

Article

Professionals as Collaborative Mentors in Early Childhood Family Education

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Abstract: Early childhood education (ECE) in China has become complex and multi-dimensional. Chinese parents/caregivers are actively involved in ECE. This qualitative study provides insights into how three ECE-related professionals, namely, a family education professional, an ECE enrichment teacher, and a founder/administrator of an ECE centre, worked collaboratively in a transdisciplinary early childhood family education (ECFE) program in a northern city of China. Qualitative data was collected via three rounds of interviews with each of the three ECE professionals and several sources of documents. The findings are generally in line with existing literature regarding the factors that influence effective transdisciplinary collaboration among ECFE team members. The ECE professionals claimed the program was a success was due to their willingness to become ergonomists, daily collaborative practice with team members, interaction with both the caregivers and their children, and non-judgmental sharing among colleagues. These positive outcomes occurred due to the continued support and instruction from other ECFE team members, especially when applying approaches outside one's respective fields. The findings illuminate several insights relating to ECFE and offer several implications regarding hands-on practices for effective ECFE.

Keywords: early childhood education; early childhood family education; caregiver; transdisciplinary; early childhood education professionals; parents



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1. Introduction

In China, the number of caregivers who are willing to become involved in the early childhood education (ECE) of their young children has been growing rapidly over the past several years since the introduction of the two-child policy in 2016 by the Chinese Government [1]. As a result, the impact of this policy is gradually being felt throughout China, and its overt effects can be seen in contemporary ECE [1–4]. In May 2021, the Chinese Government's two-child policy was replaced with the three-child policy with further emphasis on ECE issues and child-rearing changes [5]. With increased child numbers, Chinese young children and their parents have faced more complicated risks, including lower early childhood educational capabilities, increased poverty per family member, and greater stresses [6]. To minimize the aforementioned risks, more Chinese caregivers than ever before are in agreement that education should begin in the earliest years of infancy [7]. Hence, new approaches and methods of parent involvement in their children's education have been foregrounded since the two beforementioned policies have been implemented [8].

Young children acquire a broad range of human abilities during the early childhood phase [9,10], which is very much influenced by their home environments, such as parenting style, toys, familial interaction, and sociocultural values [11]. A human ability refers "to the constitutional conditions of individuals for performing in some specified manner" [12], for example, a child's abilities to learn and succeed in ECE-related programs. Thus, there is

a strong need for ECE research to extend its focus to caregiver efficacy in nurturing young children by examining current caregiver training programs associated with early childhood family education (ECFE) outcomes (i.e., to provide the best learning and developmental opportunities for young children in their homes).

In other words, parents as the primary caregivers “provide their children’s first and most significant learning environment and parents themselves are their children’s first and most enduring teachers” [13]. The idea of such a parenting education and support program has been termed as early childhood family education (ECFE) [14]. It supports parents as caregivers and also helps to empower families [15]. The goal of ECFE is “to enhance the ability of all parents and other family members to provide the best possible environments for their children’s learning and development” [13].

1.1. Professional Transdisciplinary Work

The important role played by primary caregivers in addressing the diverse developmental and learning needs of their young children is increasingly recognized in the field of ECFE [16]. This is certainly applicable in China because most contemporary primary caregivers have constant concern over whether they are providing adequate support to help their very young children grow; their children go to various early childhood intervention classes, such as music classes, physical activity classes, and early English classes [17]. As a result, the call for ECE educators, caregivers (especially parents), as well as other related professionals to work together has also taken off in China [18]. Such a collaborative effort requires endeavours from all involved professionals across varied disciplinary backgrounds, such as the arts, sports and health sciences, family education, and ECE [19,20]. According to Early Years Connect [21], there are four major characteristics of professional transdisciplinary work, and these characteristics are pooled expertise, clients (i.e., young children and caregivers) as team members, free flowing communication, and working on the clients’ goal together. Hence, the work to achieve better implementation of ECFE practices and collaboration among team members is conceptualized as professional transdisciplinary work in this paper.

