic of the Finnish academic environment overcame the family logic from his previous experiences.

Second, in most cases, the profession logic became stronger in the doctoral supervision process, diminishing the impacts of the bureaucratic state logic of the Chinese doctoral students. Finally, the Chinese doctoral students grew more autonomous and independent during the integration process. When asked to choose between “*being regulated*” and “*being autonomous*,” most of the interviewed doctoral students considered the latter to be more beneficial. A3 shared a story that she learned about academic autonomy in a discussion of target journals with her supervisors. She said:

My supervisors gave me three potential journals and asked me to check them and decide on my preferences. I then found that the first recommended journal was the closest to my research, and it was an SSCI journal. I wrote back to them and explained why I chose the first one. Then, they replied to me and told me that they also believed the first one was the most suitable. They only told me their choice after I told them my thoughts rather than imposing their ideas on me in the first email. So, I understand they wanted me to explore, to decide on my own, to exert my academic autonomy. Then, they would provide suggestions and better support my decision.

A Finnish supervisor also noticed the strengthening of the profession logic. B2 shared:

I can see there are barriers for Chinese students to catch up with the Europeans in the beginning, but nothing like that later. They overcome this kind of barrier. Actually (despite the barriers), they can still perform quite well. I mean, in terms of research productivities, yes, definitely... Yeah, they are very effective and hardworking and so on.

Third, over time, the Chinese doctoral students became accustomed to the corporate-like management practices of the Finnish universities, which reflects a strengthening of corporation logic in their integration process. Several interviewed doctoral students mentioned that they were “different” from the employed doctoral students in Finnish universities. A10 said, “Of course I noticed I am not the same as other employed doctoral students, because there are differences in our

employment situations.” He then described the differences pertaining to regulations, faculty management meetings, and, in some cases, facilities support (like work phones and laptops). He said:

In a lot of detail, you could notice the differences. For instance, the titles for us are different too. Their titles are ‘doctoral researcher’, while mine is ‘doctoral student’. There is a list of researchers on our unit’s webpage, in which we are not in the same category.

Interestingly, the strong influence of corporation logic elicited mixed reactions from the interviewed Chinese doctoral students. Some doctoral students like A5 appreciated corporate-like management. A5 said, “I think it should always be like this. You should just treat doctoral study as a job. You should not see yourself as a student anymore.” Other students, such as A3, found that compliance with corporation logic made grant researchers “marginalized” and “isolated”; they questioned the policy of managing doctoral students according to their contractual relations.

Fourth, in an exceptional case between B2 and A4, the family logic brought in by the Chinese doctoral student (A4) became stronger and even influenced the supervision style of B2, who was A4’s supervisor. According to A4, her relationship with B2 was “as close as seen in China.” She added:

In personal life, she is also more approachable to me. Apart from academic guidance, I mean, I also have contact with her family members. This also makes her special to me. We are very close in our personal lives.

In the interview, B2 confirmed that she had noticed A4’s expectation for close supervisor–supervisee relations, as seen in families. Accordingly, B2 offered her support beyond academic issues, like a life coach, and involved A4 in her life, including inviting her home for Christmas holidays. B2 considered this to be something new that she had learned from supervising her Chinese doctoral students. She said, “This also has an influence on other doctoral students in a positive way.” Subsequently, she developed close bonds with her supervised doctoral students. The close relationship between B2 and A4 also contributed to the deepening of research collaboration between B2 and A4’s master’s supervisor (called C1 hereafter) in China. During A4’s doctoral study, B2, A4, and C1 collaborated and published a translated work in their field. B2 mentioned that she appreciated A4 for acting as the bridge to facilitate the communication and cooperation between her and C1 as well as their two universities. A4 also shared her “bridge” role and experience in the Sino-Finnish collaboration between both sides. Influenced by family logic, she considered it “normal,” as she was close to B2 and C1 and felt trusted by and indebted to them. In this way, the family logic brought in by the doctoral student (A4) strengthened the family logic in the situated research group, which encouraged closer research collaboration and relations, thus influencing the whole research group.

Conclusion

This study initially proposes an analytical framework based on the institutional logics perspective for understanding the integration process of international doctoral students into host universities. Here, the framework is applied to examine the integration process of Chinese doctoral students in Finnish universities. We found that the integration process of Chinese doctoral students is characterized by mismatches between their expectations and the social reality in Finnish host universities. More importantly, from an institutional logics perspective, the study unpacks the reasons behind the mismatches: the conflicts between the profession logic in Finland and the bureaucratic state logic from China, the democratic state logic in Finland and the family logic from China, and the corporation logic in Finland and the profession logic from China. As a result of these conflicting logics, Chinese doctoral students become confused about their roles and their relations with their supervisors over the course of the integration process. However, eventually, international doctoral students are largely integrated into Finnish universities, and they adopt the dominant institutional logics of Finnish universities through the socialization process.

The findings contribute to the existing literature in a number of ways, including international doctoral students' acculturation in different social contexts, bidirectional learning in intercultural supervision, and variants of institutional logics in different cultures. In terms of acculturation studies, by linking students' integration challenges to the differences/mismatches between their expectations and the social realities in the host context, this study endorses a previous finding that understanding aspects of the student's home, societal, and cultural background is an effective strategy for reducing unfavorable adjustment experiences (Bar, 2017; Elliot et al., 2016a, b). It also supports the idea that the micro/personal cultural capital that doctoral students bring to their studies shapes their research journeys (Manathinga et al., 2023).

