



Teaching and learning chinese as a heritage language (CHL)


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ENG Abstract: Research on Chinese heritage language (CHL) education has flourished in recent decades, driven by the increasing presence of CHL learners in schools worldwide, especially in multiethnic and multilingual contexts such as the USA, Canada, and Australia. This article presents the findings of a systematic review of 53 empirical studies on CHL education indexed in the Social Science Citation Index (SSCI) and published from 2008 to 2023. The study reveals that CHL research primarily focuses on four core areas: CHL maintenance, CHL acquisition, CHL pedagogy, and CHL learners' identity. The research methodologies within the existing literature show a predominance of quantitative studies, particularly laboratory-based research on CHL acquisition, and the results highlight the critical role of the home environment in supporting CHL maintenance. This review concludes with recommendations for advancing future research on and pedagogy practices of CHL. Specifically, CHL education needs to incorporate sociolinguistically-informed pedagogical approaches and materials and implement valid assessment tools to address the diverse needs and interests of CHL learners. Future research should further investigate how CHL learners' ethnic identities are shaped by and interact with gender, socio-economic status, and dialect backgrounds, while assessing tailored interventions and engaging in classroom-based action research to enhance pedagogy and long-term language transmission across generations.

Keywords: Chinese heritage language (CHL), systematic review, heritage language learner identity, heritage language maintenance, language pedagogy

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1. Introduction

The rise in global transnational mobility has increased the numbers of immigrant minorities in Anglophone countries (e.g., the USA, New Zealand), promoting significant research attention to heritage languages (He, 2006). Heritage languages are defined as non-mainstream and no-societal languages that are often first spoken by linguistic minorities who are exposed to both their home language and the majority language (e.g., Comanaru & Noels, 2009; Mu, 2016). Examples of minority languages in different regions worldwide include Spanish, East Asian languages, Russian, and Arabic (Montrul, 2010). Chinese has a growing population of speakers residing outside China. Over the last two decades China's economic growth has greatly enhanced the global status of the Chinese language; not only is it a heritage language serving as an important link to

Chinese culture and history, it has also become a form of linguistic capital for the job market (Francis et al., 2009; Gong et al., 2020; Mu, 2014).

Learners of Chinese as a heritage language (CHL) typically experience early exposure to Chinese at home, but they may develop only latent or tacit knowledge of the language and quickly adopt the dominant language of their wider community once they begin formal schooling (Duff & Doherty, 2019). As a result, most CHL learners develop a strong proficiency in the majority language, but their proficiency and literacy in their heritage language can vary considerably (Montrul, 2010; Polinsky et al., 2010).

Given that CHL learners represent an increasingly significant subsection of global Chinese language learners (Mu & Dooley, 2015) and considering the contextual complexities and linguistic challenges inherent in teaching and learning CHL, a growing number of researchers (e.g., Chen et al., 2023; Mu & Dooley, 2015) have examined issues related to cultural identity and language maintenance while learning CHL, as well as pedagogical practices in the CHL classroom. Although there are existing review articles on teaching and learning Chinese as a foreign or second language (CFL/CSL) (e.g., Gong et al., 2018), there has been a notable absence of systematic reviews specifically addressing CHL education. This lack of focused attention hinders a nuanced understanding of the sociocultural, familial, and educational complexities associated with teaching and learning CHL, which are distinct from those experienced by CFL/CSL learners. The absence of such a review risks perpetuating gaps in research and practice, ultimately limiting the development of targeted, effective pedagogical strategies and educational policies that could enhance CHL learning outcomes and cultural integration.

To address this research gap, this article systematically reviews existing empirical studies on CHL education from 2008 to 2023 ($n=53$). The review aims to: (1) identify the methodological approaches in the reviewed studies; and (2) interpret and synthesize existing findings about teaching and learning CHL in order to provide an in-depth and holistic understanding of the complexities of the linguistic and sociocultural landscape of CHL. By examining the methodologies and coverage of these studies, the review intends to identify the research gaps in relation to CHL education and indicate relevant directions for future studies. Thus, this study aims to address the following two questions:

RQ1: What kinds of methodological approaches have been adopted in existing research on teaching and learning CHL?

RQ2: What are the research topics of existing studies on teaching and learning CHL?

2. Methodology

This review adhered to the five principles for systematic reviews (Evans & Benefield, 2001), which are: (1) establishing explicit criteria for selecting studies; (2) employing a comprehensive search strategy to identify all relevant studies; (3) ensuring a transparent process for literature selection; (4) implementing strategies to minimize biased data analysis, and (5) conducting a systematic synthesis of the findings.

2.1. Eligibility criteria

The research team collaborated to establish criteria for inclusion and exclusion in order to identify relevant research on CHL education. Publications were limited to journal articles indexed in the Social Sciences Citation Index (SSCI) and published in English between 2008 and 2023, given that 2008 marked the start of a period of significant research attention on CHL education (Curdt-Christiansen, 2008). In addition, articles in SSCI journals undergo a rigorous evaluation process before publication, thus maintaining high standards of quality and reliability in the reviewed research (Booth et al., 2021). The specific criteria for study eligibility were: (1) only empirical studies (i.e., qualitative, quantitative, or mixed methods research) were included; and (2) research primarily focused on Mandarin Chinese as a heritage language due to its popularity (Ruggles et al., 2004) in comparison with other Chinese variants (e.g., Cantonese, Fujianese).