1.2. Challenges in Implementing a Transdisciplinary ECFE Approach

The transdisciplinary approach aims to reach greater integration of services and collaboration among professionals from different disciplines. In ECFE, the transdisciplinary approach is significant as “it involves the ‘client’ (the child and their family) as a member of the transdisciplinary team, acting as a key contributor in developing goals and implementing plans” [21]. The related literature reports that when transdisciplinary professionals work collaboratively among themselves, as well as with the caregivers to support young children at risk for developmental delay or those who have special needs, several key benefits have been identified, including promoting young children’s developmental skills, accelerating the developmental process, and nurturing productive learning styles [22–24]. Reaping these benefits, however, requires various strategies to provide effective transdisciplinary intervention practices. For example, Nolan et al. [24] have argued for the need to focus on the various challenges posed to significant individuals (especially caregivers) who influence young children’s lives during their earlier developmental phases. Nolan et al. [24] also stressed that transdisciplinary team members face the challenge to change these significant individuals’ take-it-for-granted practices by respecting others whilst also being respected for one’s own knowledge, regardless of the professional qualifications. Woodruff and McGonigel [25] have suggested that the challenges preventing effective collaboration may have effects on both ECE professionals and the primary caregivers of young children.

In the local Chinese context, for example, in 2009, the official newspaper on Education in China (*China Education Daily*) highlighted the sparse transdisciplinary collaboration among professionals of different fields relevant to ECE, as well as between professionals and caregivers of young children. In addition, the current ECE literature published in China lacks research on the normal development of young children who have been in-

volved in a transdisciplinary ECFE program [26]. Likewise, little attention has been given to the current stance of ECFE within transdisciplinary ECE teams involving parents as important caregivers, despite parents' centrality to child-centred and/or family-centred approaches [8,27]. In this paper, we gathered information from a transdisciplinary ECFE team. The team members shared their working and collaboration experiences in a family-centred transdisciplinary ECFE program with us.

In the next section, key terms are defined, and a review of the literature relating to transdisciplinarity in ECE is also discussed within the family-centred context involving caregivers-as-educators in one northern city in China.

1.3. Transdisciplinary Approach

In the contemporary ECE literature, three main teamwork approaches among members from different professional disciplines have emerged, namely, multi-, inter-, and transdisciplinary disciplines [18,28,29]. Multidisciplinary, interdisciplinary, and transdisciplinary teamwork can be arranged on a continuum of collaboration within various domains, with the transdisciplinary teamwork approach being most collaborative and the multidisciplinary teamwork approach being the least collaborative [24]. The interdisciplinary teamwork approach is sandwiched in between the two approaches. An interdisciplinary teamwork approach should result in "increased professional communication, cooperation and cohesion", while a transdisciplinary teamwork approach should result in "free flow communication" [21]. In fact, "multi-disciplinary teams are unable to develop a cohesive care plan as each team member uses his/her own expertise to develop individual care goals. In contrast, each team member in an interdisciplinary team builds on each other's expertise to achieve common, shared goals" [30]. Hence, it is worth noting that the main difference between a multidisciplinary approach and an interdisciplinary approach is that the members of a multidisciplinary team work independently in providing services, whereas members of an interdisciplinary team work together.

The key feature of these three teamwork approaches used in educational services "is the pooling and exchange of inter-professional knowledge and skills across the disciplinary boundaries to maximize communication, interaction and cooperation among the members" [31]. Lesnik-Oberstein [32] has suggested the benefits of integrating professionals with various kinds of expertise, including the co-construction of new knowledge, understanding the different ways of collaboration, and the provision of more holistic, coherent, high-quality learning experiences for young children. Furthermore, according to the general theoretical perspective postulated by Burger [19], the transdisciplinary approach is situated into a circular process by forming various academic disciplines as the components of novel ECE hypotheses and theories, which can further inform ECE policymaking.

