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Parent-Child Decontextualized Conversations Supporting Early Language and Socio-Cognitive

Development of Chinese Preschoolers

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ABSTRACT OF THE DISSERTATION

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by

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Child development is intricately linked to caregiver interactions, particularly through the use of decontextualized language (DL), a vital component in fostering children's linguistic and socio-cognitive skills. This dissertation comprises two studies exploring the role of DL in Chinese families during mealtimes and evaluating a DL-focused parental conversational strategy program. DL, involving discussions beyond the immediate context, is considered for its high-quality linguistic input due to its interactive, conceptually challenging, and linguistically complex nature (Snow, 1983; Rowe & Snow, 2020). Study One analyzed the Zhou Dinner corpus (Li & Zhou, 2015), which includes mealtime conversations of 34 Chinese children aged

4-5 years and their families. This study employed a multi-level coding scheme to investigate the variability in DL usage among Chinese families. It found that while mothers frequently utilized a wide range of DL elements, fathers engaged less frequently in DL, though both parents often discussed behavior, other people, and plans. These findings indicate cultural influences on DL use in Chinese families and underscore the importance of both parents' roles in early language development. The study also identified specific maternal DL strategies that positively correlate with children's recontextualization, socio-cognitive understanding, and future-oriented thinking. Study Two, involving 48 Chinese parent-child dyads from diverse socioeconomic backgrounds and geographic areas, evaluated feasibility and impact of parent-focused conversational strategies training program. Participating parents displayed increased engagement in DL-rich conversations, utilizing more open-ended questions and causal reasoning after receiving the training. Participant feedback resonated with strong satisfaction and receptiveness towards the program. While the training did not yield immediate significant shifts in children's linguistic and socio-cognitive abilities over this short time, a promising trend toward potential benefits was observed. Taken together, this dissertation reveals cultural patterns of DL use within the Chinese context and illustrates the transformative power of DL-focused parental conversational training. These investigations highlight the intricacies and implications of DL in Chinese familial settings, endorsing a multi-methods approach and emphasizing the necessity for diverse cultural explorations in understanding the multifaceted nature of parental language and its role in child development.

The dissertation of Yawen Yu is approved.

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GENERAL INTRODUCTION

Research has consistently shown that interactions between children and their parents and other caregivers, especially during early childhood, play a pivotal role in jumpstarting brain development (Bernier et al., 2016; Romeo et al., 2018). These early interactions are not isolated; instead, they have far-reaching implications for various developmental domains, including language and social cognition. This project focuses on the quintessential high-quality language input—decontextualized language (DL) or conversations removed from the "here and now" (Snow, 1983), because it is interactive, conceptually challenging, and often linguistically complex (Rowe & Snow, 2020). Some typical types of DL include talk about the past or future, explanations, and pretend play. Families' use of DL serves as a crucial means for early socialization (Peterson & McCabe, 1999) with significant ramifications for later literacy (e.g., Bailey & Moughamian, 2007; Bailey et al., 2018). Additionally, it profoundly influences socio-cognitive skills such as theory of mind and emotion understanding (Peterson & Slaughter, 2003; Doan & Wang, 2010; Gola, 2012; Taumoepeau & Reese, 2013; Fivush et al., 2006).

Furthermore, research has also shown that how parents use DL is deeply influenced by larger social and cultural contexts. Several distinct patterns of parents' DL use are unique in Chinese culture, including limited disclosure of mental state, talk about behaviors, and talk about future events (Koh & Wang, 2013; Luo et al., 2014; Wang, 2001; Wei et al., 2020). Despite these patterns being observed in structured contexts, it remains unclear whether they hold in spontaneous, naturalistic conversations such as mealtime conversations. Naturalistic conversations, characterized by their spontaneity and unscripted nature, are rich sources of linguistic input and opportunities for language development and socialization (Ochs & Kremer-Sadlik, 2015). Investigating Chinese parents' and children's conversational patterns in everyday

life is essential for understanding children's daily DL exposure and production, shedding light on their linguistic development in a real-world context.

Conceptualization of Recontextualizing

As children gradually develop oral language skills, not only do they talk about the concrete here and now that is termed *contextualized language*, but they are increasingly capable of discussing the remote and the abstract, or *decontextualized language* (DL; Snow, 1983). Decontextualized language refers to the specific type of language that is removed from physical (e.g., the immediate environment), social (e.g., shared knowledge between interlocutors), and historical (e.g., prior experience) contexts (Snow, 1983; Imbens-Bailey & Snow, 1997). These two types of utterances are often considered to be different in their linguistic and socio-cognitive demands. Linguistically, contextualized language is often face-to-face communication, and such verbal interactions are sustained by non-verbal cues (e.g., pointing, gestures, and facial expressions) and shared settings in which people can draw inferences in similar ways and offer corrections, clarifications, and feedback in real-time (Davidson et al., 1986; Gee, 2014). In contrast, DL requires more linguistic planning and explicit presentations of information. It often comprises more sophisticated grammatical devices and more explicit lexical references than contextualized language does (Curenton et al., 2008; Demir et al., 2015; Bailey, 2020). Socio-cognitively, contextualized language is less demanding as repairs are always possible, and children can rely on their conversational partners to complete their utterances (Davidson et al., 1986). In contrast, DL requires adequate social cognition abilities (e.g., "theory of mind" or ToM) to tailor language to the needs and knowledge of the listener (Miller, 2006). DL also requires children to mentally represent objects and events absent from the immediate environment (McGillicuddy-DeLisi & Sigel, 1991).

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Prior work has suggested that parent-child interactions vary along a continuum from contextualized to decontextualized talk (Davidson, et al., 1986; Westby, 1991; Reese, 1995), instead of positing a rigid dichotomy between these two types of utterances. On a related note, the conceptualization of DL has been challenged by educational researchers and sociolinguistics. For example, Gee (2014) claims that the concept of DL is inherently a "misleading" one because it assumes little shared knowledge, background, or culture with the listeners, but all languages need to be contextualized to be understood. Given this, this dissertation adopts the concept of *recontextualizing* (Bailey, 2020, 2021) that requires the discernment between both decontextualized and contextualized language and drawing on both to effectively convey meaning to others in any given exchange. The concept of recontextualizing is defined as a "linguistic action" or "abilities to craft mind-to-mind linguistic messages" (Bailey, 2020). It involves a process of enunciation of individual perspectives, experiences, ideas, feelings, etc., for the mind of the listener to imagine through words alone. This construct was previously introduced by Bailey to bolster the argument against the primacy of a "discourse of appropriateness" (Flores & Rosa, 2015) that is frequently invoked as a prerequisite for linguistically and culturally diverse school-aged students to achieve academic success. Shifting from the seemingly arbitrary notions of appropriateness, recontextualizing emphasizes a continued need for explicitness in meaning-making for others but as means of fostering students' linguistic and academic agency (Bailey, 2021). This project will extend this notion to monolingual, parent-child dyads with young children who are just starting to develop the skills needed to become competent interlocutors and members of their speech communities.

The differentiation between the concepts of recontextualizing and decontextualized language serves two purposes. On the one hand, the concept of recontextualizing accounts for the

dual development of both contextualized language and decontextualized language in the early years. As children develop language, they need to acquire DL in preparation for later school success, in the meantime, they are still expected to learn how to use contextualized language appropriately in relation to the practices, values and norms accepted by their discourse community. This is made evident by the fact that parents from different cultures socialize their children in cultural-specific ways during verbal interactions (e.g., Melzi, 2000; Wang, 2001; Curtis et al., 2020), but they scaffold children's language development in a very similar way. Specifically, parental utterances often vary along the continuum of decontextualization from occasional confirmation questions at the minimum level of support to highly scaffolded exchanges involving frequent requests for clarification and explanation (Imbens-Bailey & Snow, 1997). On the other hand, the concept of recontextualizing explicitly underlines two developmental skills—language skills and socio-cognitive skills—that are critical to this linguistic action. When communicating events, people, objects, and ideas that are beyond the here and now, children need to utilize various linguistic skills such as providing a coherent narrative and adhering to conversational rules (Kelly & Bailey, 2013a). They are also required to take different mental perspectives, including reflecting on others' knowledge (Harris et al., 2005) and mentally traveling backwards in time to re-experience the events when talking about the past (Tulving, 1984). For instance, a child might describe their previous birthday party by mentally revisiting the event. The following section will discuss in detail the development of these skills and their connections to recontextualizing.

Despite the differentiations, these two concepts of *decontextualized language* and *recontextualization* are closely related because speakers need to draw on decontextualized language when engaging in the recontextualizing process. In other words, decontextualized

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conversations are critical contexts for children to practice and develop the abilities of recontextualizing. This dissertation will keep the term decontextualized language (DL) to be consistent with existing literature and use the concept of recontextualizing when referring to an ability or a process that involves the use of both contextualized and decontextualized languages.

This project takes a developmental approach considering the parallel progressions of children's abilities to recontextualize and parental modified scaffolding strategies on a continuum of decontextualization in response to children's emerging abilities in language and socio-cognitive skills. The remaining literature review will summarize the guiding theoretical framework and provide discussions about developmental skills underlying the process of recontextualizing and parental scaffolding needed to support this process, as well as the power of routine activities.

Language and Socio-cognitive Skills Underlying Recontextualizing

Language Development. To successfully engage in the processes of recontextualizing requires a set of language skills such as conversational skills, narrative discourse, and narrative comprehension skills. First, to effectively participate in conversations, children must adhere to two basic rules: cooperation and turn taking (Grice, 1957, 1975). These rules are often manifested in parent-child verbal interactions in the way that interlocutors take turns, respond to preceding prompts, maintain the topic of the preceding utterances, etc. Even before they speak, children are beginning to learn to respond in turn (Bruner, 1978; Snow, 1977), but their ability to provide contingent responses develops later.

As children continue developing language skills, they are expected to take a more active role in these conversations to co-construct narratives supported by parental verbal scaffolds

(Kelly & Bailey, 2013a). The oral narrative is defined as a form of oral discourse that communicates past experiences, lived events, plans, and imagined scenarios (Bruner, 1986). The development of narrative skills begins as early as when children are two and three years old (Peterson & McCabe, 1983). Children at a young age narrate their desires, needs, plans and feelings, and they often produce narrative scripts of routine activities (Fivush & Hammond, 1990). Their narratives generally become more complex and sophisticated with age (Peterson & McCabe, 1983; Snow, 1983; Minami, 1996; Tabors et al., 2001; Zhang et al., 2019). Children then produce narratives including information about different macrostructural elements of stories (e.g., settings and problems) and characters' internal state such as internal responses and mental processes (see Paris & Pairs, 2003 for a review). These narrative discourse skills are critical to narrative comprehension especially for understanding and interpreting the actions, intentions and meanings during decontextualized conversations such as retellings of favorite tales and discussions about previous experiences. More generally, the narrative production and comprehension skills jointly reflect children's narrative thinking, which is a cognitive foundation by which young children "learn how to mean" to make sense of the world (Bruner, 1986). The development of conversational and narrative skills is intertwined, with a reciprocal relationship between communicative competence and narrative abilities (Kelly & Bailey, 2013b). For young children, it can be challenging to construct coherent narratives while also using effective conversational skills, particularly when engaging in discussions on complex, decontextualized topics.

Socio-Cognitive Development. Social cognition refers to the psychological understanding of persons (Rosnay & Hughes, 2006). Recent years have seen a significant increase in scholarly interests in children's socio-cognitive skills, partly due to its link to social

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behaviors (Flavell, 2004) and later school achievement (Lecce et al., 2017). During the preschool years, decontextualized conversations often cover various topics from narratives about past events, discussions about plans and explanations of causal relationships, etc. Hence, different perspective-taking skills are necessary for these communicative practices involving others and different historic contexts (e.g., the past and the future). Three components of socio-cognitive skills will be examined to capture the construct of perspective-taking: a) children's ability to reason about others' intentions, beliefs and desires, or "theory of mind" (ToM), b) emotion understanding, and c) children's ability to mentally project the self into the future that is termed prospection (Tulving, 1984) or episodic future thinking (Atance & O'Neill, 2001), which is thought to be the essential part of what makes us human.