2.2. Literature identification

The initial literature search was conducted in October 2023, and was updated in February 2024 to identify any new research published since the initial search. To maximize the scope of the research, the literature search included key education databases (Stentiford & Koutsouris, 2021), namely Web of Science, Scopus, and Education Resources Information Center (ERIC). The search strings used in these databases were:

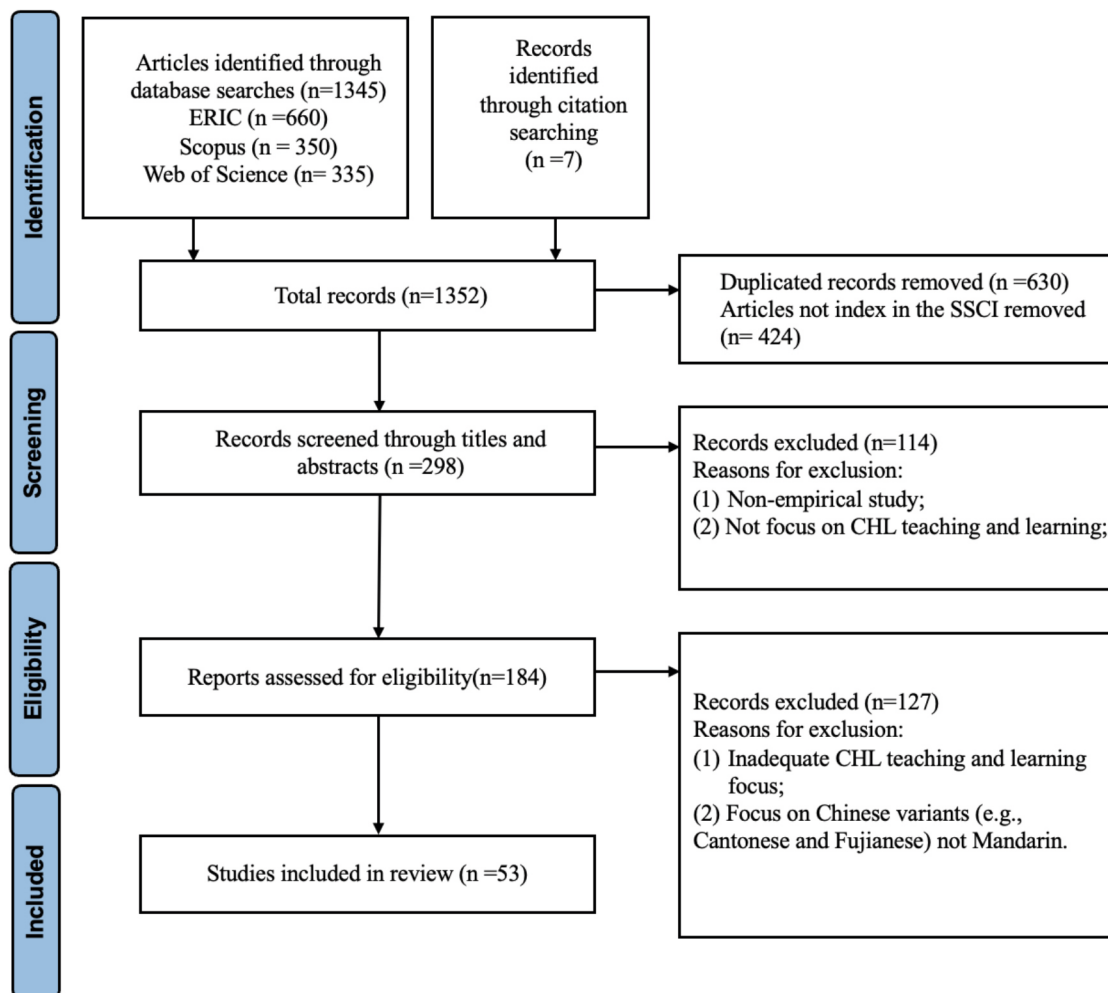
1. heritage ('speaker*' OR 'learner*' OR) AND (Chinese OR Mandarin)
2. heritage AND (Chinese OR Mandarin)
3. Chinese heritage language (CHL) teaching OR learning

2.3. Selection process

The publication selection process followed the PRISMA flow (Moher et al., 2009) as shown in Figure 1. The first author conducted an initial round of searches combining search string, publication type, and year of publication; this yielded 1,352 results (1,345 from database research, 7 from reference lists). Duplicates and articles not indexed in the SSCI were removed, before the first author screened the titles and abstracts of the remaining 298 articles for eligibility based on the criterion of empirical studies focusing on CHL education. After this screening, 184 studies remained. Further exclusions were made based on inadequate focus on

CHL teaching and learning, or a focus on Chinese variants other than Mandarin Chinese (e.g., Cantonese or Fujianese), resulting in 53 studies meeting the final inclusion criteria. To ensure the eligibility of these studies for inclusion, both the first and the second author independently read the content of the potential publications, and differences of opinion about the inclusion of particular studies were discussed until a consensus was reached.

Figure 1. PRISMA flow diagram for the systematic review



2.4. Data analysis

This review employed thematic synthesis (Thomas & Harden, 2008) to integrate the findings from the included studies and identify the main themes that emerged from the texts. The data analysis involved three phases, with Microsoft Excel used for coding data. Initially, the first author carefully read each study several times to become familiar with the content. Then, the following data was compiled in the Excel database: author name(s) and year, research context and participants, research questions, research design and instruments, and key findings. Third, an inductive approach was used to analyze and synthesize all the findings to identify the research foci, topic trends, and development trajectories in research on CHL education. While the first author performed the coding, the main themes were reviewed and validated by two additional researchers with expertise in the field of higher education.

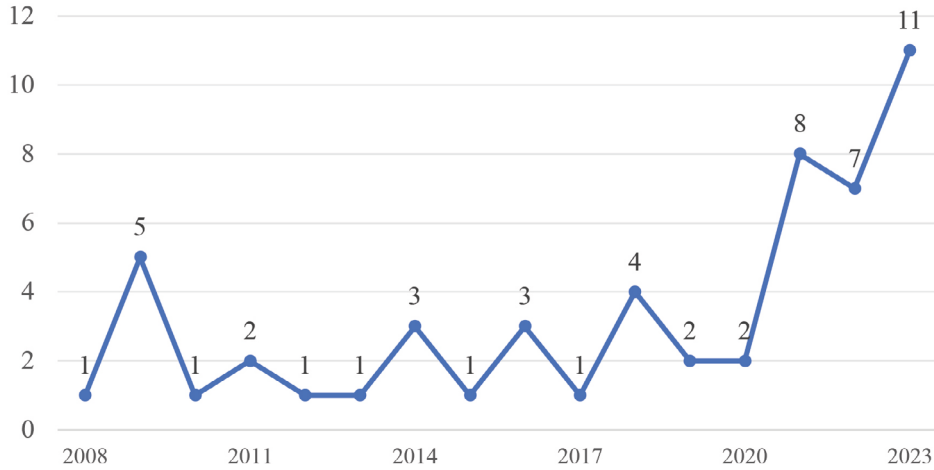
3. Findings and discussion

Before we address the research questions, some general observations involving publication trends and geographical distribution emerged as we analyzed the studies. Over the past 15 years there has been a notable increase in terms of the number of research studies on CHL education, especially in the most recent three years (see Figure 2). This indicates the growing global mobility of Chinese people and their families (Yang, C. T., 2023).