Moreover, a number of factors have also been reported as the possible contributing elements to building up transdisciplinary teamwork at three different levels [33,34]. First, the administrative-level factors consist of explicit and coherent ECE policies [34] and training workshops that prepare team members to work together effectively [35]. Next, at the practical level, important aspects include a shared ECE theoretical framework, as well as a clear mind-map of what it means to practice in a transdisciplinary team, strong leadership, and good school structures supporting collaboration and shared understandings within the team. Finally, at the staff training level, it is important that team members are motivated to learn about their own as well as others' disciplines, with the ability to clearly understand the underlying implications, the capacity to become reflective, and the willingness to establish and keep a strong collaborative teamwork spirit within the transdisciplinary team [36].

In this way, the effects of transdisciplinary programs in mainstream ECE classrooms and special needs intervention settings can be studied and evaluated by identifying the following challenges: (1) unclear and inconsistent policies regarding how an ECE or ECFE program is to be run; (2) the unclear boundaries among team members during daily practice; and (3) limited collaboration due to a lack of training for members to have a

shared understanding of other team members' foundation knowledge from respective academic disciplines [37]. One such concept of collaboration is family-centeredness, which has been promoted as a valuable medium for ECE [38]. Moreover, transdisciplinary team members have been challenged in terms of their transdisciplinarity in different professional disciplines [39]. Furthermore, these professional work transfers "may be in the areas of family- and child-centred planning and evaluation" [39]. Hence, we aimed to stimulate transdisciplinary discussion on issues surrounding ECFE. We explored and documented a family-centred transdisciplinary ECFE program offered in a northern city in China. The following research questions were proposed to guide the study:

1. How have the staff become the transdisciplinary team members they are today?
2. What are the transdisciplinary team members' experiences with transdisciplinary collaboration?
3. How has the transdisciplinary approach changed over time, and what caused this change?

2. Materials and Methods

This study adopts a qualitative design to gain in-depth insights into how a transdisciplinary team function in an ECFE program in China, as qualitative "research focused on discovery, insight, and understanding from the perspectives of those being studied offers the greatest promise of making a difference in people's lives" [40]. Semi-structured interviews were conducted to understand the experiences of the three participating transdisciplinary team members, who had been observed working with other ECE professionals and caregivers toward caregivers' goals, that is, implementing tailored services for the children and their families in an ECFE program. Ethical issues have been considered very carefully. The ethics application has been reviewed and approved by the Ethics Review Board of the researchers' university. All consent had been obtained before the data collection process started.

2.1. The ECFE Program in a Northern City in China

There are three concerns in the daily ECFE practices of the program: first, young Chinese children felt uneasy about unfamiliar ECE enrichment programs' teachers and routines; next, the primary caregivers had a long list of questions about the children's development and learning; and lastly, the existing ECE educational program failed to help the child-caregiver dyads by providing comprehensive, useful ECE information for all the people around the children, such as caregivers and ECE-related professionals. The targeted ECFE program for the current study aims to use a transdisciplinary approach to address these concerns. The program provides healthy and resilient caregiver-child experiences to families living in an urban city in Northern China. The founder of the program places an emphasis upon maximizing the expertise of all the ECE-related professionals to smooth the way for family-centred ECE service. Using the collaborative techniques drawn from Hanson and Lynch [41], the team involved in the current study consisted of three professionals: an early ECE enrichment teacher, a family education professional, and the founder-designer (i.e., centre administrator). The ECFE program contains detailed stimulation activities and specific guidelines for caregivers to conduct comprehensive ECFE in a home setting. These comprehensive ECFE practices incorporated insights and observations from both primary caregivers and an array of ECE-related professionals. The founder-designer has considered the advantages of the caregiver-and-child interaction and a transdisciplinary approach established as the program's foundation. For example, the well-organized curriculum includes various types of daily stimulation activities and toys as teaching resources for caregivers. The centre also provides caregiver training courses for caregivers to plan early childhood activities and assessments.

2.2. Participants

A purposive and convenience sampling method was employed to identify “intensity-rich cases that manifest the phenomenon intensely, but not extremely” [42]. From the pool of possible participants, three ECE-related professionals volunteered to participate in this research. The three participants (see Table 1) included a family education professional with 20 years of related working experience, an ECE enrichment teacher with five years of working experience, and a centre founder/administrator with five years of administrative experience running an ECE enrichment centre and additional expertise in art education (i.e., calligraphy, with more than ten years of experience in the specialized field). To ensure confidentiality, pseudonyms were given to the participants (see Table 1).