Theory of mind (ToM) and emotion understanding represent children's understanding of mental states. Such an understanding enables children to explain others' behaviors and emotions, reflect on the common ground for the conversations between themselves and their interlocutors, and recognize that people have different perspectives (Harris et al.,2005; Miller, 2006). These abilities are required for children to tailor language to the needs and knowledge of listeners and evaluate and comment on others' mental states during the process of recontextualizing. From approximately 12 to 18 months, children are implicitly aware of others' mental states (Low & Perner, 2012), but they develop explicit understanding of inner states and hidden emotions only during later language acquisition (Wellman, 2018; Pons et al., 2004). Individual differences in the development of ToM and emotional understanding are significantly influenced by sociocultural factors. Research based on a large-scale twin study (Hughes et al., 2005) indicates that environmental influences play a predominant role, explaining 85% of the variance in theory-of-mind performance at age 5, while genetic factors account for only 15% of the variance.

Several environmental factors likely contribute to these differences, including the quality of social relationships, such as those with siblings (Hughes et al., 2005), and social experiences like exposure to parental discussions about mental states, which have been associated with children's comprehension of mental states (Harris et al., 2005; Fivush et al., 2006). The following section will delve further into parental scaffolding of children's perspective-taking abilities.

Prior work on decontextualized conversations has predominantly focused on reminiscing (e.g., talk about the past), but this project will also consider future-oriented talk because it is often discussed among Chinese families (Wei et al., 2020). There appears to be an intimate relationship between the cognitive processes underlying reminiscing about behaviors and future-oriented talk (Atance, 2008). The abilities to mentally travel backward and forward possibly are supported by a shared brain network that enables cognitive flexibility in projecting the self from the immediate environment to alternative perspectives (Buckner & Carroll, 2007). Together, these studies suggest that multiple perspective-taking abilities are needed for children to engage in the process of recontextualizing and discussing various non-immediate topics.

Relationships Between Two Developmental Domains. Of particular relevance to the proposed investigation, language abilities and social cognition co-vary together in the early preschool years, especially in that the improvement in one area possibly leads to a corresponding increase in the other (Conte et al., 2019; also see Milligan et al., 2007, for a review). When children engage in linguistic interactions, they gain access to others' perspectives by picking up subtle cues from the conversational partners and develop an understanding that people might think differently from them (Rosnay & Hughes, 2006). A moderate to large, reciprocal effect size has been found in the relation between language abilities and socio-cognitive abilities as measured by false-belief tasks among children under seven years old (Milligan et al., 2007),

although their causal effects are still controversial (Saxe et al., 2004). Nevertheless, it is widely accepted that successful communication requires that children attend to conversational partners' cognitive states such as beliefs, desires, and common knowledge, as well as their emotions (Nilsen & Fecica, 2011). Integrating these two critical developmental domains, namely language and socio-cognitive domains, will allow for a fruitful examination of how a quality language environment enhances children's language skills, possibly through different socio-cognitive pathways.

Power of Routine Conversations

Routine conversations, those that naturally occur during daily activities and interactions, create an ideal environment for fostering children's language and socio-cognitive development. Extensive research has underscored the significance of establishing consistent, predictable routines during early childhood, as they contribute to the enhancement of a child's self-regulation skills, cognitive capacities, and the strengthening of parent-child bonds (Ferretti & Bub, 2014; Ren & Fan, 2019).

Conversations between parents and children during routine activities positively influence child development. Take the mealtime routine as an example. Mealtime is an essential part of many families' daily routine, and it serves as an important cultural site for not only eating but also language development and socialization (Snow & Beals, 2006; Ochs & Shohet, 2006; Hu et al., 2019;). It immerses children in a diverse linguistic environment where they are exposed to narratives, elaborations, extended conversations, explanations, clarifications, and even cultural norms about speech such as valid topics of conversation, etc? (Ely et al., 2001; Sheng et al., 2022). During mealtime conversations, children listen, watch, and observe the various discourse styles modeled by their parents, and they are sometimes encouraged to participate in the

conversations. Thus, children need to master how to take conversational turns and engage in multiparty extended discourses, which are crucial for later literacy development (Snow & Blum-Kulka, 2002; Bailey & Moughamian, 2007; Bailey et al., 2018).

Similarly, bedtime routines centered on language also play a pivotal role in a child's linguistic and cognitive growth. Studies have shown their lasting benefits, evident from infancy through age five, as reflected in assessments like the Peabody Picture Vocabulary Test-Revised (Hale et al., 2011). Together, these insights illuminate the profound influence of parental language during routine time on the trajectory of a child's developmental progress.

Parental Language in Support of Language and Socio-Cognitive Development

Social interactions, especially those within parent-child relationships, are fundamental to the developmental process and outcomes (Vygotsky, 1978). Within these interactions, parental language takes center stage as they play a prominent role in supporting children's language and socio-cognitive development.

Support of Language Development. Parental verbal support or scaffolding, as discussed above, may vary along a continuum from contextualized to decontextualized talk (Davidson, et al., 1986; Westby, 1991; Reese, 1995). Both forms of parental communication contribute to children's increasingly sophisticated language and literacy skills. For example, Reese (1995) suggested that maternal decontextualized comments were an overall good predictor of children's print and semantic skills, but mothers' increasing use of contextualized utterances during shared reminiscing narratives better predicted narrative comprehension and print knowledge. While the rest of the section will primarily focus on DL, it is important to note that socializing children to use contextualized language appropriately is a common practice with implications for child

language development. For instance, parental print-related talk and pointing to the print during shared reading predict children's early literacy skills in the areas of print and word awareness (Justice & Ezell, 2000). Furthermore, the body of research underscores the consistently positive impact of parental responsiveness, characterized by timely and contingent responses to children's exploratory and communicative behaviors, with clear associations with early language development (for an in-depth review, see Tamis-LeMonda et al., 2014). Specifically, parental responsiveness has demonstrated significant correlations with the vocabulary size of two-year-olds (Tamis-LeMonda et al., 1998) and the timing of achieving critical language milestones (Tamis-LeMonda et al., 2001). It is noteworthy that within the realm of parental responsiveness, certain dimensions, such as expansion, imitation or repetition, and responsive questions, have been identified as particularly influential in predicting children's language development (Smith et al., 2018; Levickis et al., 2014; Tamis-LeMonda et al., 2001).

In addition, parental decontextualized language (DL) use significantly impacts children's acquisition of DL, vocabulary, and narrative skills (Imbens-Bailey & Snow, 1997; Peterson et al., 1999; Rowe, 2012; Sparks & Reese, 2013; Demir et al., 2015). For instance, Demir et al. (2015) demonstrated that the use of maternal decontextualized language (DL) when children were 30 months old significantly predicted their vocabulary, syntax, and narrative performance in kindergarten. This relationship held true even after accounting for early language skills of the child, the use of parental contextualized talk, and various demographic factors. Parental DL in the context of supporting children's narration also has significant ramifications for later literacy (Bailey & Moughamian, 2007; Bailey et al., 2018). These effects are not exclusive to White middle-income families but are potentially universal. So far, research with diverse populations has largely confirmed that parental DL is instrumental in child language development among

immigrant families from diverse racial/ethnic backgrounds in the United States, such as African American, Chinese American, Dominican American, and Mexican American backgrounds (Curenton et al., 2008; Escobar et al., 2017; Ribner et al., 2020), and low-income families in the United States (Tabors et al., 2001; Bailey & Moughamian, 2007; Bailey et al., 2018; Kelly & Bailey, 2013a, 2013b) and in Turkey (Seven et al., 2020).

Notably, not all decontextualized language is equally influential to child development. Rowe and Snow (2020) review existing studies and discuss three critical features characterizing high-quality parental language input. These features include the interactional feature, conceptual distancing, and linguistic complexity. For example, the number of conversational turns between parents and four-year-olds significantly relates to vocabulary and syntax skills assessed by standardized tests and language processing in fMRI tasks (Romeo et al., 2018). Yet, simple back-and-forth communications are not enough; parents need to engage children in extended discourse using diverse vocabulary and syntax (Weizman & Snow, 2001), and the communicative exchanges should be conceptually challenging (Imbens-Bailey & Snow, 1997), which should be appropriate to children of a given age/ability. According to the progression proposed by Rowe and Snow (2020), DL is the quintessential type of high-quality parental talk that is particularly beneficial to children of four or five years because it typically contains longer discourse, diverse vocabulary, complex grammar, discussions about abstract and hypothetical topics, therefore, it is conceptually challenging and linguistic complex.

Support of Socio-Cognitive Development. Prior research consistently underscores the positive impact of parental language on socio-cognitive skills. Specifically, language that involves timely and responsive reactions to a child's communication, as well as discussions on decontextualized topics, has been associated with beneficial outcomes (Landry et al., 2006; Merz

et al., 2017; Peterson & Slaughter, 2003; LaBounty et al., 2008; Doan & Wang, 2010; Gola, 2012; Reese et al., 2010; Taumoepeau & Reese, 2013; also refer to Fivush et al., 2006 for a comprehensive review). First, parental verbal responsiveness plays a critical role in infants' social cooperation and affective skills, with moderate to strong effect sizes (Landry et al., 2006). Moreover, it predicts concurrent executive function and continues to have an impact 6.5 months later among preschoolers attending Head Start programs (Merz et al., 2017).

Additionally, the use of DL by parents is significantly linked to children's socio-cognitive skills. For example, the study by LaBounty and colleagues (2008) found that parents' explanations and mental state talk (i.e., a particular kind of DL that focuses on emotions and cognitive states) were significantly related to three-year-old's emotional understanding and theory of mind (ToM) both concurrently and 1.5 years later. In other words, only the conversations about causality and emotions contribute to an enhanced understanding of emotions and mental state, suggesting that the impact of parental DL may be domain specific. Further evidence that is consistent with a role for parental language in the development of ToM comes from comparative studies on native- and late-signing deaf children. These studies found that reduction in language exposure (i.e., sign language) results in disrupted socio-cognitive abilities, which in turn leads to significant difficulties in social communications (for a review, see Nilsen & Fecica, 2011).

In addition to mental state talk, other types of DL that are beneficial to a child's socio-cognitive skills include maternal elaborative reminiscing (see Salmon & Reese, 2016 for a review), behavior clarifications and explanations (Liu et al., 2016), and future-oriented talk (Chernyak et al., 2017; Leech et al., 2019). Behavior-related talk and future-oriented talk are particularly relevant to this project because Chinese parents more frequently talk about behaviors

than the mental state (Miller et al., 1997; Wang, 2001; Luo et al., 2014) and they more often engage their children in talk about future events or plans than European American parents (Wei et al., 2020). The positive effect of behavior-related talk on children's language and socio-cognitive development has been documented in middle-class Chinese (Liu et al., 2016), middle-class European American (Sales et al., 2003), low-income American (Sparks & Reese, 2013), and low-income Chilean families (Leyva & Smith, 2016). Specifically, Chinese mothers' early behavior clarifications uniquely predict children's false-belief understanding one year later with early false-beliefs and verbal abilities controlled for (Liu et al., 2016).