Through an analysis of the participants recruited by these studies, we found that 47 out of the 53 studies recruited CHL learners spanning various age groups as participants, with 13 studies concentrating on children (under 12 years old), 6 studies on teenagers (12 to 18 years old), 19 studies on university students and adults (over 18 years old), and 9 studies on mixed groups. The largest number of adult CHL learner studies is consistent with the convenience of sample access to university students, who often participate in credit-bearing Chinese language-related courses or study abroad programs in China (Tong & Tsung, 2023). Compared to teenagers and college students, children were reported to have a greater level of exposure to the Chinese

language via family members or heritage language schools, making them important in studies on CHL education (Tang & Zheng, 2023). However, as CHL children grow up they encounter increasing pressure to assimilate into the dominant society and increasingly busy schedules, which often diminish their motivation and effort related to learning Chinese. However, there is a lack of research on language attrition during this critical period, despite conflicting learning attitudes that may arise as a result of parental and teacher expectations (Zhang & Slaughter-Defoe, 2009).

Figure 2. Number of studies on teaching and learning CHL

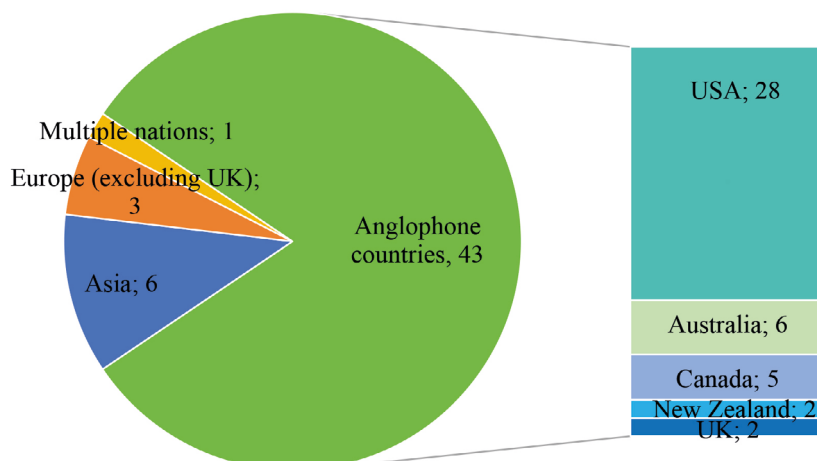


Consequently, researchers such as Wu and Leung (2022) and Zhang (2012) adopted a broader sampling approach, including CHL learners ranging from children to teenagers in order to better investigate the evolving challenges related to teaching and learning CHL. In addition, these studies (e.g., Tian, 2017; Yang, C. T., 2023; Yang, Y., 2023) mostly included the learners’ parents or educators to provide a more holistic perspective of the relevant issues, such as academic struggles and ethnic identity formation. Five studies focused on parents and educators in the context of CHL education, examining their roles in maintaining CHL learners’ Chinese proficiency (e.g., Tang & Zheng, 2023; Wang & Hamid, 2022). Two studies explored textbooks (Curdt-Christiansen, 2008) and educational institutions (Luo et al., 2019) related to teaching and learning CHL.

The studies were geographically diverse and covered a variety of regions with significant Chinese diaspora populations, but they were predominantly focused on Anglophone countries (n=43) such as the USA, Canada, the UK, Australia, and New Zealand (see Figure 3). The high numbers of CHL studies in these countries may be attributed to their popularity as destinations for education, study abroad, and international exchanges, driven by the global spread of English and the internationalization of higher education. However, research based in other regions with increasing Chinese diaspora populations, such as Europe and Asia, especially those with societal languages other than English, remains limited (n=10). To address this gap, future research should expand to include these regions in order to explore the potential nature of CHL education in different cultural and linguistic contexts (Li & Shen, 2023).

This section partially addresses RQ1 by detailing participant types and settings, including the age groups of learners and the involvement of parents and educators. It also responds to RQ2 by identifying research topics such as CHL maintenance and ethnic identity formation. The regional focus on Anglophone countries highlights gaps in research from non-English-speaking regions.

Figure 3. Regional distribution of studies on teaching and learning CHL



Furthermore, these studies were conducted primarily in five different types of contexts, including home (13 studies), classroom (12 studies), home and classroom (6 studies), laboratory (13 studies), and individual (9 studies). Studies on CHL in naturalistic or non-instructional contexts, typically within homes, focused on family language policies, parental involvement, and informal language practices, highlighting the role of the domestic environment in supporting or hindering heritage language maintenance. Classroom-based and laboratory-based studies examined formal educational practices such as teaching methods, curriculum design, and the integration of technology, providing insights into structured educational settings where CHL learning took place. The distribution of these research contexts potentially indicates that immigrant families constitute the dominant space where heritage languages are maintained (Duff & Doherty, 2019), and highlights the importance of relevant studies to address the practical challenges encountered by transnational families.

In what follows, we address the first research question (RQ1) by examining the methodological approaches employed in existing research on teaching and learning CHL. This analysis aims to provide the insights and knowledge needed to inform researchers in their choice of research methods and their role in shaping key perspectives or paradigms in CHL education. We also respond to the second research question (RQ2) by identifying the key research topics that have emerged from these studies, offering a comprehensive view of the field's current focus.