Table 1. Summary of participants’ background information.

Role	Pseudonym	Gender	Age (Years)	Experience (Years)
ECE teacher	Lian	Female	32	5
ECFE professional	Rui	Female	42	20
Centre administrator	Wong	Male	51	5

2.3. Interviews

Semi-structured interviews were conducted individually with each participant by the first author. An interview protocol was followed to assist the continuity across the interview process because the researchers had the expectation that the interviewees would provide certain types of needed data (see Appendix A). Thus, a protocol could serve as a guide to aid the researchers in asking appropriate interview questions in a clear and productive manner [43]. Meanwhile, the researcher retained an open mind to adequately capture the interviewees’ viewpoints while also attending to emergent data. The interviewer maintained detailed field notes during each interview session.

There were three interviews conducted with each participant, and each session took approximately 30 min. Three interviews were conducted at their early childhood enrichment centre over three consecutive weeks. The “three-interview series” followed the model proposed by Creswell [42] and focuses on the participants’ life histories, an in-depth exploration of the participants’ ECCE experiences coming after the life histories, and finally, inviting the participants to focus on “reflection on the meaning” [42]. In addition, the choice of three interviews rather than one was made for practical reasons. It was not easy for the participants to arrange a long interview of one and a half or two hours, and long interviews might overwhelm them and decrease the opportunity to obtain in-depth insights into their life stories. In the first interview, the interviewer applied the life narrative method by asking the participants to provide information beginning from the initial stage of their ECE career and to reflect on the following question: “How have you become the transdisciplinary team member that you are today?” This question allowed wide-ranging experiences to emerge from the participants so that the interviewer could bring together varied but relevant experiences. As a result, the transdisciplinary team members’ identities began to unfold. The second interview’s aim was to identify each participant’s experiences of cooperating with others and, more importantly, to explore the transdisciplinary collaborative experiences. The last interview focused on the view of each participant related to how the transdisciplinary teamwork approach changed over time and what influenced changing perspectives.

2.4. Other Sources of Data

The other data collected and analysed in the current study included the centre documents, that is, documents that are kept by the ECE-related professionals, including teachers’ notes, children’s profiles, and individual ECCE study plans (See Table 2). The participants showed the above documents during interviews when they wanted to use more contextual

information to explain their thoughts. The interviewer also maintained this contextual information in field notes. These data consisted of essential information recorded as meeting minutes during team meetings among the transdisciplinary team members and other invited guest speakers from the transdisciplinary team's collaborative or allied centres. In addition, individualized profiles of families whose children were attending the ECFE centre at the time of the data collection were also collected. These profiles include caregivers' background information, such as socioeconomic status, occupation, educational level, and their children's responses to their individualized ECFE plans with the carried-out activities. Furthermore, comments provided by the team members to each individualized ECFE plan were taken into consideration in the review as they related to the transdisciplinary teamwork approach in the ECFE program. Profiles of children's learning process were another source of data for the study. For example, children's learning progress was formulated as feedback from the caregivers. These evaluations often occur directly during the discussion among caregivers and the transdisciplinary team members. Based on the caregivers' feedback, a tailor-made ECFE plan with stimulating early childhood activities was developed to meet the individual child's learning style and developmental needs.

Table 2. Data types and collection methods.

Data Collection Method	Data Type	Examples
Interviewing	Language (verbal and body)	Interviewees' explanation of their actions or behaviours and their expressed perspectives
Collecting	Centre documents: teachers' notes, children's profiles, and individual ECFE study plans	Texts and demographic information