In Finland's context, this study describes discoveries of mismatched expectations between Chinese students and Finnish realities, such as the expected regulative learning process and the advocacy of academic autonomy in Finland (Wang, 2019; Wang & Riih , 2021). It also shows how Finnish supervisors became aware of these mismatches and adjusted their supervision behaviors (e.g., B2), which challenges Wang (2019) argument that Finnish supervisors were not aware of the students' struggles in acculturation due to their lack of understanding of Chinese students' cultural backgrounds. This could be related to the fact that Wang's studies (Wang, 2019; Wang & Riih , 2021) were based on the perceptions and observations of students and did not take into account the perspectives of Finnish supervisors. Moreover, this study has demonstrated that an institutional logics perspective is an effective approach to uncovering challenges in acculturation (mismatches) and has shed light on how they can be resolved through reconciling multiple logics.

This study not only supports arguments on the benefits of bidirectional learning in intercultural doctoral supervision (Singh, 2009; Soong et al., 2015) with new evidence, but also indicates that bidirectional learning benefits doctoral students, supervisors, other actors (like other supervisees), and host universities. As seen in

the example of B2 and A4, B2 changed her supervision practices by learning from A4 and adopted innovative supervision practices within her research group. They also jointly advanced the research collaboration between China and Finland based on their close family-like relations. Thus, the differences between Chinese doctoral students' expectations and Finnish social reality can promote organizational innovation in host universities. It also indicates, as suggested earlier, that non-Western cultural knowledge might be underestimated in Western-dominated knowledge production (Manathunga et al., 2023). It seems that bidirectional learning between the international supervisors and doctoral students is the key to turning integration challenges into opportunities for change, and enabling both the local supervisors and international doctoral students to become global scholars. In line with this thinking, if one wants to know how to enable global and local cultures to inform each other in the development of global scholarship (Rule et al., 2021), bidirectional learning between actors on both sides is the answer.

More importantly, this study deepens our understanding of the variants of institutional logics in doctoral education with new empirical evidence. It verifies the assumption that an institutional logic may develop different variants in different cultures and contexts (Zheng, 2020). Evidence from Chinese international students' integration into Finnish universities enhances our understanding of the variants of democratic state logic and bureaucratic state logic, originally proposed by Friedland and Alford (1991). This study appears to indicate that the strengthening/weakening of one variant of logic does not necessarily lead to a corresponding effect on another. For instance, throughout the integration process, the democratic state logic underlying Chinese doctoral students' conceptions of supervisor-supervisee relations became strengthened, even though the influence of the bureaucratic state logic on their demands for a regulated doctoral process weakened. Nevertheless, the variants of other institutional logics require more empirical exploration and refined definitions. For instance, the variants of family logic in Chinese society (i.e. extended family logic) and Finnish society (i.e. nuclear family logic) were not noticeable in the study's findings, which could be explored further.

This study has other limitations that must be acknowledged. First, although the study captures the perceptions of both international doctoral students and supervisors, the sample size of both groups is limited. In this sense, readers should note that the findings of this study only provide possible instances of Chinese doctoral students' integration experiences in Finland, rather than being generalizable to all Chinese international doctoral students, or to all Finnish supervisors or universities. More interviews should be conducted in future studies on the topic. Second, while this study found that conflicts of institutional logics could lead to institutional change, thus contributing to organizational innovation in transnational research training, only one instance (i.e., between B2 and A4) of such change was identified. More empirical evidence is needed to support this argument and to explore the circumstances under which we can turn conflicts into positive changes. Third, to further refine the analytical framework proposed in this study, we should apply the framework to other transnational research contexts in the future. Finally, we share insights from this study that can potentially help Chinese and Finnish stakeholders

in the integration process, such as host universities, host supervisors, and doctoral students.

Host universities should be aware of the potential mismatches between international doctoral students' expectations about doctoral education and the social realities of Finnish universities. Accordingly, they can provide more guidance to both doctoral students and their supervisors. In this sense, an orientation course tailored to international doctoral students that introduces the regulations, academic norms, values, and culture of host universities along with other useful toolkits is necessary.

Host supervisors should pay attention to potential mismatches and the underlying logic conflicts that international students tend to face. To this end, the host university could implement an intercultural doctoral supervision course or offer manuals tailored to doctoral supervisors with international supervisees. However, an awareness of potential mismatches and underlying logics is only the first step. Other than providing academic guidance to reconcile the mismatches, Finnish supervisors could also learn from the institutional logics of international students and facilitate changes to enhance the quality of doctoral supervision for international or intercultural students.

Chinese international doctoral students in Finland could take proactive measures to adapt to the local environment, such as strengthening their professional identity as early career researchers (strengthening the underlying profession logic), lowering their expectations of familial relations with supervisors and institutions (weakening the underlying family logic), and familiarizing themselves with the corporate management style of Finnish universities (strengthening the underlying corporation logic). Joint efforts are required from all stakeholders to support the integration of Chinese international doctoral students into the local academic environment in Finland. In this way, Chinese international doctoral students can become competent global scholars for the knowledge production of mode 3 in a globalized knowledge society.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s13132-023-01420-8>.

Acknowledgements We would like to express our sincerest gratitude to all interviewees and participants in the study.

Funding Open access funding provided by Tampere University including Tampere University Hospital, Tampere University of Applied Sciences (TUNI). The research leading to these results received funding from the National Social Science Foundation of China under grant number BIA180204.

Data Availability Figures 1, 2 and Table 1 were generated using the publicly available academic literature. The interview data supporting Table 2 are not publicly available to preserve individuals' privacy under the European General Data Protection Regulation. The interview data can be accessed on request from the corresponding author upon the completion of a data usage agreement, according to policies from Finnish National Board on Research IntegrityTENK.

Declarations

Competing Interests The authors declare no competing interests.

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