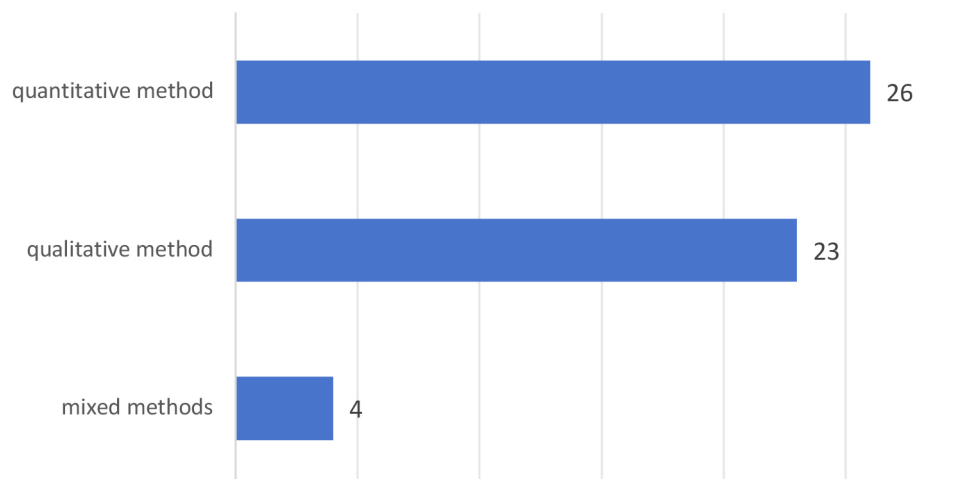
3.1. Methodological approaches in studies on CHL education

Our analysis identified that the studies on CHL teaching and learning could be divided into cross-sectional, longitudinal, and experimental studies according to their methodological approaches. Cross-sectional studies examined representative samples from various national backgrounds, phases of education, or levels of acquisition (e.g., Jee et al., 2023). Longitudinal studies compared a sample of CHL learners over time to trace their changes (e.g., He, 2016). Experimental studies often included control groups, comparing a representative sample of CHL learners with native speakers, dialect-heritage speakers (e.g., Cantonese), or English-L1 baseline groups. Case studies presented deep analyses of the profiles and experiences of CHL learners, families, or teachers (e.g., Liang & Shin, 2021) and offered in-depth analyses of how identity, culture, and context influenced CHL learning outcomes (Li & Shen, 2023).

Regarding methodological design, 26 out of the 53 studies employed quantitative methods, with half being laboratory-based and designing tasks to investigate CHL acquisition (Figure 4). The other half included questionnaire surveys and controlled observations conducted in homes, classrooms, or individual settings, focusing on CHL acquisition (4 studies) and pedagogy (4 studies) to explore the predictive factors of CHL learners' language proficiency. The predominance of quantitative, particularly laboratory-based, research may be attributed to researchers' preference for the rigorous testing of hypotheses about language learning in controlled settings, offering precise insights into cognitive processes specific to heritage language learners.

In contrast, 23 studies utilized qualitative methods, with 13 focusing on issues related to CHL maintenance and policy, 6 on identity topics, and 4 on pedagogy. Specifically, the research approaches of these studies included narrative studies and ethnography, employing data collection and analysis methods such as interviews with learners, parents, and teachers, observations in both homes and classrooms settings, conversation analysis, and the analysis of artifacts such as textbooks and other cultural materials used in CHL educational contexts. In addition, four studies adopted mixed methods—two on CHL maintenance and policy, and two on identity issues. The use of qualitative and mixed methods in CHL research provided detailed insights into language maintenance practices, identity formation, and effective teaching strategies by capturing contextual and experiential data that complements the quantitative findings from other studies.

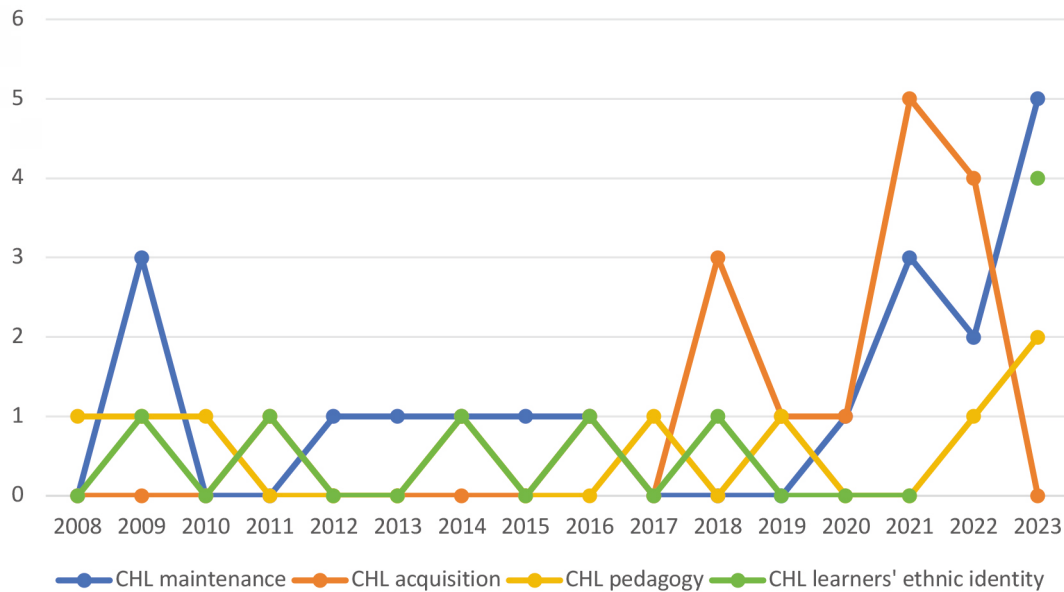
Figure 4. Methods used in the reviewed studies



3.2. Research topics of studies on CHL education

Overall, the studies on CHL education could be categorized into four areas: (1) CHL maintenance (19 studies), (2) CHL acquisition (15 studies), (3) CHL pedagogy (10 studies), and (4) CHL learners' ethnic identity (9 studies). The numbers of these types of CHL education studies have increased steadily over recent years (see Figure 5), with a growing emphasis on CHL maintenance and learners' identity from a sociocultural perspective rather than solely a cognitive one. The reviewed studies have reported and explained the challenges encountered in CHL proficiency development by learners, parents, and educators, as well as their coping strategies. Two contributing factors to learning outcomes were also examined in the studies, including individual efforts and contextual input from homes, classrooms, and wider communities. Researchers have also focused on how CHL learners (re)construct their ethnic identity within multilingual and multicultural societies.