2.5. Data Analysis

This study employed Yin's [43] five-phased cycle procedures of qualitative data analysis. First, all the field notes were arranged in chronological order. Then, the notes were sorted into three broad categories according to their relevance to the three research questions. Second, the data were then coded and disassembled into smaller categories. This happened for each broad category that corresponded to each of the research questions. For example, all the occurrences in the first interview where the ECFE teacher said something relevant to research question 1 were firstly placed together; however, later, they were further broken down into smaller categories. Third, the rearrangement and recombination of the smaller categories took place by arranging these smaller pieces of data into three themes that emerged. The themes are the development of the transdisciplinary team, the collaboration among the transdisciplinary team members, and tackling the complex issue of transdisciplinary changes. Fourth was the phase of interpreting. Next to the smaller sections of the data, the researchers jotted down interpretations (also called conceptual memoing) related to the interview notes to highlight how the data from the interviews might have been related to ECFE issues that were unexpected or anticipated by the researchers. Fifth, all relevant data were then combined in a meaningful way to address each of the research questions. For example, the conceptual memos written to help sort out the research findings were placed together with relevant data.

3. Results

3.1. How the Staff Became the Transdisciplinary Team Members They Are Today

Findings from the first interview notes showed that all three participants provided a similar perspective on ECFE. They expressed their wish to provide highly promising opportunities for improving the quality of ECFE to enhance healthy and resilient caregiver-child experiences. Moreover, at the beginning stage of developing this transdisciplinary program, all of them tried to heighten the caregivers' awareness that ECFE (i.e., learning

beyond the ECE classrooms, such as in their homes) is as or more important than traditional ECE (i.e., learning within the ECE centres or kindergartens) by persuading the caregivers that ECFE provides broader educational, developmental, and societal trajectories of young children in their home contexts.

Wong's observation pointed to two crucial factors that he perceived as being related to young children's human abilities in the home environment, namely: (1) a child's gross and fine motor skills' development level, as well as age-appropriate stimulation through physical activities at home, and (2) the adequacy of a child's language stimulations, plus supplemental caregivers-as-educators training programs at ECFE centres. Furthermore, Rui also gave comments related to the home environment of young children. She described her observation of the cognitive development of young children within the home context. For example, Rui mentioned "frequent transfers among various ECE enrichment programs", "frequent change of caregivers from parents' home to grandparents' home", and "adverse childhood experiences" can be "triggers" that negatively affect children; these children may need "better services" that can be suggested to their caregivers. Lian also felt the quality of education at home "is the most important ECE factor predicting their children's development and learning outcomes."

Findings derived from the centre documents confirmed the perspectives of the team members before they set up a transdisciplinary team. They all noticed the interplaying factors between community ergonomics and educational ergonomics and their impact on caregivers as educators in teaching their young children. The term "ergonomics (or human factors) is the scientific discipline that is concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data, and methods to design in order to optimize human well-being and overall system performance" [44]. In a way, the three participants have become incidental ergonomists.

3.2. Experiences with Transdisciplinary Collaboration

In the second round of interviews, with the aim of focusing upon the transdisciplinary ECFE experiences of each participant and of examining more carefully specific areas and themes that had gradually unfolded from the examination of the centre documents, the open-ended interview questions focused on the experiences they had working in the transdisciplinary ECFE team. Specifically, the experiences included participants' reflections on their own or other professionals' identities, influences on their collaboration, and their beliefs about the team.

All three participants were aware that the traditional strong claim that *teachers matter most* is not the proper answer to a high-quality ECFE. They agreed that among the factors (i.e., community ergonomics and educational ergonomics) identified in the first round of interviews, caregivers have far greater influences on their children's ECFE. The theme that arose in the second round of interviews was that working in a transdisciplinary ECFE team makes them feel empowered. According to Lian, if she holds herself accountable for the quality of ECFE by increasing her own discipline's teaching strategies and knowledge, it may lead to an effective early childhood enrichment class. Lian said that everyone should not "only depend on me" because this cannot "facilitate children's achievements in development and learning." She felt primary caregivers need to "learn how to educate young children" because the children spend the most time at home.