Prior experimental work has also suggested children's socio-cognitive skills can be improved after a brief exposure. For example, Leech and colleagues (2019) found that a brief experimental exposure to future-oriented language about the self is found to boost children's prospective abilities as measured by future-oriented decision making, delay of gratification, and prospective memory. Similarly, a brief exposure to behavior-related talk improved Chinese children's performance on false-belief tasks (Liu et al., 2016). Findings of these experimental studies are encouraging, and more research is required to determine whether extended participation in such conversations with non-Western, non-English-speaking populations might confer similar benefits.

The Current Research Landscape of Chinese Language Development. Research into the factors associated with language development in Chinese children being raised in Chinese-speaking dominant societies (e.g., China, Taiwan) has predominantly centered around the home literacy environment, often quantified through metrics like the frequency of literacy-related activities (e.g., Zhang et al., 2008; Liu et al., 2017). In some instances, parental language quality has been assessed within a structured environment (e.g., Wei et al., 2020). However, much less

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has explored the nuances in the content and style of Chinese parents' language use in a naturalistic, everyday setting. A recent study has found that Chinese mothers' scaffolding as assessed using questions and new information provision during shared book reading mediates the relationships between home literacy environment and child vocabulary (Wang & Shen, 2017), suggesting a potential effect of parental verbal language support. So far, to the best of my knowledge, there has not been any study that systematically examines the effect of Chinese-speaking parents' DL use on their children's language development. This project will contribute to the limited knowledge.

Theoretical Framework

This 2-study dissertation is primarily guided by Vygotsky's sociocultural theory and Bronfenbrenner's ecological systems theory. Vygotsky's sociocultural theory underscores the dynamic interdependence of social and individual cognitive processes (Vygotsky, 1978). It posits that development involves the transformation of socially shared activities into internalized processes (John-Steiner & Mahn, 1996). Crucially, it suggests that individual development originates from social sources, including the home language environment, which plays a pivotal role in shaping children's decontextualized language use and is influenced by varying parental language styles.

Within Vygotsky's framework, the *zone of proximal development* is a pivotal concept, representing the difference between a child's actual developmental level, determined through independent problem-solving, and their potential development, achieved through problem-solving under adult guidance or with more capable peers (Vygotsky, 1978, p. 86). The provision of effective guidance, prompts and regulations is termed *scaffolding* (Wood et al., 1967). Children's development of recontextualizing abilities is built on parents' interactive scaffolding

that may vary between historical, conversational, and psychological levels (Imbens-Bailey & Snow, 1997). Parents adapt their forms of verbal responsiveness to align with their children's language development. For instance, they might use more repetition when children are in the early stages of acquiring specific words and employ more responsive questioning as children become more skilled in language and grow older (Bornstein et al., 2008). As children continue developing their skills of engaging in decontextualized conversations, parental scaffolding is expected to be withdrawn, and children progressively take more responsibility for completing specific non-present narratives (Bailey et al., 2018) until they internalize all the components of the narratives and can narrate independently.

Furthermore, Bronfenbrenner's ecological systems theory provides a comprehensive framework for comprehending human development by emphasizing the intricate interplay between individuals and their surrounding environments (Bronfenbrenner, 1979). This theory categorizes these environments into five levels, ranging from the microsystem (the immediate environment, such as family and school) to the macrosystem (the broader cultural and societal context). Within the context of parental language use and child development, the microsystem is the closest and most influential sphere. It encompasses the immediate family environment, including parent-child interactions and routines such as mealtimes and bedtime conversations, which have been found to significantly influence child language development (Ely et al., 2001; Sheng et al., 2022). Specific to the Chinese context, families often engage in extended mealtime conversations compared to their European American counterparts (Koh & Wang, 2013). These interactions are not only longer in duration but also involve more complex and lengthier utterances (Li & Zhou, 2015). This distinctive feature of Chinese family life is reflective of a broader cultural value system that emphasizes interdependence and familial connectedness.

Mealtime conversations thus go beyond mere nutritional practice or routine interaction; they embody a deeper cultural practice that fosters strong family bonds and interconnectedness. This is aligned with findings by Chao & Tseng (2002), who highlight the profound importance placed on family ties and interactions in Chinese society, illustrating how the microsystem in the Chinese context significantly shapes a child's development through rich, culturally embedded familial interactions.

At the macrosystem level, overarching cultural and societal norms significantly shape parent-child interactions, with these dynamics varying notably across different cultures (Ochs & Schieffelin, 1984). In the Chinese context, parents engage in discussions that emphasize behaviors, social norms, and future events more frequently than their European-American counterparts (Doan & Wang, 2010; Wei et al., 2020). This pattern is reflective of the societal and cultural values deeply rooted in Chinese society. Additionally, the concept of maternal responsiveness, a crucial aspect of parent-child interactions, varies culturally. For instance, parents in diverse sociocultural communities, including those in Beijing, provide different levels of contingent responses to their infants' non-distress vocalizations compared to those in Berlin, Los Angeles, Delhi, and urban Nso from Cameroon (Kärtner et al., 2008). This variation highlights the cultural specificity of communicative practices and underscores how parental behaviors and interactions with children are influenced by broader societal values and beliefs (Ochs & Schieffelin, 1984; Richman et al., 1992). These cultural distinctions in parenting practices and communication styles, as observed in the Chinese macrosystem, influence the nature and quality of parent-child relationships and interactions. In addition to culture, other sociodemographic factors such as mothers' age, education, and occupation proved to be significant, positive correlates of parenting knowledge (Bornstein et al., 2020). Chinese parents,

for example, from higher SES groups are more elaborative when discussing past events with their children than their counterparts from lower SES groups (Lai & Chen, 2005).

The Current Study

This 2-study dissertation included two complementary parts: 1) a corpus analysis, as described by Sinclair (1991), which methodically examines electronically stored natural language occurrences, in this instance focusing on Chinese parent-child interactions during mealtimes, and 2) a feasibility and impact study evaluating feasibility and the effects of a parent-focused conversation strategies program capitalizing on the observed features of part 1 and existing effective training programs.

Study 1 uses a correlational design with the Zhou Dinner corpus (Li & Zhou, 2015) that is publicly available in the Child Language Data Exchange System (CHILDES). This corpus includes videos of dinner conversations recorded by families in Shanghai, China. Participants were 34 children aged 4-5 years old (range 4;1 and 5;11, M = 55.5, SD = 3.16) and their family members. The language transcripts were coded using a four-level coding scheme that was adapted from extant literature (Reese et al., 1993; Bailey & Moughamian, 2007; Melzi et al., 2011; Li & Zhou, 2015; Liu et al., 2016; Wei et al., 2020), and preliminary examination of the content of the dataset based on its types of decontextualized talk, topics of the talk and language functions each utterance serves, and types of parental responsiveness. The data were analyzed to understand the characteristics of DL within Chinese families by summarizing and reporting descriptive statistics. A series of analyses of variance (ANOVAs) and t-tests were used to compare how mothers and fathers engage in decontextualized talk. Hierarchical regression analyses were then performed to investigate the relationship between parental DL use and children's language production.

Study 2 uses a randomized controlled experimental design with a sample of 25 parent-child dyads in the training group and 23 parent-child dyads in the control group recruited from diverse socioeconomic backgrounds in 10 provinces across Mainland China. Recruitment was done through local schools, social media advertisements, or referrals. The children's ages ranged from 48 to 70 months, with a mean age of 58.8 months ($SD = 6.5$). All participating families completed both pre-training and post-training assessments, which tested the children's narrative production and comprehension skills, theory of mind, emotion knowledge, and prospection ability.

Parents in the training group received a three-week program on parent conversation strategies with delayed follow-up assessment. The implementation of the training program adhered strictly to the planned protocol, as confirmed through comprehensive fidelity checks. This program included a 15-minute video and four infographics that explained and demonstrated various strategies using video and written examples. Additionally, we collected four recordings of routine conversations between parents and children, each lasting at least 15 minutes. The first recording was collected before the pre-training assessment, and the subsequent three recordings were spaced one week apart after the parents received the training program or placebo video. Responses to a social validity questionnaire were collected from parents in the training group to gain their insights into the feasibility and social acceptance of the training program. Prior to analyses, the routine conversation recordings were transcribed verbatim and then coded using a coding scheme adapted from Study 1.

Descriptive statistics were reported for the social validity survey to understand the acceptability of the training strategies, procedures, their perceptions of the training program's effectiveness and willingness to continue using the strategies in the future. To understand

training effects on parental decontextualized language use, linear mixed effects models were employed, incorporating group indicators and time variables (Time1: prior to pre-assessment; Time2: within a week after receiving training video; Time 3: three weeks after receiving training video)[1] as fixed effects. Interactions between these variables were also evaluated to understand the differences in parental DL across different timepoints. The models also accounted for individual variability in parents' DL use by including random effects. Lastly, the effects of parent-focused conversation training on children's linguistic and social development outcomes were examined using multivariate regression.

Summary

Taken together, this introduction and literature review has delved into the intricate landscape of parent-child decontextualized conversations and their critical role in fostering the early language and socio-cognitive development of Chinese preschoolers. It has provided an overview of the theoretical underpinnings, emphasizing the socio-cultural and ecological theories, and highlighted the cultural patterns inherent in Chinese families' decontextualized language use. Moreover, it has underscored the power of routine conversations as a rich context for nurturing children's recontextualizing abilities and developmental skills. In the subsequent chapters, my dissertation will unfold as an in-depth exploration comprising both corpus analysis and a feasibility study. Together, these components aim to shed light on how Chinese parents facilitate preschool-aged children's recontextualization processes and elucidate the developmental impact of parental scaffolding in the context of decontextualized language use.

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[1] The conversations recorded two weeks post-training were excluded from transcription, coding, and analysis due to time constraints.

This two-study, multi-method approach will offer a comprehensive understanding of the relationship between parental decontextualized language and child development, and it will provide significant implications for both research and practical applications.

STUDY 1

Decontextualized Language in Chinese Family Mealtime Conversations and Its Impact on

Children's Recontextualization and Socio-Cognitive Abilities: A Corpus Analysis

Decontextualized Language in Chinese Family Mealtime Conversations and Its Relationship to Children's Recontextualization and Socio-Cognitive Abilities: A Corpus Analysis

Decontextualized language (DL), highly valued as a form of quality linguistic input, significantly contributes to the multifaceted development of children. This type of language encompasses elements crucial for enhancing language acquisition, expanding vocabulary, building narrative skills, and developing perspective-taking and prospection abilities (Imbens-Bailey & Snow, 1997; Rowe, 2012; Sparks & Reese, 2013; Demir et al., 2015; Liu et al., 2016; Chernyak et al., 2017; Leech et al., 2019). Engaging with DL necessitates children to utilize diverse linguistic resources (Kelly & Bailey, 2013) and adopt various perspectives (Tulving, 1984) for articulating individual viewpoints, experiences, emotions, and ideas. Central to this process is recontextualization, the ability to craft linguistic messages that convey concepts or experiences beyond the immediate context (Bailey, 2020, 2021). This dissertation investigates the interplay between parental DL use and its influence on children's abilities in recontextualization. Furthermore, the study delves into how parental use of DL impacts children's socio-cognitive awareness, specifically their understanding of others and their capacity for envisaging future scenarios.

The study pays particular attention to DL use during Chinese family mealtimes, a routine that immerses children in a linguistically enriching environment. In Chinese culture, mealtimes are not merely for nutritional sustenance but also serve as integral platforms for linguistic and socio-cognitive development. These interactions often exhibit culturally specific patterns, such as more extended conversations compared to European American families, reflecting deep-rooted values (Koh & Wang, 2013). Unique aspects of DL in Chinese families include limited use of

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mental state terms and frequent discussions about future events and behaviors (Li, 2015; Luo et al., 2014; Miller et al., 1997; Wang, 2001; Wei et al., 2020), offering a culturally distinct perspective on the influence of DL on child development.