Figure 5. Trends in the reviewed studies under each topic



3.2.1. CHL maintenance (19 studies)

HL maintenance is understood as the continuing use of a minority language in the face of challenges from a regionally or socially more powerful language (Mesthrie & Leap, 2000; Schalley & Eisenchlas, 2020). The studies on this topic consistently argued that CHL maintenance is both a necessary ethnic asset for communication within families, and a practical skill set for educational and career opportunities. The existing literature has extensively explored the complex processes and outcomes of CHL maintenance, highlighting a wide range of contributing factors such as the individual investment of CHL learners (Li, G. et al., 2021), parental involvement (Chen et al., 2023), parents' and children's ideologies related to CHL (Zhang & Slaughter-Defoe, 2009), HL classroom practice (Wu & Leung, 2022), and practical benefits from the broader sociocultural context (Mu, 2014), and so on. These factors collectively contributed to the diverse outcomes observed in CHL learners' multilingual development.

To effectively navigate CHL maintenance, related stakeholders, including learners, parents, and educators, have made significant efforts and enacted diverse practices that have attracted scholarly attention. For example, Mu and Dooley (2015) and Zhang and Slaughter-Defoe (2009) reported various forms of family support for CHL maintenance, such as verbal encouragement and instruction. They noted that families tended to use both informal instruction (e.g., error correction, parent-child talk, language practices like watching Chinese TV and mealtime conversations) and formal instruction (e.g., assigning additional Chinese homework, using Chinese books from China, attending Chinese schools, engaging home tutors). They also found that family encouragement and structured learning activities played a crucial role in fostering a sense of pride and connection among CHL learners.

In addition, Chen et al. (2021) reported that the effectiveness of home efforts was mediated by family socioeconomic status (SES), whereby higher SES was generally associated with reduced emphasis on Chinese reading and writing, decreased use of Chinese at home, limited exposure to Chinese media, fewer Chinese friendships, and lower proficiency in Chinese productive vocabulary. While lower generational status correlated with lower HL proficiency, CHL learners' Chinese literacy and receptive vocabulary improved as they matured. However, although parents expected their children to maintain the Chinese language, they primarily emphasized conversational skills over literacy development, assuming that extensive exposure to Chinese might hinder their English development, which they deemed crucial for college preparation. They also anticipated that Chinese literacy would be further developed during college, as reported by Chen et al. (2023).

Despite considerable efforts made by parents, CHL children's attitudes often varied, with peer pressure and the urge to conform diminishing their motivation to learn Chinese and resulting in resistance during childhood, although there was often a renewed interest in adolescence. Liang and Shin (2021) found that CHL learners preferred communicating in English within ethnic networks despite their near-native conversational proficiency in Chinese, resulting from pressure to assimilate into the dominant society.

At the same time, children were often passively or agentively engaged in spontaneous language brokering and code-switching in addition to formal and informal CHL learning, shaping immigrant family discourse. He (2016) reported that CHL children often assisted their parents with language, cultural, and technological challenges through language brokering, which specifically referred to the translating and interpreting practice of bilingual individuals for their family members or others who do not speak the dominant language. Wu and Kim (2009) found that Chinese American adolescents' perceptions of brokering were influenced by their Chinese orientation and family expectations. Code-switching, or using multiple languages in a single conversation, helps CHL speakers to achieve interpersonal goals in multilingual contexts (He, 2013; Gong et al., 2021). These practices highlight CHL speakers' ability to blend linguistic resources, enhancing their identity flexibility and cultural affiliation.

Beyond individual and interpersonal practices within the close personal relationships of CHL learners (i.e., in family and school contexts), co-ethnic networks, especially extended family support, also played crucial roles in CHL maintenance as well as being mediated by media use. For example, Zhang (2012) reported that the language maintenance of CHL learners from immigrant families was shaped by co-ethnic networking among their family members in both China and their country of residence. Throughout the process, poly-media and digital platforms (e.g., WeChat) significantly impacted CHL maintenance in immigrant families by offering diverse resources and enabling interactions, although challenges such as children's preferences and parental supervision persisted, as reported by Wang and Hamid (2022) and Zhao and Hewitt (2020). Wang and Hamid (2022) examined the role of polymedia in enhancing CHL development and maintaining family communication across significant geographical distances. Parents valued polymedia for providing diverse CHL-related practices and fostering ethnic identity, but they were concerned about excessive use and the challenges of navigating polymedia effectively, especially caused by children's preference for English-mediated and entertainment-oriented (rather than educational) media. At the same time, CHL children agentively and creatively navigated communication using various semiotic resources such as written Chinese, English, audio recordings, emojis, stickers, and digital artifacts, as reported by Zhao and Hewitt (2020). This study highlighted that digital platforms like WeChat facilitated meaningful language and literacy development through dynamic, engaging interactions by extending CHL learner's Chinese-speaking social worlds and providing contextualized HL practice.

The 19 studies on CHL maintenance reveal a complex landscape, where the efforts of parents, children, teachers, and contextual factors intertwine to shape CHL maintenance and policy, impacting CHL proficiency and heritage cultural connection. Overall, relevant research findings have demonstrated that significant challenges persist despite the well-documented crucial role of family and language schools in preserving CHL. The contribution of parents' efforts and engagement in CHL maintenance are often hindered by children's attitudes and the dominant language environment. Interpersonal support from co-ethnic networks and extended family is vital, but managing these influences alongside assimilation pressures is a sophisticated process. Contextually, factors such as SES, family language use, and media engagement critically shape CHL development. Although digital platforms provide diverse resources, they also present challenges related to children's preferences and parental supervision. While a substantial portion of the existing research has concentrated on examining individual and familial practices (e.g., home language use and parental involvement) in CHL maintenance, it has often failed to explore how these practices interact with broader socio-political factors, such as language policy, education policy, access to bilingual educational resources, and racial social justice.

3.2.2. CHL acquisition (15 studies)

Among the 53 studies reviewed, 15 provide insights into the acquisition of CHL across different dimensions, including vocabulary knowledge development, literacy abilities, and grammar acquisition (e.g., Li, F. et al., 2021; Mai & Deng, 2019). Research in these domains has highlighted the multifaceted nature of CHL acquisition, emphasizing the importance of vocabulary knowledge, print-related activities, and early language exposure in literacy and grammar development.