Daily collaborative practice within the team enabled Lian to focus on how she was conducting her weekly teaching plans, both individually in a one-to-one caregiver - child dyad enrichment course and as a group with Rui and Wong in caregiver training workshops. Rui mentioned "collaborating with each other and learning from each other" by "conducting dry runs together" allowed "observation of others" that ensures "I won't miss out." In addition, with the aim to maximize efficient and effective communication in their staff meetings and to emphasize the positive connectedness about the team working in a transdisciplinary approach, Wong said they would ask each other questions such as "Why

do you want to teach like that?" or "What do you think about that caregiver's reflection?" Enhancing their sense of the importance of ECFE issues by questioning each other helped them to internalize a wide variety of our daily teaching practice and to bring connectedness to their collective wisdom.

The participants believed the transdisciplinary staff meetings were a platform to achieve a win-win situation. Wong expressed his strong determination to help team members get to know one another and help them enhance productive participation in decisions related to the collaboration. For example, Wong participated mindfully in the staff meeting to create a respectful atmosphere (i.e., "I learnt from Rui that . . . ") to show how he respected the opinions of other team members. He believed knowledge exchange was more successful in a respectful atmosphere where team members' contributions were acknowledged.

3.3. How the Transdisciplinary Teamwork Approach Changed over Time and What Caused Their Perspectives to Change

In the third round of interviews, the aim was to focus upon the changes that the transdisciplinary ECFE team had gone through. The focus of the open-ended questions was on how the participants' teamwork approach had changed over time and what caused their perspectives to change. The main finding uncovered was that the co-workers realized that a transdisciplinary ECFE approach to inter-professional collaboration is about establishing a sense of cooperation and connectedness among co-workers by integrating different skills and knowledge in joint contexts. Both Rui and Wong confirmed that they continually learned from their co-workers in the joint contexts. Lian learned the skills of looking at the social context of the education of young children from Wong, while Wong learned the skills of catering to children's individual development and learning needs from Lian. This taps into both Wong's and Lian's expertise that already existed in the team since the beginning. The change they began to realize was that integrating their expertise is well suited to transdisciplinary teamwork by applying those new skills and/or knowledge in proper contexts. For example, they noticed that it was important to know when families wanted to let their children learn Chinese calligraphy from Wong or to let the child learn with an ECE teacher in her ECE enrichment classes, and when was the right time to introduce Rui to caregivers and young children and to cross disciplines. As a result, they could provide tailored educational services more confidently when armed with joint expertise.

The team also faced challenges over time. Wong expressed that he felt uneasy and not confident enough to apply what he called the "transdisciplinary loop". The loop included three stages: practice by using the knowledge learnt from co-workers, obtaining feedback from caregivers, and reflecting on the practices during the next staff meeting. Wong highlighted that working with others with diverse backgrounds "is challenging . . . I feel I can never know as much about ECE and ECFE as I do about my own area." He gave one example of Rui suggesting him trying it out in his calligraphy class. He tried, but he felt he could not take others' suggestions, feeling he did not always have the "courage to get feedback directly from the caregivers and the children[']s performance]." He did, however, claim he shared these experiences in staff meetings, inviting others to "model their [new] knowledge in my class." Lian likewise worried that her co-workers would mistakenly apply the new knowledge in other classes. Her classes focused on young children's construction of knowledge. Lian explained in the interview: "There's also the problem of relaying information to someone else [and possibly not] conveying it inaccurately to caregivers and young children." Thus, Lian preferred to exact her teaching authority when her intention was to facilitate a child's learning.

4. Discussion and Implications

The current education literature suggests that the efficacy in transdisciplinary teams is facilitated by having unambiguous, pooled knowledge of the educational professionals, its collaboration purpose, and its sound philosophical framework [18,45]. The same holds true, especially for transdisciplinary ECFE programs, where relevant knowledge and skills are

apparently integrated and applied by everyone in a program. However, our findings suggest that, even when all three participants shared a growing understanding of the holistic goal of their respective classes, which underlies their own disciplines' guiding philosophical principles, especially in the areas of child-centeredness and caregivers-as-educators, they still lacked some common understandings of the key concepts of community ergonomics and educational ergonomics underlying each other's practices [46].