Despite the recognized importance of DL, its use in naturalistic familial settings, particularly within the Chinese context—a culture profoundly influenced by Confucianism and collectivist values (Luo et al., 2014; Miller et al., 1997) —has been less studied compared to more structured environments. This gap in research is significant, as understanding DL use in naturalistic settings can provide deeper insights into the everyday linguistic experiences of children and their developmental implications. Therefore, this study aims to systematically analyze how DL is used in Chinese families and how it contributes to child development. The findings are expected to enhance our understanding of the cultural similarities and differences in the use of this high-quality language input.

Additionally, this research extends its focus to include the understudied area of fathers' contributions to the language environment during mealtimes. Given the limited research on fathers' linguistic interactions, especially in the Chinese context, this study will provide valuable insights into the role of both parents in fostering language and socio-cognitive development in children. By exploring both maternal and paternal contributions, this dissertation aims to offer a more comprehensive view of the familial language environment and its impact on children's development.

Mealtime as a Language Learning and Socialization Site

Family mealtimes are recognized as a vital and naturally occurring setting for the exploration of decontextualized language (DL) production, playing a significant role in many

cultures not just for nourishment, but also as a cornerstone for language development and socialization (Snow & Beals, 2006; Ochs & Shohet, 2006; Hu et al., 2019). These regular gatherings offer a unique window into the daily linguistic interactions within families, immersing children in an environment rich with diverse linguistic features. Such features include narratives, elaborations, extended conversations, and clarifications, all embedded within cultural norms of speech (Ely et al., 2001; Sheng et al., 2022). As children actively listen, observe, and participate in these mealtime conversations, they acquire essential conversational skills, including turn-taking and engaging in multiparty discourses, which are fundamental for their later literacy development (Snow & Blum-Kulka, 2002; Bailey & Moughamian, 2007; Bailey et al., 2018).

In the context of Chinese family life, mealtime conversations are particularly indicative of distinct cultural patterns. For example, Chinese families engage in lengthier mealtime relative to European American families (Koh & Wang, 2013), and they use longer utterances at mealtime than parent-child dyads (Li & Zhou, 2015). These extended mealtime gatherings, offering a time for families to reunite and bond over the dinner table after a day's work and school (Ochs & Shohet, 2006). Such deep engagement in conversations during meals signifies more than just communication; it is a manifestation of Chinese cultural emphasis on interdependence and familial connectedness. This aspect of Chinese familial life underscores the value placed on strong family ties and interactions (Chao & Tseng, 2002).

In addition to its role in language learning and socialization, mealtime serves as a naturalistic context for studying parental and children's decontextualized language (DL) production. During mealtime conversations, children are exposed to various forms of DL modeled by their parents, making it a particularly valuable setting for studying this aspect of language development. The impact of DL on child development transcends cultural and

socioeconomic boundaries. Studies among diverse populations, including African American, Chinese American, Dominican American, Mexican American, and low-income families in the United States and Turkey, consistently highlight its instrumental role in child language development (Curenton et al., 2008; Escobar et al., 2017; Bailey et al., 2018; Ribner et al., 2020; Tabors et al., 2001; Seven et al., 2020). Notably, while existing research has largely focused on these diverse populations, Chinese-speaking parents remain relatively underrepresented in these studies. Nevertheless, it is anticipated that the impact of DL among Chinese-speaking parents aligns with the patterns observed in these other cultural contexts. Exploring the role of DL in Chinese families' mealtime conversations offers an opportunity to illuminate how this linguistic input influences language development and socialization within this specific cultural context.

Cultural Patterns of Chinese Families' Decontextualized Language Use

The Chinese population, including Chinese immigrants worldwide, comprises approximately 20% of the world's population and is unique in its customs, values, social, economic, and political contexts (National Bureau of Statistics of China, 2019). First, China is deeply rooted in Confucianism (see Luo et al., 2014 for a review); one of the most durable ideological systems that emphasizes various moral, social, political, and philosophical norms and thoughts. This philosophy strongly emphasizes interdependent or collectivistic values, which are evident in various aspects of daily life, particularly in parent-child interactions, parenting styles, and socialization methods. For instance, parents often emphasize respect for elders, obedience, and filial piety, which are crucial components of collectivist cultures (Chao, 1994). Chinese parents often engage in conversations about social norms and behaviors, guiding their children to behave in ways that are socially acceptable and beneficial for the community, though they may discuss emotions less frequently (Doan & Wang, 2010).

Additionally, Chinese parents are known to prioritize educational achievement and emphasize the acquisition of factual and social knowledge, viewing these as key to the child's success and, by extension, the family's honor and status (Luo et al., 2014).

Consistent with Bronfenbrenner's notion of human development as a product of interconnected ecological environments (Bronfenbrenner, 1979), how parents use DL is deeply influenced by larger social and cultural contexts. Several distinct patterns of parents' DL use are unique in Chinese culture, including limited disclosure of mental state, frequent talk about behaviors, and frequent discussions about future events. These patterns reflect some values that are guided by some Confucius principles. Specifically, to maintain harmonious interpersonal relationships, children are expected to understand social norms and others' interests, restrain their words and actions when in doubt, control the emotions and preferences of their own when personal interests conflict with those of the group.

Mental State Talk. Influenced by the value of self-restraint, Chinese mothers are found to be more restrained from verbalizing their own mental states—utterances about emotions, thoughts, and desires of themselves and others—compared to European-American mothers and Latinx mothers (Li & Zhou, 2015; Luo et al., 2014). The restraint of mental-state talk is particularly salient when talking about emotions. In some cases, when Chinese mothers do talk about emotions, they mostly encourage children to attune to other people's emotions to reinforce a sense of connectedness (Wang, 2001; Koh & Wang, 2013). This tendency is similar to Japanese mothers' ways of emotion socialization (Hess, et al., 1986) and Latino mothers' emphasis on interpersonal relationships (Melzi, 2000; Schick & Melzi, 2010). In contrast, European-American mothers often engage children in conversations about their own and their children's emotions and provide causal explanations for these feelings (Wang, 2001).

Research suggests differences in emotion disclosure and elaboration that go beyond race. For example, in the context of Chinese American immigrant families, factors such as socioeconomic status, English proficiency, and immigrant generations have been found to significantly impact the frequency and extent of parental emotion talk (Curtis et al., 2020). Specifically, parents from lower socioeconomic backgrounds, or those with lower English proficiency, tend to engage less frequently in emotion-related discussions. Additionally, more recent immigrants show lower levels of emotion elaboration compared to those who have been in the host country for longer. This suggests that the interplay of economic, linguistic, and acculturation factors significantly shapes how emotions are communicated and discussed within families.

Furthermore, the top-down economic and political conditions (e.g., globalization, the one-child policy, and economic structure reform) influence on-the-ground communications of Chinese families in the way that they increasingly express emotions in parallel to the rise in individual desire fulfillment and privacy that is accompanied by recent economic reform (Rofel, 2007). Specifically, Rofel's ethnographic studies suggested a link between Chinese people's diverse aspirations and beliefs, and policies that enable their realization during the globalizing process. Taken together, the limited mental state disclosure of Chinese parents is influenced by cultural values, but such a pattern is far from culturally determined. More studies are required to understand Chinese parents' emotion socialization at the intersection of traditional cultural values and the various economic, political changes and to include families from diverse socioeconomic backgrounds.

Behavior-related talk. For any Chinese child, moral education starts at home much earlier than formal schooling (Cheng, 2004). Children must follow social norms and behave in a

culturally and socially appropriate manner. Chinese parents bear a large portion of the blame for not effectively teaching moral knowledge at home, and they are inevitably expected to be the primary moral educators. Thus, to a great degree, talk about behaviors is demanded or expected in Chinese families, which is manifested in day-to-day Chinese family talk. For example, Chinese parents frequently make comments on behaviors and emphasize "negative consequences" and social norms in order to reinforce the child's proper behavior and a sense of connectedness when they talk about past events with their children (Miller et al., 1997; Wang, 2001; Luo et al., 2014). Behavior-related talk, in particular, conversations about misbehaviors or negative experiences, is likely more focused on causality, mental state, and explanations, and therefore benefits children's language and cognitive development (Sales et al., 2003; Sparks & Reese, 2013; Leyva & Smith, 2016; Liu et al., 2016).

Future-oriented talk. In addition to mental state talk and behavior-related talk, the proposed study will also take a closer look at Chinese parent-child conversations about future events. This type of conversation about the future can be highly decontextualized as it requires interlocutors to refer to the abstract, the hypothetical ideas, events, people, and objects remote in time. However, in contrast to past narratives, research on parent-child future talks remains scant. Among the limited studies, conversations about past and the future events are often lumped together as an aggregate DL category in these investigations (e.g., Rowe, 2012; Demir et al., 2015). In contrast, Wei and colleagues (2020) examined different types of DL, including past events, explanation, and future narratives. They found cultural differences in how future talk is used within European American and Chinese families, both in terms of frequency and social functions. Specifically, Chinese caregivers tend to engage in discussions about future events with their children more frequently. Furthermore, the functions of these discussions differ: Chinese

caregivers often use future talk to prepare their children for potential challenges and to practice appropriate behaviors and speech for future interactions. In contrast, European American parents predominantly use future talk to provide elaborative descriptions of upcoming events, such as a dental visit, with less emphasis on discussing future actions.

Furthermore, Wei and colleagues (2020) also documented that Chinese caregivers are very elaborative and use more utterances when talking about the future. Previous research with a middle-class European-American sample suggested that parental elaborations, repetitive prompts, and reference to past events were positively linked to 4-year-olds' contributions to future talks (Hudson, 2006). Extending Wei and colleagues' work, this project will differentiate future talks from past narratives and examine how Chinese parents support young children's future language use in naturalistic conversations, as well as its effects on children's prospection abilities.

Contribution of Fathers' Language

Although the predominant studies have examined mother's utterances, fathers' language plays a potentially significant and unique role in child development (Pancsofar et al., 2010; Feldman et al., 2013; Baker, 2014; Ely et al., 1995). Studies with Chinese samples have found that fathers' education significantly predicts child language (e.g., Zhang et al., 2008). The influence of paternal language on child developmental outcomes is possibly both direct and indirect. For example, fathers' responsiveness to their 2- and 3-year-olds predicted children's cognitive and language abilities within and across time, even when controlling for mothers' responsiveness (Tamis-LeMonda et al., 2004). Moreover, research has identified stylistic differences in how mothers and fathers engage in child-directed speech. While mothers often repeat child utterances, fathers tend to employ a more interactive approach, marked by a higher

frequency of *wh*-questions and explicit clarification requests (Rowe et al., 2004; Tamis-LeMonda et al., 2012; Leech et al., 2013). A recent intervention study confirms the direct impact of fathers' DL use such that training of fathers' decontextualized utterances during shared book reading effectively increases children's DL use (Seven et al., 2020). The correlation between paternal and maternal language further suggests language alignment within parent dyads, especially in cohabiting families, creating a holistic family language environment shaped by both parents' contributions (Tamis-LeMonda et al., 2012).

Clearly, there is a need to broaden the research base beyond mother-child interactions and maternal DL use. It should be noted that little research has addressed Asian fathers' involvement in early child language development, as the above examples focus on low-income English-speaking European-American and African American families (Pancsofar et al., 2010; Tamis-LeMonda et al., 2004). A few studies have extended such investigations to Latinx Americans and outside North American contexts, such as families in Turkey and Israel (Feldman et al., 2013). This project will expand the scope of examination beyond traditional mother-child dyads to include father-child dyads, with the goal of gaining a deeper understanding of the impact of fathers' language on child development.