The predominant focus of these studies lay in investigating CHL learners' vocabulary acquisition, exploring various factors such as morphological awareness, oral language exposure, learning strategies, and family language environment. For example, Luo et al. (2018) found that morphological awareness contributed to Chinese vocabulary learning, but no clear positive correlation was observed with phonological knowledge. Similarly, the study by Zhang et al. (2022) indicated that in addition to morpheme recognition and definitional knowledge, structural recognition also contributed to Chinese lexical inference. As well as highlighting the morphological awareness in vocabulary learning, studies have also examined the effect of language input (i.e., oral and print language) on vocabulary acquisition among CHL learners. For instance, Zhang (2016) demonstrated that oral language input at home and print exposure at CHL schools jointly enhanced word-level abilities, such as vocabulary knowledge and lexical inferring ability. In addition, Zhang and Koda (2018a) suggested that early exposure to spoken Chinese enhanced the development of oral vocabulary knowledge and morphological awareness in CHL learners, thereby strengthening the connection between oral and print

vocabulary knowledge. Previous studies have also recognized the influence of learning strategies and home language environment on CHL vocabulary acquisition; family SES was found by Li, G. et al. (2021) to be a significant factor affecting early HL vocabulary development. In addition, the quality of home language environments has been shown to shape early vocabulary development, although the duration of attending HL schools showed only a limited association with lexical knowledge.

Research on CHL learners' literacy development (e.g., reading comprehension) also highlighted the crucial role of vocabulary knowledge, morphological awareness, and print-related activities in reading comprehension, while oral language exposure was found to contribute less directly to higher-level reading skills. For instance, Zhang and Koda (2018b) investigated the role of vocabulary knowledge and morphological awareness in reading comprehension, finding that vocabulary knowledge (i.e., word-meaning knowledge) directly and indirectly influenced reading comprehension. They emphasized that morphological awareness was helpful in connecting vocabulary knowledge to reading comprehension. Zhang (2016) explored how early language input impacted later reading development, finding that while oral language exposure enhanced oral language capacity, it did not directly improve higher-level reading abilities (e.g., lexical inferring and reading comprehension). In contrast, print-related activities at home, for example, practicing Chinese characters and reading Chinese storybooks, significantly facilitated reading comprehension.

Zhang and Koda (2021a) further explored the relationship between oral language and reading capabilities, finding significant correlations between oral language capacity, morphological awareness, and print vocabulary, but no direct impact on higher-level inferring and comprehension. In addition, Zhang and Koda (2011) found a positive correlation between parents' use of Chinese, their assistance with homework, and children's vocabulary breadth, with a particular relationship between independent schoolwork reading, radical identification ability, and vocabulary breadth. Overall, these findings underscored the intricate relationship between various linguistic awareness, knowledge, and activities in shaping reading comprehension skills among CHL learners, highlighting the need for a multifaceted approach to literacy development.

Despite these insights, the existing research reveals gaps in our understanding of how various factors interact to affect reading comprehension. Future research should explore how different types of print-related activities and parental engagement specifically influence higher-level reading skills, while longitudinal studies could provide a deeper understanding of how early literacy experiences shape long-term reading development. Moreover, investigating the interplay between oral language exposure and print-based strategies may reveal more effective approaches to fostering comprehensive literacy skills in CHL learners.

Grammar represents a critical linguistic aspect in the acquisition of CHL, alongside Chinese vocabulary and reading skills, and it has attracted considerable scholarly interest. Research on CHL grammar has highlighted the importance of early language exposure and the resilience of HL proficiency, with current theories such as the Interface Hypothesis showing limitations in predicting bilingual grammar acquisition (Jin et al., 2022). Mai and Deng (2019) quantitatively investigated the proficiency and grammatical representation of the *shì...de* cleft structure in CHL learners, revealing that while its temporal feature is relatively stable, lexical and discourse aspects are more susceptible to variability. This suggests that early Chinese exposure plays a key role in shaping proficiency, with minimal English transfer effects. Jin and colleagues (2022) examined the comprehension and production of Mandarin relative clauses, finding that despite initial production challenges, CHL learners could fully acquire complex structures with sustained HL exposure. This study also indicated that cross-linguistic influence from English did not lead to incomplete acquisition, emphasizing the resilience of HL proficiency.

While current research has highlighted the resilience of HL proficiency and the importance of early language exposure, it also underscores the limitations of existing theoretical frameworks such as the Interface Hypothesis in fully explaining bilingual grammar acquisition. Future research needs to focus on longitudinal studies to better understand the dynamic processes of grammatical development in CHL learners. At the same time, more nuanced investigations into the interaction between crosslinguistic influences and grammatical structures are needed, along with studies exploring how different types of language exposure and instructional methods impact long-term proficiency.

3.2.3. CHL pedagogy (10 studies)

Studies on effective CHL pedagogy encompass a range of practices, including classroom teaching strategies, the use of textbooks, and curriculum development tailored to CHL learners. These studies mainly examine teaching practices that foster literacy, vocabulary acquisition, and reading comprehension while integrating modern educational tools and technology. They also explore the role of textbooks and curriculum development in shaping CHL educational experiences and outcomes. The relevant findings highlight the importance of innovative teaching methods and curriculum enhancements in supporting CHL learners' language development and cultural understanding.

Previous studies (e.g., Lan, 2014; Zhou, 2022) have shown that effective classroom teaching practices in CHL education are crucial for enhancing literacy, vocabulary, and reading comprehension, as well as indicating the importance of integrating modern technology to support language learning. Previous studies highlighted diverse strategies that addressed these areas, demonstrating the impact of innovative pedagogical approaches on student outcomes. Cun (2023) and Cheng et al. (2023) focused on enhancing literacy and reading comprehension through innovative approaches. Cun (2023) highlighted the effectiveness of arts-based writing activities, where teachers took on a supportive role to boost student engagement and meaning-making, while Cheng et al. (2023) introduced the Progressive Character Reading method, which

improved character acquisition and reading comprehension by providing frequent exposure to characters, thereby strengthening students' orthographic, phonological, and semantic knowledge.