In the case of the transdisciplinary ECFE program that was the focus of the current study, co-workers' peer-to-peer learning was found to be the anchor for the daily classroom practices of how to better carry out transdisciplinary caregiver training in its social contexts. The findings suggest that ECFE classes could take many forms. For example, there was a different status attributed to caregiver training in the ECFE program depending on who was attending the sessions. The caregiver training class could pair caregivers in one-on-one sessions, create groups learning together about real ECE problems, or involve young children in weekly enrichment classes in which co-workers share and reflect on the newest skills and knowledge they have learnt with or from others. Our results support a meta-analysis on ECFE conducted by Joo et al. [47] that found fully developed caregiver programs can be conducive to a wide range of young children's development and learning.

Based on the current study's findings, the following recommendations regarding some hands-on practices are suggested to make ECFE classes fully developed. Firstly, there is a need to choose proper co-workers to join the team. Although the structure of collaboration is horizontal instead of hierarchical, co-workers for the team should be based on young children's individual learning and development needs. These co-workers, ideally professionals in their areas, should write lesson plans, keep everyone on track by inviting other professionals and/or caregivers as facilitators, and motivate everyone to learn, apply, and reflect. Secondly, it is necessary to maintain a respective atmosphere in staff meetings. Transdisciplinary team meetings only work when everyone feels comfortable enough to question each other. Co-workers must be open and honest enough to receive knowledge from other experts. They also need to have enough courage to give constructive feedback. This feedback must be received with gratitude. Thirdly, a transdisciplinary approach should be integrated into ECFE practices. Co-workers will feel confident and competent in applying new knowledge if they learn it by observing others' classes (i.e., real-world situations). As a result, the co-workers will more likely integrate the new knowledge into practice. Finally, everyone should be involved [21]. Caregiver involvement helps to set a social context around ECE. With a well-developed ECFE transdisciplinary program in place as an alternative to a traditional ECFE program, young children and their caregivers will construct knowledge and build attachments that will support them in creating a context that fosters learning [48]. In a traditional ECFE program, either caregivers are not involved enough in their young children's education, or caregivers feel there were no comprehensive explanations or descriptions gained from the program about how to become actively involved in their children's education. These previously unrecognized differences which relate to knowledge sharing and family-centred aspects of ECFE are significant, as they support constructive and successful caregiver training. As a result, caregivers who receive adequate support from their co-workers in transdisciplinary ECFE classes will play a major role in addressing their young children's diverse developmental and learning needs. Therefore, it is important that attention should be paid to the caregiver training by focusing on ECFE professionals and caregivers' cooperation because cooperation is the key dimension of ECFE's pedagogical quality [49].

Recognizing others' disciplines in terms of their knowledge and skills as shared information has been perceived as a crucial characteristic of peer-to-peer learning [50]. This perception has enabled the expertise of transdisciplinary co-workers to be shared with others as an important contributing factor of community ergonomics and broadens the expertise and collections of skills of all co-workers, which is the contributing effect to educational ergonomics [35]. Wong argued "to avoid becoming a jack-of-all-trades and master of none"; being a transdisciplinary co-worker does not necessarily mean that the co-worker

must master others' disciplines. However, Wong's statement points to the advantage of effectively integrating others' expertise. It highlights that transdisciplinary collaboration is not about moving towards some form of traditional ECFE practice; instead, it is about developing the skills to work collaboratively with others who can offer their related or allied expertise (e.g., childcare manager, social worker, counsellor, and psychologist).