Study One

The previous research investigating families' DL has mainly been based on English-speaking populations in industrialized Western countries. Less is known about this type of language use in other cultural and sociolinguistic contexts in which non-English languages (and various regional dialects) are spoken daily, and the confluence of different values is transforming the on-the-ground communications of many families. Of the studies that have examined parent-

child interactions, most have focused on conversations about past events (e.g., Reese, 1995; Sparks & Reese, 2013; see Fivush et al., 2006 for a review of the effect of maternal reminiscing talk on child development); few have specifically examined other types of DL such as behavior-related talk, future-oriented talk and talk about hypothetical situations (e.g., Rowe, 2012; Demir et al., 2015; Wei et al., 2021). Study One systematically explores the content of decontextualized language, the strategies of children's recontextualizing, and parental scaffolding styles that support this process. Because of the limited understanding of fathers' utterances, this study also extends the investigation to include fathers' contribution at mealtimes. Findings of this first study inform the parent training program presented in Study Two of the dissertation. This first study specifically addresses the following research questions:

1. What are the characteristics of Chinese families' decontextualized language use at mealtimes?

   a. I hypothesized that Chinese families' decontextualized conversations will frequently discuss behaviors, plans, and less often talk about mental state and hypothetical topics.

2. Do Chinese families' decontextualized conversations at mealtimes vary by parents' gender?

   a. I hypothesized that Chinese mothers and fathers would differ in the quantity of decontextualized utterances they produce at mealtimes. Given the scant evidence, the investigation of the differences in the quality of Chinese parents' decontextualized language by parent gender is exploratory.

3. To what extent do characteristics of Chinese parents' decontextualized language use relate to children's language production during decontextualized conversations?

    a. I hypothesized that both Chinese mothers and fathers' decontextualized language use will positively relate to the children's language production.

Method

Data Source and Participants

To answer the research questions above, I analyzed the Zhou Dinner corpus (Li & Zhou, 2015) publicly available in the Child Language Data Exchange System (CHILDES). This corpus comprises video recordings of dinner conversations among families residing in Shanghai, China, primarily collected between 2013 and 2015. Participants were 34 families with children aged 4-5 years old (range 4;1 and 5;11, $M = 55.5$, $SD = 3.16$). In terms of parental education, 19 families had parents whose highest level of education was less than a college degree. Additionally, approximately 40 percent of families speak a regional dialect in addition to Mandarin Chinese (i.e., the official language in China) at the dinner table.

Families were instructed to video record their mealtime conversations for at least 15 minutes, and the average time was 18.5 minutes. All videos have been transcribed verbatim by Zhou and colleagues. The participating families included either one or both parents, based on whether only one parent or both were present during mealtimes, and one focal child for each family. Notably, fathers were present in 27 families, while mothers were present in 33 families. Family compositions during mealtimes varied: four families included both parents and the focal child, one family consisted solely of the father and child, and another of just the mother and

child. The remaining families included extended family members, specifically, grandparents, aunts, siblings, cousins, or nannies, in addition to the focal child and the mother or both parents.

Coding Decontextualized Talk

This study adopted a four-level coding scheme that was adapted from extant literature (Reese et al., 1993; Bailey & Moughamian, 2007; Melzi et al., 2011; Li & Zhou, 2015; Liu et al., 2016; Wei et al., 2020), and preliminary examination of the content of the dataset based on its types of decontextualized talk, topics of the talk and language functions each utterance serves, and forms of parental responsiveness. The codes at each level were mutually exclusive.

Level 1—Types of Decontextualized Talk

Following the categories suggested by Li & Zhou (2015) and Wei et al. (2020), I first identified decontextualized utterances which were then classified into a) talk about PAST, b) talk about FUTURE, c) HYPOTHETICAL talk, d) talk about CAUSAL relationships or explanations, e) OTHER utterances about topics such as often recurring scripts, norms, general knowledge, people's mental state, and something that are not visually present. However, talk about recording or anything related to the research study they participated in is excluded because this talk is not representative of Chinese families' typical mealtime conversations.

Level 2—Content and Topics

Drawing from coding schemes in Liu et al. (2016) and Li & Zhou (2015), and informed by the initial findings from our inductive coding approach, we then assigned different content or topics to each decontextualized utterance including a) FOOD refers to the statement and questions about food; b) MENTAL STATE representing the speaker's inference about others' internal state, the speaker his or her own cognitive states or a cognitive process such as *knowing,*

remembering, thinking, and statements or questions about emotions or feelings using terms such as *want, like, dislike, happy etc.*; c) METALINGUISTIC refers to reporting and commenting on speech, as well as those talks that control when and how speech occurs. It often includes language-focused terms or words such as *say, ask, tell*, and *speak*; d) BEHAVIOR includes simple mention and clarification of behaviors that happen in a past, future or hypothetical context, and behavior explanations; e) OTHER-REFERENCE referring to events and activities involving others; f) PLANNING for future events; g) RULES and NORMS; h) ACADEMIC WORK referring to knowledge and content children learn at school; i) GENERAL KNOWLEDGE; j) OTHER including prompt for additional information, references to objects not present, singing songs, recalling elements from fiction or animations, among others.

Level 3—Language Functions

Adapting Reese's (1993) coding scheme, we categorized the decontextualized utterances into different language functions: a) REPETITION of the entire or part of the previous utterances without adding new information; b) ELABORATION refers to the utterances that provide or request new information, introduce a topic for discussion, move the conversation to a new aspect of the event under discussion; c) EXPLANATION provision and request. These include talk that draws logical connections between objects, events, concepts, and/or conclusions (i.e., tell how things work and why we do things); d) EVALUATION of the previous utterances or behaviors in the form of confirmations or negations; e) CONNECTION refers to the statements or questions that connect the present context to another time, place, event (e.g. past events, general knowledge); f) POETIC SPEECH such as songs, poetry and metaphors; g) PLACEHOLDERS referring to empty but attentive conversational turns (e.g., I don't know); h) OTHER including request for attention, regulative talk, simple yes-and-no response, non-contingent responses.

Level 4—Forms of Parental Responsiveness

Expanding upon the coding schemes developed by Bailey & Moughamian (2007) and Melzi et al. (2011), we further categorized parental decontextualized utterances into various forms of responsiveness: a) RESPONSE to others' questions; b) SUPPORTING CONVERSATION including repetitions and clarification request; c) REFRAME children's previous utterances especially those that include language mistakes; d) INITIATION of a new topic in the form of a statement; e) FOLLOW-ONS including any comment or question that continently followed directly from the other speakers' nonverbal or verbal behaviors.

The coding for each utterance was dependent on the utterance that came before it. For example, if the child asked "Why? (为什么呀？which was coded as explanation)", the mother responded with the same question, "Why? (为什么呀？which was coded as repetition)".

Seven (20%) of 34 transcripts (780 of 7768 codes) were randomly selected and double-coded by a trained independent coder, yielding moderate to high reliability: 84% (Cohen's Kappa = 0.71) for types of decontextualized talk, 94% (Cohen's Kappa = 0.85) for topics and content, 76% (Cohen's Kappa = 0.54) for language functions, and 97% (Cohen's Kappa = 0.92) for forms of parental responsiveness. Disagreements were addressed through discussions until consensus was achieved between the coders. The primary researcher coded the remaining transcripts.

Measures

  To effectively unpack the influence of parental DL on children's language production and reduce the number of variables included in the analyses, several composite variables were computed based on theoretical relevance and empirical correlations between respective variables.

  Recontextualization. I first computed the recontextualization variable for children, which was computed by summing[2] the rate of elaboration provision and request, along with the rate of making connections between the present context and a more remote one, showing a strong association ($r = .61$, $p < .001$). It's important to note that I did not compute a recontextualization variable for parents, as this study aimed to explore the influence of specific aspects of parental language.

  Responsive Modification. A new parental responsive modification variable was introduced by summing the rate of parental responses and reframing practice. These two forms of responsiveness were significantly correlated with each other ($r = .91$, $p < .001$).

  Socio-cognitive Awareness. The socio-cognitive awareness variable was created for both children and parents by combining the usage of mental-state terms, references to other people and behavioral discourse. Rooted in Confucian teachings, this combination offers a nuanced lens into the culturally unique socio-relational cognition, underlining interconnectedness. References to other individuals underscore the significance of one's position within the intricate web of

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[2] Taking the mean of these variables yielded results that were perfectly correlated with those obtained by summing them, as indicated by a correlation coefficient (r) of 1. This perfect correlation suggests that both mean and sum effectively capture the same underlying pattern of recontextualization in children's language use, providing consistent insights into their linguistic behaviors.

relationships, while discussions of mental states stress the importance of empathizing with others' inner experiences. Conversations about behaviors often serve as moral and social evaluative lessons, highlighting accepted norms and responsibilities. The compelling empirical correlations for these elements, ranging from 0.61 to 0.75 ($p < .001$), provide empirical justification for the creation of this composite variable that captures the intricate facets of communication in Chinese culture.

Prospection Awareness. Children's discussions about plans were relabeled as prospection awareness to better encompass their future-oriented thinking and decision-making abilities, aligning with the terminology used in Study 2.

Language Complexity. In assessing language complexity within the family context, the study quantifies the mean length of utterances (MLU), vocabulary diversity (word types), total word count (word tokens), lexical density (words per minute), and type-token ratio (TTR) for both the focal child and their parents. These measures collectively provide a comprehensive evaluation of each speaker's linguistic abilities.

Analytic Plan

The analytic plan begins with the calculation of frequencies for each level of coding, which are then converted into relative proportions and rate data. This corrects for potential discrepancies in talkativeness among different mother-father-child triads. We use the relative proportions (frequency divided by total utterances produced) and rate data (frequency divided by the duration of the conversation in minutes) to understand the total amount and variability of each type of decontextualized language (DL) (Research Question 1). However, only rate data will be applied to examine the differences in DL use between mothers and fathers (Research

Question 2) and the correlation between parental language and child language production (Research Question 3).

To address RQ 1, the characteristics of DL within Chinese families are captured by summarizing and reporting descriptive statistics. For RQ 2, the ways how mothers and fathers engage in decontextualized talk were compared through a series of analyses of variance (*ANOVA*s*) and *t*-tests depending on the data types.

To address RQ 3, Pearson product moment correlations were first used to select strong candidates for regression analyses predicting children's language production based on parental DL. Hierarchical regression analyses were then employed to determine the best predictive models. Qualitative data was also provided to illustrate how children recontextualized during decontextualized conversations, especially how they attended to listeners' knowledge and beliefs, and drew information from different physical, social, and historical contexts to craft their responses to make meaning of the remote and the abstract.

Results

Characteristics of Decontextualized Language Use at Mealtimes

This section provides descriptive statistics on language complexity and the use of different decontextualized language (DL) characteristics among a sample of mothers, fathers, and children from Shanghai, China. The results are detailed in terms of frequency, rate, and proportion of DL use, providing a comprehensive overview of DL characteristics within this specific sociocultural, demographic group.

The analysis revealed significant variations in language complexity among family members during mealtimes. The mean length of utterances (MLU) was used as a measure of linguistic complexity. The child's MLU was 4.14 (SD = 0.42), suggesting moderate complexity in their language use. The father's MLU was slightly lower at 4.01 (SD = 1.02), whereas the mother exhibited a notably higher MLU of 4.72 (SD = 0.73), indicative of longer or more complex utterances. Shapiro-Wilk Test results confirmed that the MLU distributions for mothers, fathers, and children were normal.

Examining lexical richness, the child displayed moderate vocabulary diversity with 144 word types and 474 word tokens. This was reflected in a lexical density of 24.6 and a type-token ratio (TTR) of 0.341. The father, on the other hand, had a lower lexical density of 7.97 with 62.3 word types and 157 word tokens, but a higher TTR of 0.550, suggesting a more varied use of vocabulary. The mother showed the highest lexical diversity, with 156 word types and 578 word tokens, resulting in the highest lexical density of 27.9 and a TTR of 0.385.