Han and Chen (2010) further contributed to this area by demonstrating that repeated reading strategies enhanced word recognition and a deeper understanding of language content. In contrast, both Zhou (2022) and Jia (2009) examined more effective teaching approaches beyond rote memorization. Zhou's (2022) study on teaching Chinese classifiers found that cognitive teaching methods were more successful than traditional rote memorization in facilitating understanding of complex linguistic structures, and Jia (2009) compared student-centered interactive learning with teacher-centered memorization, highlighting the benefits of interactive methods in promoting cultural transmission and literacy development. In addition, Lan (2014) demonstrated that technology, specifically immersive virtual environments, could improve CHL learners' oral performance and attitudes towards Mandarin, underscoring the growing importance of integrating modern technology into educational practices to foster engagement and to enhance language learning outcomes.

At the same time, teachers were being confronted with the sociolinguistic challenges of CHL maintenance posed by the public emphasis on Mandarin over other dialects, as Wu and Leung (2022) notably pointed out in their study on Hoisan-heritage Chinese Americans. They also reported that CHL teachers used translanguaging pedagogy to allow students to share their diverse linguistic knowledge and ameliorate the risks of a Mandarin-only approach, fostering critical language awareness and encouraging competence in various Chinese languages. This study emphasized the need for CHL education to consider different Chinese languages, not just Mandarin.

While these studies have consistently illustrated the effectiveness of diverse teaching strategies and technological integration in advancing CHL education, future research should explore how these strategies can be tailored to diverse learning contexts and individual needs, as well as the long-term impact of these pedagogical strategies on language proficiency and cultural competence. Further studies should also investigate the interplay between technology and traditional teaching methods to optimize their combined effects on particular CHL acquisition.

Other studies on CHL pedagogy explored issues such as the use of textbooks and curriculum development. Curdt-Christiansen (2008) examined the textbooks used in CHL classrooms, revealing that teachers employ discourse devices and historical contexts, which constituted literacy education, to cultivate cultural identity and values among CHL children. This study demonstrated how these educational texts, alongside other sociocultural resources, can play a role in shaping students' moral identities and cultural capital, and also highlights how textbooks can contribute to students' interpretation of social events and their ability to navigate their social worlds.

The exploration of curriculum development in CHL education has revealed crucial insights into the roles of various stakeholders and structural challenges within language programs, including parental involvement (Li, 2005), institutional tracking (Tian, 2017), and program resources (Luo et al., 2018). Li (2005) examined the role of parents in CHL schools, revealing that while parental support is beneficial, an over-reliance on parents can lead to issues such as low teaching quality and inadequately prepared instructors. This study emphasizes the need to diversify resources by fostering connections with Chinese international students, scholars, and faculty to enhance the overall quality of these programs. Tian (2017) analyzed the impact of tracking systems in an Ivy League Chinese language program, indicating that despite their cultural and linguistic advantages, CHL learners were placed in lower proficiency tracks compared to non-heritage learners. This analysis highlights how institutional tracking and cultural processes can contribute to the achievement gap between heritage and non-heritage learners, stressing the importance of reconsidering structural and cultural factors in improving CHL learners' language proficiency. Luo et al. (2018) conducted a national survey of college-level Chinese language programs in the USA, providing a comprehensive overview of CHL education. Their survey, which included responses from 246 institutions, revealed a broad spectrum of program structures, teaching materials, and pedagogical challenges. The study identified key issues such as the need for updated teaching resources and professional development for instructors, emphasizing the need for systemic improvements to address these challenges and better support CHL learners.

Studies on CHL pedagogy highlight progress in literacy, vocabulary acquisition, and reading comprehension through innovative teaching practices and curriculum enhancements. While modern strategies and technology integration demonstrate potential in improving education effectiveness and quality, there is still a need to tailor these approaches to diverse learning contexts and individual needs. The role of textbooks and curriculum development in fostering cultural identity underscores the necessity for ongoing refinement. Future research should focus on how pedagogical strategies impact long-term language proficiency and cultural competence, adapt practices to varying educational settings, and evaluate the interplay between technology and traditional methods. At the same time, addressing structural challenges and resource needs in CHL programs will be essential for developing more effective and inclusive educational practices.

3.2.4. CHL learners' ethnic identity (9 studies)

Nine of the 53 identified empirical studies focused on CHL learners' ethnic identity, defined as an individual's understanding of their membership in a non-state-dominating group and the significance they attach to this belonging (Yang Y., 2023). The study of CHL learners' ethnic identity is crucial for understanding their cultural adaptation within multilingual and multicultural societies. It can shed light on the complex entanglement between language, culture, and identity formation, supporting Ruzaa's (2000, p. 168) assertion that "languages are among the most powerful symbols of ethnic identity."

It is commonly assumed that ability and use of a heritage language are key factors related to ethnic identity construction (Noro, 2009). Because of CHL learners' diverse backgrounds, the ways they view themselves in relation to their languages and heritage communities vary considerably, with some readily adopting a dual linguistic and cultural identity and others feeling more reluctant to do so. Hence, the heterogeneity in CHL learners' identities and the associated social, cultural, and historical ramifications have received increasing attention from scholars. These authors generally argue that it is essential to comprehend how young people express their racial and ethnic identities, language use, literacy, and cultural traditions in both conventional and evolving ways, and also to avoid the assumption of unidirectional correspondences between race, ethnicity, language, and cultural ways of being.

Researchers have reported that CHL learners' ethnic identity may be shaped by essentialist discourses of Chineseness and their own agency (e.g., Comanaru & Noels, 2009; Zhou & Liu, 2023). These essentialist discourses, which are based on the assumption that all members of a particular identity category shared fixed attributes that define their identity (Bucholtz & Hall, 2004), can either constrain or enhance CHL learners' ethnic identity, and they often impose rigid definitions and stereotypes about ethnic groups, which can impact how learners perceive and express their own ethnic identity in relation to their heritage language learning. For instance, Zhou and Liu (2023) found that CHL learners were often disempowered by the model minority stereotype imposed by their parents and the dominant society, but their bilingual skills, which facilitated their workplace experiences, provided a space for them to gain confidence in their bilingual and hybrid identities. Similarly, Paciocco (2018) observed that the exclusionist discourse in Italy led CHL children with limited Italian literacy to adopt a diasporic stance as a coping strategy. In terms of the tensions between Chinese ethnic identity and the dominant society where learners reside, Wu et al. (2014) further noted that the mismatch between the Chinese dialect spoken at home and the standardized Mandarin used as the institutional norm in language classrooms posed challenges for CHL learners' language learning investment and ethnic identity.