In the current study, while the three participants seemed to have knowledge of the concept of a transdisciplinary team effort, they also expressed difficulty applying the knowledge and skills they have learnt from other professionals into their daily ECFE classroom practices. To give an example, while the participants felt that "it is quite straightforward to share a lesson plan with other co-workers", it was much more difficult for Lian to apply Rui's lesson plan directly. The "flexible application" relies not only on the general information or background knowledge of sharing lesson plans, but it is also based on hands-on experiences of when ECFE educational tactics would be most effective in its application within a given social context (i.e., the home) of each child and his/her caregivers. Empirical studies that have examined the benefits of ECFE caregiver programs have shown some promising results. One example is Parent Corps, an American ECFE program where ECE teachers and mental health professionals worked together by using various ECFE educational strategies in a timely manner to help caregivers to facilitate their young children's learning across domains [51]. According to the results of Joo et al.'s meta-analysis [47], "fully developed parenting programs to ECE" improved young children's various development and learning (i.e., pre-academic skills, social-emotional skills, behaviours, and health)." Therefore, for the three participants in the current study to realize the extensive benefits of transdisciplinary peer-to-peer learning, a range of alternatives must be provided for them to choose and advance a deeper understanding of these complex aspects of co-workers' distinctive disciplinary practices and tactics and not only the basic knowledge and skills of each other's disciplines. As a result, the implications for transdisciplinary ECFE training is to adopt a transdisciplinary loop, which is rooted in disciplinary paradigms, and the need to assess the value of these paradigms with respect to creating a new domain of knowledge or providing a solution to a practical problem in both community ergonomics [47,52].

5. Limitations

This study's findings were derived from data obtained from interviewing three participants and reviewing their respective centre documents. Hence, the small sample size limited the generalizability. However, data were collected via multiple interviews. These interviews have provided a comprehensive case of one transdisciplinary ECFE program and have also provided some pragmatic suggestions in the implications for the ECFE transdisciplinary service provision. The research site is one of the largest metropolises in China. Most young children (i.e., 60% of the population) in the city live in central districts and economically developed areas [53]. While the current study provides rich data about the situation in one northern city in China, the situation may be very different in other parts of China. More qualitative studies such as the current investigation should be conducted by using a similar approach to explore the situation of other urban areas to aid in gaining a holistic picture of transdisciplinary ECFE.

6. Conclusions

The transdisciplinary team approach has been widely promoted as the most suitable collaboration practice among educational professionals in western countries [22,24,45,54]. However, for it to be an effective approach in the ECFE domain requires much more than just gathering a team of different but related professionals [18].

This study has attempted to provide a deeper understanding of a transdisciplinary ECFE program in a northern city in China. This study reiterates the need for all related or allied professionals from diverse disciplines to receive support and information sharing from each other to achieve an ECFE program's common goals and to smoothly facilitate

the peer-to-peer learning process. A practical transdisciplinary loop, its three stages, and its implications for the ECFE classroom practices need to be supported with (1) teaching authority; (2) meaningful exchange among co-workers that results in reflections that promote deeper collaboration; and (3) a transdisciplinary social context that facilitates the co-workers to carry out the ECFE classes with each other through learning, application, and reflection. All stakeholders (i.e., ECFE-related professionals, caregivers, and young children) need to be involved in the ECFE daily practice in children's homes. For both community ergonomics and educational ergonomics factors to be in place, transdisciplinary co-working requires adequate time and support for effective staff training to ensure opportunities for open and robust peer-to-peer learning. In particular, the co-workers of a transdisciplinary team must address practical issues of concern (e.g., lack of confidence in applying others' discipline knowledge and skills) and make visible the hands-on experiences that are helping co-workers of the transdisciplinary ECFE program work together successfully.

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Appendix A. Examples of Guiding Questions for Semi-Structured Interviews

First interview: Initiation of the transdisciplinary team

1. How did you become the transdisciplinary team member that you are today?
2. What caused the creation of the transdisciplinary team?
3. Who was the main source of support for this transdisciplinary team? (e.g., ECE teacher, ECFE teacher) Why?
4. Support can come in many forms. What was the main source of support for this transdisciplinary team? (e.g., age-appropriate stimulation at home)

Second interview: Collaboration in the transdisciplinary team

5. What role do you usually play in this team?
6. Has this cooperation been productive?
7. Have you experienced any challenging situations when collaborating? If yes, how did you address the challenges? Did you actively address the challenge, and could you describe your actions as positive?
8. Please describe a situation where you had to give positive and/or negative feedback to a member of the team.
9. What are your experiences of cooperating with others in this team?
10. Please describe productive cooperation with another member of the team that has a different background than yourself.

Third interview: The change

11. How has the transdisciplinary teamwork approach changed over time?
12. What influenced your changing perspectives?

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