In terms of distribution of various lexical indicators, children's and fathers' word types were normally distributed. Mothers' word types, however, were right skewed (skewness = 1.05), indicating a tendency towards a broader range of unique words. Children's word tokens followed a normal distribution, while the word tokens in both mothers' and fathers' speech significantly deviated from normality (Shapiro-Wilk $p < .001$) and were right-skewed (skewness = 1.40 and 1.60, respectively), signifying greater variability in adult language usage. Lexical density for children aligned with a normal distribution, unlike that of mothers and fathers, which showed significant deviations from normality (Shapiro-Wilk p-values of < 0.05 and 0.001, respectively) and were right-skewed (skewness = 0.73 and 1.38, respectively). The TTR distributions for

children and mothers were non-normal (Shapiro-Wilk *p*-values of < .05 and 0.05, respectively), while the father's TTR did not significantly deviate from normality, indicating a more uniform vocabulary usage. To correct for skewed distributions, a log transformation (Base 2) was applied to the original data in the subsequent regression analyses.

Overall, these findings underscore distinct patterns of language use within the family, with the mother exhibiting the highest lexical richness and complexity, and the father showing a higher proportion of unique word types, reflecting diverse linguistic dynamics within family interactions.

General DL Contribution

The use of decontextualized language (DL) varied, comprising an average of 23% of mothers' utterances, 14% of fathers' utterances, and 22% of children's utterances, indicating variability in DL use among the three speakers during mealtime conversations. In terms of each speaker's contribution within their family, mothers on average contributed the most, accounting for 51.6% (SD = 21.8%) of all DL, followed by children at 32.9% (SD = 19.6%), and fathers at 21.4% (SD = 27.2%). This corresponds to mothers producing an average of 32.8 (SD = 46.5) decontextualized utterances, children generating 20.8 (SD = 24.2), and fathers producing the least, at 5.9 (SD = 10.1). Upon examining DL production per minute, it was found that both mothers (M = 1.52, SD = 1.85) and children (M = 1.02, SD = 1.12) produced over one DL utterance per minute on average. In contrast, fathers showed significantly less frequent DL use during mealtimes, with an average rate of 0.28 (SD = 0.47) DL utterances per minute. Notably, the variability in DL utterance production is highest for mothers, followed by children, and is lowest for fathers.

Level 1: Types of Decontextualized Talk. The study revealed significant variability in the use of various decontextualized language (DL) types, encompassing discussions about past events, plans, hypothetical scenarios, and causal relationships, among mothers, fathers, and children (for more detailed information, see Appendix A). Given the importance of rate data in the subsequent regression analyses, its distribution characteristics across the different family members were examined and reported below.

For past-oriented DL, mothers exhibited the highest average frequency at 9.36 (SD = 12.53), followed by children at 8.53 (SD = 11.69), and fathers with 2.48 (SD = 5.12). The rate and proportion followed the same pattern, indicating that mothers and children engage more in past-oriented DL compared to fathers. In terms of distribution of rate data, mothers' past-oriented DL showed a mean rate of 0.45 (SD = 0.51), indicating significant use, but with substantial variability as reflected in the right skewness (1.82) and deviation from normality (Shapiro-Wilk p-value < .001). This suggests that mothers might engage in more complex or varied conversational topics than other family members. Fathers and children appear to have a more consistent and less varied use of this language type.

In the future-oriented DL, mothers again led with an average frequency of 5.91 (SD = 8.37), but the frequency was much lower in children and fathers, with averages of 2.97 (SD = 4.76) and 1.56 (SD = 2.86) respectively. The corresponding rates and proportions similarly pointed towards mothers engaging more in future-oriented DL than the other speakers. Specifically, mothers had a mean rate of 0.32 (SD = 0.53), fathers displayed a mean rate of 0.07 (SD = 0.14), and children showed a mean rate of 0.18 (SD = 0.43). All groups showed deviations from normality, with mothers and children exhibiting more variability in their use of future-oriented DL.

In terms of talk about hypothetical scenarios, the frequencies were significantly lower across all speakers, with mothers averaging 1.61 (SD = 3.53), children at 0.59 (SD = 1.23), and fathers at 0.26 (SD = 0.71). The mean rate for mothers was 0.06 (SD = 0.15), for fathers was 0.01 (SD = 0.04), and for children was 0.03 (SD = 0.07). This language type was less frequently used across all groups, with mothers showing a slight skewness (3.12), suggesting a more uniform usage pattern compared to other DL types.

Lastly, in talk about causal relationships, mothers led with a much higher average frequency of 10.94 (SD = 28.52), whereas children and fathers averaged 4.53 (SD = 11.39) and 0.63 (SD = 1.28) respectively. As with the other categories, the rates and proportions followed a similar pattern. Mothers showed the highest variability with a mean rate of 0.46 (SD = 1.12) and a significant right skew (4.33). Fathers and children displayed mean rates of 0.03 (SD = 0.07) and 0.20 (SD = 0.48), respectively, indicating a more consistent and lower usage of causal talk compared to mothers.

Level 2: Content and Topics. As a collective, these families tend to emphasize behavior-related topics during their DL interactions (see Appendix B). With the highest combined average frequency of 10.46, a rate of 0.50 per minute, and representing 9% of all utterances, the prominence of behavior-centric discussion is evident. Examples of this include simple remarks about behavior (e.g., "帮奶奶摘菜" picking vegetables for grandma.), elaborations on behavioral motives (e.g., "为什么不能拍孕妇？" Why can't pregnant women be recorded?), and commentary on children's behavior in relation to social norms (e.g., "不能给别人起绰号" [You] cannot give others a nickname.).

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Discussion of other-references and planning are also prevalent over mealtimes. Chinese parents and children commonly reference other people who are not present at mealtimes, such as friends, teachers, extended family members, and colleagues. Moreover, there is a notable prevalence of future-oriented discussions, with parents often initiating dialogues about upcoming events aiming to plan or prepare them for both near and distant future events, for instance, "吃完饭去爬山怎么样？"(How about going hiking after eating?) or "圣诞节我们要怎么装饰家里？" (How will we decorate our home for Christmas?). Such a tendency to favor future-oriented talk is consistent with the previous literature (Wei et al., 2020). Children also actively engaged in this future-oriented talk mostly in response to parents' questions pertaining to future events, for example, 爸爸： "你要和谁结婚？"(FAT: Who will you marry?). In addition, children also initiated future-oriented conversations, "以后我长大你变老了，我要给你样东西。" (CHI: When I grow up and you get old, I will give you something special.). These results demonstrate the broad scope of topics Chinese families engage in.

When delving into the data by each speaker, mothers tend to discuss behavior, other-references, and planning most frequently. Behavior dominates the conversation, with an average frequency of 5.61 (SD = 8.67), an average rate of 0.26 per minute (SD = 0.36), and an average proportion of 3% of all utterances. Mothers also talk about mental state including discussing their inferences about other people's mental state or sharing their own mental state with family members at mealtimes such as emotions, feelings, the process of knowing, thinking, and remembering. The least common topic among mothers is academic work, with an average

frequency of 0.79 (SD = 2.03), an average rate of 0.04 per minute (SD = 0.09), and an average

proportion of 1%.

Fathers also talked most about behavior, but with a notably lower average frequency of

1.26 (SD = 1.97), an average rate of 0.06 per minute (SD = 0.10), and an average proportion of

3% of their total utterances. Following this, planning was the next most frequent topic, with an

average frequency of 1.04 (SD = 2.05), an average rate of 0.05 (SD = 0.1) and an average

proportion of 0.02 (SD = 0.00). The least frequently discussed topic for fathers was rules and

norms, with an average frequency of just 0.11 (SD = 0.32).

Children's most common topic, like their parents, was behavior with an average

frequency of 3.59 (SD = 5.4), an average rate of 0.18 per minute (SD = 0.27), and an average

proportion of 3% of the total utterances. Other references followed, with an average frequency of

2.62 (SD = 5.36), an average rate of 0.12 (SD = 0.18) and an average proportion of 0.06 (SD =

0.00). Rules and norms were the least discussed, with an average frequency of 0.35 (SD = 0.77),

an average rate of 0.02 (SD = 0.04) and constituting just less than 1% of the utterance on

average.

To summarize, across all speakers, the topic of behavior, encompassing mentions of

behaviors, clarifications, and explanations of behavior, appears most commonly in these

decontextualized interactions. Mothers show a greater breadth in their topic coverage and

produce more decontextualized utterances, regardless of the content or topics discussed during

joint conversations, compared to fathers and children. Furthermore, a higher proportion of

mothers' utterances pertain to decontextualized topics and content. In contrast, fathers tend to

emphasize behavior and planning more, while children's utterances revolve around behavior and

discussions about others. These discussions about behaviors, mental state, and other people are

likely to help children recognize themselves in relation to others and attune to others' needs, behaviors and even thoughts.

Level 3: Language Functions. Turning to the language functions used by these families, each family member uniquely contributed to the decontextualized conversations, although mothers took a leading role in using different language functions (see Appendix C).

Elaboration, as a key function, was used extensively across all family members, but mothers led the way with a mean frequency of 15.61 (SD = 19.36), an average rate of 0.74 per minute (SD = 0.83) and an average proportion of 11% of all utterances. This signifies their role in providing new information and initiating discussions. Fathers also contributed to the elaboration function, albeit less frequently than mothers, with an average frequency of 3.19 (SD = 7.03), an average rate of 0.15 per minute (SD = 0.34) and an average proportion of 5%. Children were not passive listeners; they were actively engaged, offering elaborative contributions with an average frequency of 11.38 (SD = 12.81), an average rate of 0.55 per minute (SD = 0.60) and an average proportion of 11%.

Repetition of the earlier utterances was another frequent function, primarily driven by mothers, with an average frequency of 3.3 (SD = 4.92), an average rate of 0.15 per minute (SD = 0.20) and and an average proportion of 3%. Fathers and children echoed previous statements less often, with fathers at an average frequency of 0.59 (SD = 1.45), an average rate of 0.02 (SD = 0.06) and an average proportion of 0.01 (SD = 0.02), and children at 1.56 (SD = 2.11), an average rate of 0.08 (SD = 0.1) and an average proportion of 0.01 (SD = 0.01), reinforcing the interactive pattern.

For explanation provisions and requests, mothers were the primary drivers with an average frequency of 5.45 (SD = 14.29), an average rate of 0.23 per minute (SD = 0.56) and an

average proportion of 0.03. Fathers and children also contributed to drawing logical connections, with fathers having a lower frequency of 0.33 (SD = 0.62), an average rate of 0.02 (SD = 0.03), an average proportion of 0.01 (SD = 0.03). On the other hand, children exhibited an average frequency of 2.5 (SD = 5.14), an average rate of 0.13 (SD = 0.23), and an average proportion of 0.02 (SD = 0.04). Their contributions added diverse perspectives that enriched the discussions.

In the case of evaluation, mothers once again took the lead with an average frequency of 1.76 (SD = 2.53), an average rate of 0.08 per minute (SD = 0.11) and an average proportion of 2%. Fathers and children also participated in this function, albeit less frequently. Fathers had an average frequency of 0.26 (SD = 0.53), an average rate of 0.01 (SD = 0.03) and an average proportion of 0.01 (SD = 0.01). Children employed the evaluation function with an average frequency of 0.76 (SD = 1.74), an average rate of 0.03 (SD = 0.08), and an average proportion of 0.02 (SD = 0.04). Their contributions introduce an element of critique and assessment into the conversation.