While being socially impacted by essentialist discourses, CHL learners' agency and strategies to (re)position themselves in learning Chinese also significantly influence their ethnic identity. For example, Comanaru and Noels (2009) and Yang, Y. (2023) found that agentic CHL learners who perceived their Chinese heritage as integral to their self-concept, rather than strongly preferring the dominant language Mandarin, exhibited greater motivation, engagement, and enjoyment in learning Chinese, which in turn reinforced their Chinese ethnic identity. In contrast, limited agency among CHL learners could negatively impact their identity development. For example, Yang, C. T. (2023) reported that CHL learners who were strongly connected with English perceived Mandarin as a secondary language rather than a heritage language, and this lack of agency resulted in rejection and resistance to learning Mandarin due to their identity connections to their country of residence (i.e., American identity).

In addition, Tong and Tsung (2023) highlighted that CHL learners with higher agency who employed proactive strategies, such as intense engagement with Chinese language and culture, strong motivation to overcome learning challenges, and reflective integration of Chinese language development with their whole personal growth, were able to foster a nuanced and reinforced ethnic identity. Conversely, those who embraced the advantages of their foreigner identity when visiting China, adopting an outsider stance and engaging only superficially with Chinese language and culture, failed to actively explore their heritage language identities, leading to minimal development of their Chinese ethnic identity (Tong & Tsung, 2023). In this regard, the ethnic identity dynamics of CHL learners involve navigating essentialist discourses, with outcomes ranging from feeling disempowered by stereotypes to reclaiming and transforming their identities through strategic repositioning, gaining confidence, and actively participating in heritage language learning.

Existing research underscores that the interplay between essentialist discourses and individual agency has emerged as a critical aspect shaping these identities, and highlights the significance of CHL learners' ethnic identity in their cultural adaptation and language learning. Essentialist views of Chineseness could both constrain and empower learners, depending on how they navigate these discourses. The contrast between learners who actively engage with their heritage language and those who adopt an outsider perspective highlights the pivotal role of agency in identity formation. However, an over-reliance on essentialist frameworks risks oversimplifying the complexities of identity, potentially neglecting other sociocultural factors—for example, duration of residence in the adopted country, family socioeconomic status, education experience, and local sociopolitical context—that may act to shape identity. Future research should aim to move beyond these binaries and extend the focus to intersectionalities between identity and other factors—for instance, media use in family and school—and embrace the full diversity of experience among CHL learners.

4. Conclusions and the way forward

This systematic review of 53 empirical studies aimed to examine the landscape of research on CHL education from 2008 to 2023, focusing on learners' and teachers' identities, maintenance and policy issues, acquisition processes, and pedagogical practices. Studies on CHL learners' ethnic identity have underscored the significant interplay between language and identity, pointing to the need for more context-specific research Gong et al. (2021). Insights into how ethnicity, gender, and socioeconomic status influence identity formation, as well as the necessity of including various Chinese dialects, are crucial. Similarly, the examination of CHL maintenance and policy across individual, interpersonal, and contextual levels illustrates the complexity of maintaining heritage languages amid assimilation pressures and varying contextual factors. Research on CHL acquisition has emphasized the importance of vocabulary development, literacy, and grammar, but gaps remain in understanding the interactions between these factors and their long-term impacts. Pedagogical

studies have highlighted the effectiveness of modern teaching strategies and technology integration, but call for further adaptation to diverse educational contexts and needs.

While the reviewed studies have provided valuable insights into CHL education, several critical areas warrant further exploration in terms of both research topics and methodologies. Thematically, first, studies are needed to examine how CHL learners' ethnic identity is constructed in multilayered contexts, factoring in ethnicity, gender, and socio-economic status, and non-Mandarin Chinese dialect backgrounds. Second, investigations can be improved by extending to additional contextual factors such as changes in educational policy, community support networks, and access to bilingual resources, all of which may significantly influence CHL maintenance and development.

Methodologically, first, there is a pressing call for research that develops and tests tailored interventions to address the specific challenges faced by different family members while balancing the benefits of CHL maintenance with assimilation pressures. Second, classroom-based action research conducted by teacher researchers has the potential to enhance both CHL pedagogy development and the professional development of CHL teachers, to mitigate their perception of teaching Chinese as a "secondary" vocation (Wu et al., 2011). Also in this area, it will be beneficial to understand how to effectively combine modern educational tools with traditional methods to enhance CHL learning outcomes. Third, evaluating the long-term effects of innovative teaching strategies and curriculum developments will be essential. Fourth, considering the development of immigrant generations, it is becoming increasingly important to conduct research on language and culture transmission among third-generation Chinese immigrants and beyond, since changes in the linguistic and cultural profiles of their parents and societal environments are likely to significantly impact their heritage language experiences (Visonà & Plonsky, 2020). Finally, how CHL learners and other stakeholders negotiate the process of learning and teaching CHL should be investigated using a bottom-up approach in order to capture their experience.

At the same time, we also offer some practical suggestions for related stakeholders in teaching and learning CHL. First, parents play a vital role in CHL maintenance, and they should be actively involved in their children's language learning journey. Practical actions should include creating a home environment rich in Chinese linguistic input, such as regular family conversations in Chinese, reading Chinese books, and participating in cultural activities. It is also important that parents collaborate with schools to reinforce learning goals, and balance the maintenance of Chinese with the overall development of their children in the dominant society. Second, teachers are encouraged to differentiate their instruction based on learners' linguistic backgrounds, incorporate culturally relevant materials, involve families in the learning process, and leverage technology to enhance engagement and bilingualism, while fostering a positive cultural identity in CHL learners Gong & Gao (2024). Third, educational institutions should foster closer collaboration among teachers, parents, and communities to provide holistic support for CHL learners. This could include organizing workshops, sharing resources, and building community networks that encourage the use of Chinese both in and outside of the classroom, so that the quality of CHL learning and teaching can be improved. This will ultimately benefit many Chinese immigrant families.

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