Connections to other times, places, or events were primarily made by mothers, with an average frequency of 1.79 (SD = 4.08), an average rate of 0.08 per minute (SD = 0.17) and an average proportion of 1%. However, fathers and children were not far behind. Fathers exhibited an average frequency of 0.52 (SD = 0.94), an average rate of 0.03 (SD = 0.05), and an average proportion of 0.01 (SD = 0.03), while children displayed an average frequency of 0.71 (SD = 1.49), an average rate of 0.03 (SD = 0.06), and an average proportion of 0.00 (SD = 0.01). In doing so, they drew associations and contributed varied perspectives, enriching the overall conversation.

Poetic speech was least used, but here too mothers took the lead with an average frequency of 0.48 (SD = 1.42) and an average rate of 0.02 per minute (SD = 0.06). Fathers

utilized it sparingly, with an average frequency of 0.04 (SD = 0.19), an average rate of 0.00 (SD = 0.01), and an average proportion of 0.00 (SD = 0.00). In contrast, children emerged as more active contributors compared to fathers. They maintained an average frequency of 0.68 (SD = 1.59), an average rate of 0.03 per minute (SD = 0.08), and an average proportion of 0.01 (SD = 0.02), adding creative elements to the dialogue.

Level 4: Forms of Parental Responsiveness. When examining the forms Chinese mothers and fathers use responsiveness strategies during family mealtimes, it becomes apparent that both parents actively participate, albeit mothers more frequently, in sustaining the dialogue and promoting the child's engagement (see Appendix D). However, fathers' contributions, though fewer in frequency, remain crucial in providing diversified input and supporting a well-rounded linguistic environment.

Mothers led the way in responding to the conversation, with an average frequency of 5.3 responses per mealtime (SD = 11.94), an average rate of 0.24 responses (SD = 0.48), and accounting for an average proportion of 0.03 (SD = 0.05). Fathers, on the other hand, responded less frequently, with an average frequency of 0.48 responses (SD = 0.94), an average rate of 0.03 (SD = 0.06), and contributing approximately 0.01 (SD = 0.02) of all utterances.

Similarly, mothers provided more supporting conversations, reflected in an average frequency of 4.88 (SD = 7.06), an average rate of 0.24 per minute (SD = 0.33), and an average proportion of 0.04 (SD = 0.05). Fathers also offered support but less frequently, with an average frequency of 1.11 (SD = 3.24), an average rate of 0.05 per minute (SD = 0.14), and an average proportion of 0.01 (SD = 0.03).

In terms of reframing the conversation, mothers were the primary contributors, with an average frequency of 0.64 (SD = 2.45), an average rate of 0.03 per minute (SD = 0.10) and an

average proportion of 0.00 (SD = 0.01) of all utterances. Notably, fathers' contributions in this function were not observed in our dataset.

When it came to initiating a new aspect or topic of the conversation, mothers took the lead, with an average frequency of 7.85 (SD = 13.59), an average rate of 0.36 per minute (SD = 0.50), and an average proportion of 0.05 (SD = 0.05). Fathers also engaged in this function, with an average frequency of 1.7 (SD = 2.83), an average rate of 0.08 per minute (SD = 0.14), and an average proportion of 0.03 (SD = 0.04) .

Lastly, follow-ons, where a speaker adds to or expands upon the previous speaker's utterance, were a major contribution from both parents. Mothers, again, took the lead with an average frequency of 12.55 (SD = 17.20), an average rate of 0.59 per minute (SD = 0.72), and an average proportion of 9%. Fathers followed on from their child's utterance with an average frequency of 2.15 (SD = 4.06), an average rate of 0.10 per minute (SD = 0.19), and an average proportion of 0.04 (SD = 0.05).

Overall, this section provides a comprehensive exploration of the decontextualized language (DL) use within our specific sample of Shanghai-based families, specifically within the context of mothers, fathers, and children during mealtimes. The types of DL, the topics or content, and the language functions reflect cultural patterns and are heavily influenced by the speaker's role. Among the speakers, mothers' language use appears to be the most diversified, with fathers contributing less frequently, and children actively engaging in the dialogues. Furthermore, the analysis of parental responsiveness suggests that both parents contribute significantly to the family's linguistic environment, but with different styles and frequencies. To develop a better understanding of parental DL, the upcoming section will delve into a comparison of mothers' and fathers' DL to investigate if there are any significant differences in

their decontextualized language use. This comparative analysis will provide insights into the respective influences mothers and fathers may have on their children's language development and the intricacies of their roles in this process.

Comparing Fathers and Mothers' Decontextualized Talk

Results of *ANOVA* revealed multiple differences in the ways fathers and mothers engaged in DL including types of DL they discussed, various topics they talked about, language functions they often used, and how they provided language scaffolding in support of children's recontextualization.

Level 1: Types of Decontextualized Talk. In this study, out of 33 mothers and 27 fathers present at mealtimes, notable differences in their contributions to various types of decontextualized language (DL) were found. Among the fathers, 19 engaged in different types of DL, but with significant variability in each category. For instance, while 12 fathers discussed past events, only 4 engaged in hypothetical scenarios. In contrast, 32 mothers participated in diverse DL conversations, with the majority discussing past and future events, and causal relationships. However, similar to the fathers, a smaller subset of 10 mothers engaged in conversations about hypothetical scenarios. Across different types of decontextualized conversations, significant differences between fathers' and mothers' production of DL were observed for frequencies, $F(1, 103) = 4.40$, $p < .05$, $\eta^2 = .04$, and rates, $F(1, 103) = 2.55$, $p < .05$, $\eta^2 = .05$, but not as a proportion of overall talk, $F(1, 103) = 0.21$, $p = 0.65$, $\eta^2 = .002$.

Level 2: Content and Topics. Parents differed in the content or topics they discussed during decontextualized conversations, which were significant for all data types ($F(1, 185) = 6.46$, $p < .05$, $\eta^2 = .03$ for frequencies; $F(1, 184) = 8.40$, $p < .01$, $\eta^2 = .04$ for rates; and $F(1,$

190) = 5.68, $p < .05$, $\eta^2 = .03$ for proportions). A significant main effect of Topic was found in the analyses using proportion data, $F(1, 190) = 8.63$, $p < .01$, $\eta^2 = .04$, suggesting a large variability in parents' preferences for topics or content of DL. For example, of the 19 fathers participating in DL conversations, 14 primarily discussed behavior-related topics. The range of topics among these fathers varied considerably, with other topics being discussed by one to eight fathers. Among the 32 mothers engaged in decontextualized language (DL) conversations during the study, a majority exhibited a broad range of interests, covering 70% of the topics coded for the study. The number of mothers contributing to each topic varied, with participation in specific topics ranging from seven to 23 mothers. Notably, behavior-related topics also emerged as the most prevalent, being discussed by 23 mothers.

Level 3: Language Functions. Significant main effects of Speaker and Language Functions were found. Fathers and mothers differed in their choices of language functions ($F(1, 129) = 4.21$, $p < .05$, $\eta^2 = .03$ for frequencies; $F(1, 132) = 4.73$, $p < .05$, $\eta^2 = .03$ for rates). The discrepancies were even more distinct in parents' preferences for specific language functions; results were significant for all three data types ($F(1, 129) = 13.80$, $p < .001$, $\eta^2 = .09$ for frequencies, $F(1, 132) = 17.30$, $p < .001$, $\eta^2 = .11$ for rates, and $F(1, 137) = 27.09$, $p < .001$, $\eta^2 = .17$ for proportions). Among the 19 fathers participating in decontextualized language (DL) conversations, the most commonly used function was elaboration, utilized by 13 fathers. This was followed by a smaller group of five fathers who made connections between the present and the remote. In contrast, out of 32 mothers contributing to DL, a majority (27 mothers) employed the elaboration function. Additionally, repetition and explanation functions were also prominent, with 18 mothers engaging in these aspects of DL production.

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Level 4: Forms of Parental Responsiveness. Fathers and mothers also differed in forms of parental responsiveness they provided during decontextualized conversations. Significant main effects of Speaker and Forms of Responsiveness were found. They differed in frequencies and rates of responsiveness provided by fathers and mothers (F (1, 151) = 8.33, $p < .01$, $\eta^2 = .05$ for frequencies; and F (1, 151) = 9.79, $p < .01$, $\eta^2 = .06$ for rates).

To determine fathers' and mothers' preferences for specific forms of parental responsiveness, I performed separate analyses to compare rates of responsiveness strategies across parents using t-tests. Mothers used significantly more supporting conversations (t(23.99) = -11.22, $p < .001$), especially repeating children's previous utterances or asking children to clarify. Mothers more frequently responded to children's questions and requests (t(22.70) = -5.35, $p < .001$), initiated new decontextualized topics (t(31.32) = -7.23, $p < .001$), and followed up with children to expand on the conversations (t(35.58) = -7.61, $p < .001$). Within the group of 19 fathers who participated in decontextualized conversations, the majority (15 fathers) predominantly used the follow-ons strategy. Interestingly, none of the fathers in this group utilized the reframe strategy, rendering a comparative analysis of reframe strategy use between mothers and fathers statistically impractical. Conversely, more than 60% of the mothers demonstrated a diverse array of responsiveness strategies during decontextualized conversations. These included repetition, supporting conversations, initiating new topics, and follow-ons. Notably, reframing strategies were used by only seven mothers.

Additionally, a significant main effect of parental responsiveness was found in all three data types (F (1, 138) = 13.35, $p < .001$, $\eta^2 = .08$ for frequencies; F (1, 138) = 17.75, $p < .001$, $\eta^2 = .11$ for rates; and F (1, 140) = 45.25, $p < .001$, $\eta^2 = .16$ for proportions). These results suggest that parents preferred certain forms of responsiveness strategies over others. Specifically,

they most frequently used the strategies of follow-ons ($M = 0.09$, $SD = 0.06$) and initiation ($M = 0.05$, $SD = 0.02$), but they least often reframed children's utterances ($M = 0.02$, $SD = 0.02$).

Comparing Additional Language Features. A series of *ANOVA*s was then used to determine if there were significant differences in parents' production of specific language features, including word tokens, word types and lexical density, when engaging in different types of DL. The results indicate significant main effects of the Speaker on all language features. Regardless of the type of DL, mothers produced a significantly greater number of words compared to fathers, $F (1, 88) = 13.92$, $p < .001$, $\eta^2 = .14$, they also used a more diverse vocabulary, $F (1, 91) = 14.32$, $p < .001$, $\eta^2 = .13$, and mothers used words more densely than fathers, $F (1, 174) = 5.41$, $p < .05$, $\eta^2 = .03$, when participating in decontextualized conversations at mealtimes.

Parental Language Relating to Children's Language

The hypothesis for this study postulated that parental language would be related to children's language production, specifically in terms of language complexity as evaluated by various vocabulary indices, the rate of recontextualization, socio-cognitive awareness, and prospection awareness. Initially, results from the Pearson correlation analyses are presented below (for more comprehensive information, see Appendix E, F and G), followed by the findings from the hierarchical regression analyses. The latter assesses the specific parental language behaviors that significantly predict children's language production.

Correlational Analyses

Associations were investigated between children's language (including word tokens, word types, lexical density, recontextualization, socio-cognitive awareness, prospection

awareness) and multiple parental language indices (such as lexical richness, different types of DL, DL content and forms of parental responsiveness).

The results generally showed that both the quantity and quality of maternal language are significant for children's language production during decontextualized talk. This is underscored by high correlations between child language production and various maternal language indices. It's worth highlighting that none of the language indices associated with fathers showed significant correlations with the language of the children at a significance level of $\alpha < .05$, although some language indicators such as paternal supporting conversations and talk about past reach a marginal significance ($p < .1$).

For children's ability to recontextualize, positive correlations were discovered with various maternal language indices such as lexical richness, specific topics, and different forms of responsiveness. Specifically, the rate of children's recontextualizing was significantly associated with mother's word tokens ($r = 0.39, p < .05$), word types ($r = 0.45, p < .01$) and lexical density ($r = 0.39, p < .05$). It also significantly related to mother's socio-cognitive awareness ($r = 0.69, p < .001$), talk about the past ($r = 0.61, p < .001$), future-oriented talk ($r = 0.68, p < .001$), talk about causal relationships ($r = 0.52, p < .01$), behavior-related talk ($r = 0.71, p < .001$), as well as maternal responsiveness such as maternal responsive modification ($r = 0.55, p < .001$) and supporting conversation ($r = 0.72, p < .001$).

For socio-cognitive awareness, the data revealed strong positive correlations with mothers who demonstrated higher socio-cognitive awareness ($r = 0.75, p < .001$), frequently repeated children's statements ($r = 0.69, p < .001$), and engaged in more talk about the past ($r = 0.64, p < .001$) and the future ($r = 0.57, p < .001$) and causal relationships ($r = 0.55, p < .001$). They also use more ($r = 0.45, p < .05$) and more diverse word types ($r = 0.51, p < .05$). The

father's supporting conversation ($r = 0.33$, $p < .1$) and talk about the past ($r = 0.32$, $p < .1$) also exhibited a marginally positive correlation with the child's socio-cognitive awareness.

When it comes to prospection awareness, the results indicated correlations with mothers' socio-cognitive awareness ($r = 0.36$, $p < .1$), repetition of each other's previous utterances ($r = 0.75$, $p < .001$), and their talk about the past ($r = 0.55$, $p < .001$) and the future ($r = 0.87$, $p < .001$).

Hierarchical Regression Results

Since correlations are, by definition, bidirectional, I conducted separate hierarchical regression analyses to determine whether parental language measures predicted various aspects of children's language production. These aspects encompassed their vocabulary production, rate of recontextualization, socio-cognitive awareness and prospection awareness.

In the process of fitting hierarchical regressions, I systematically incorporated different facets of parental language that displayed substantial correlations ($r > 0.5$) with child language measures—a crucial consideration given the relatively small sample size of this study. These facets were introduced into the model separately at each distinct step of the analysis. Step 1 accounted for child level variables, specifically child age and word types, and the following steps explored the impacts of parental vocabulary, various DL types, DL content, and forms of parental responsiveness. This systematic approach enabled the identification of the unique contributions of each facet of parental language while effectively accounting for potential confounding variables. Consequently, it provided a nuanced understanding of how different aspects of parental language influenced various dimensions of children's language development. Detailed results of these hierarchical regression analyses are presented below.

Vocabulary Production. The results of hierarchical regression analyses, with total number of words produced by children and child word types as the dependent variables and maternal word types as a predictor, are detailed in the Table 1-1. Prior to the regression analyses, all necessary assumptions for linear regression were confirmed, including linearity, homoscedasticity, normality of residuals, independence of errors, and absence of multicollinearity, were satisfactorily met for the fitted models.

After controlling for child age, mother word types significantly predicted children's production of total number of words ($B = 1.45$, $SE = 0.43$, $p < .01$, $\eta^2 = .29$) and distinct word types ($B = 0.32$, $SE = 0.10$, $p < .01$, $\eta^2 = .26$). The inclusion of mother word types in the model accounted for an additional 29% of the variance in the word tokens, and 27% in the word types. Additionally, no significant correlations were found between additional maternal language measures and child lexical density ($r = 0.5$). As a result, models for lexical density were not included in the analysis. Lastly, none of the DL related variables predict children's lexical complexity as measured by word tokens, word types and lexical density.

Recontextualization. The hierarchical regression analyses were employed to understand the predictors of children's recontextualization rate (Table 1-2). To address the right skewness in the data, all variables that were included in the models were log-transformed using base 2. This transformation, applied to the original dataset, effectively normalized the distribution of the variable. In Model 1, initial variables including child age ($\beta = 0.26$, $SE = 0.16$) and word types ($\beta = 0.02$, $SE = 0.01$, $p < .05$) were significant predictors. This model accounted for 25% of the variance ($R^2 = 0.25$), $F(2, 29) = 4.84$, $p < .05$.

The inclusion of DL types significantly improved the model. Mother's past-oriented talk ($\beta = 0.65$, $SE = 0.14$, $p < .001$, $\eta^2 = .60$) and causal talk ($\beta = -0.05$, $SE = 0.16$, $\eta^2 = .04$) were

significant contributors, whereas mother's future-oriented talk showed a positive trend ($\beta = 0.31$, $SE = 0.15$, $p = .06$, $\eta^2 = .14$). The model's fit improved markedly, explaining 72% of the variance ($R^2 = 0.72$), $F(5, 26) = 13.12$, $p < .001$.

When DL content was added in Model 3, mother's socio-cognitive awareness did not emerge as a significant predictor ($\beta = -0.05$, $SE = 0.20$). The R^2 remained at 0.76, and the F-value was 13.36, indicating that DL content did not substantially increase predictive power.

In the final analysis, Model 4, which included variables related to parental responsiveness such as mother's responsive modification ($\beta = 0.16$, $SE = 0.17$) and supporting conversation ($\beta = 0.12$, $SE = 0.22$), did not produce statistically significant results. Although the cumulative R^2 remained 0.74, the overall strength of the model, as reflected by a lower F-value of 8.35, indicated a diminished model efficacy compared to previous models.

The Chi-squared tests between the models showed significant improvements in fit from Model 1 to Model 2 ($\Delta\chi^2 = 3.35$, $p < .01$), but the transitions from Model 2 to Model 3 ($\Delta\chi^2 = 0.39$, $p > .05$) and Model 3 to Model 4 ($\Delta\chi^2 = 0.71$, $p > .05$) did not result in statistically significant improvements.

Given the correlations between the components of recontextualization ($r = .61$), additional models were developed for its two key components: children's rate of elaboration and rate of connection. This approach was taken to test the robustness of the findings allowing for an evaluation of whether the observed effects are consistent across different aspects of recontextualization or if they are driven predominantly by one component. For elaboration rate, after accounting for child's age and word types, maternal past-oriented talk ($\beta = 0.48$, $SE = 0.22$, $p < .05$, $\eta^2 = .48$), future-oriented talk ($\beta = 0.56$, $SE = 0.16$, $p < .01$, $\eta^2 = .36$) and causal talk ($\beta = 0.28$, $SE = 0.09$, $p < .01$, $\eta^2 = .35$) were all significant predictors. The final model accounted for

71% of the variance in children's elaboration rate. In contrast, when predicting the rate at which children connected the present with remote concepts, only maternal causal talk was marginally significant as a predictor ($\beta = 0.02$, $SE = 0.01$, $p = .06$, $\eta^2 = .05$), after adjusting for child age and word types. This model explained 38% of the variance. These findings are in line with earlier results, where maternal past-oriented, future-oriented, and causal talk were shown to significantly predict overall child recontextualizing abilities, with the final model accounting for 76% of the variance. These comparisons suggest that while specific elements of recontextualizing, such as connection and elaboration, may be influenced differently by maternal talk, the overall pattern of influence remains consistent across different aspects of recontextualization.

Socio-Cognitive Awareness. Table 1-3 shows the results of predicting child socio-cognitive awareness from parental language. All variables included in the models were log-transformed using base 2 to correct for right skewness, effectively normalizing their distributions. Model 1 incorporated child variables, such as age ($\beta = 0.25$, $SE = 0.15$) and word types ($\beta = 2.28$, $SE = 0.80$, $p < .05$, $\eta^2 = .21$), accounting for 26% of the variance ($R^2 = 0.26$), and demonstrating a moderate fit ($F = 5.08$, $p < .01$).

The introduction of mother word types in Model 2 resulted in a notable increase in the model's predictive power, with $\beta = 1.06$ ($SE = 0.66$) and a significant change in the R^2 value to 0.36. The model's F-value improved to 5.24 ($p < .01$).

With Model 3, DL types were added, significantly enhancing the model. Mother's past-oriented talk ($\beta = 0.80$, $SE = 0.11$, $p < .001$, $\eta^2 = .72$) and causal talk ($\beta = 0.26$, $SE = 0.13$, $p < .05$, $\eta^2 = .13$) emerged as strong predictors, while future-oriented talk showed a trend towards

significance ($\beta = 0.23$, $SE = 0.13$, $p = .06$). This model explained a substantial 85% of the variance ($R^2 = 0.85$), with an F-value of 22.82 ($p < .001$).

Model 4 included DL content, with mother's socio-cognitive awareness as an additional predictor. Although this variable did not reach statistical significance ($\beta = -0.01$, $SE = 0.15$), the model retained a high explanatory power with an R^2 of 0.81 and an F-value of 18.78 ($p < .001$).

Finally, Model 5 incorporated parental responsiveness, including mother's responsive modification and supporting conversation. Neither of these predictors was significant, but the model maintained a strong cumulative R^2 of 0.85 and an F-value of 14.17 ($p < .05$).

The transition from Model 2 to Model 3 marked the most significant improvement in model fit ($\Delta\chi^2 = 28.34$, $p < .001$), while the other transitions demonstrated smaller or non-significant changes.

Prospection Awareness. Results of the hierarchical regression analyses predicting children's prospection awareness were presented in Table 1-4, with all variables log-transformed using base 2 to address right skewness. Model 1, including age and word types as control variables, indicated no significant predictors. Age ($\beta = 0.26$, $SE = 0.15$) and word types ($\beta = 1.63$, $SE = 0.81$) did not reach statistical significance. However, this model accounted for a modest variance in the dependent variable, with an R^2 of 0.18 and an F-value of 3.27.

In Model 2, the addition of DL types significantly enhanced the model's predictive power. The mother's future-oriented talk emerged as a strong predictor ($\beta = 0.46$, $SE = 0.19$, $p < .05$, $\eta^2 = .17$), while mother's past-oriented talk did not yield significance ($\beta = 0.17$, $SE = 0.18$). The R^2 value improved to 0.45, and the F-value increased to 5.61 ($p < .01$).

Model 3 incorporated several parental responsiveness-related predictors. Mother's supporting conversation, however, was not a significant predictor $(\beta = 0.04, SE = 0.26)$. The mother's future-oriented talk continued to be significant $(\beta = 0.46, SE = 0.21, p < .05, \eta^2 = .17)$, while the significance of mother's past-oriented talk $(\beta = 0.14, SE = 0.27)$ remained non-significant. The model's R^2 remained at 0.45, with an F-value of 4.33 $(p < .05)$.

The transition from Model 1 to Model 2 led to a substantial improvement in model fit $(\Delta\chi^2 = 6.67, p < .01)$, though the transition from Model 2 to Model 3 resulted in only a minor, non-significant enhancement in explanatory power $(\Delta\chi^2 = 0.02, p > .05)$.

Discussion

The present study contributes to the body of knowledge regarding the decontextualized language (DL) use of parents and children during early childhood by systematically investigating the quality and quantity of DL at mealtimes produced by Shanghai-based families with diverse socioeconomic backgrounds, and the various types of parental language features that may support children's development of DL. Findings suggest a large variability in their DL use. Both salient differences and similarities have been found in fathers' and mothers' DL, suggesting cultural effects on these families' DL use and the importance of considering both parents' contribution to the early child language environment. Results have also linked parental DL use to children's language production and socio-cognitive awareness.

Young Children's Recontextualization

This study represents one of the first empirical studies exploring the notion of recontextualizing among a group of preschool-aged children. The quantitative data presented in this study confirmed that children as young as four years old have begun to develop "abilities to

craft mind-to-mind linguistic messages" (Bailey, 2020, 2021) when discussing the remote and the abstract. In general, children frequently contributed to decontextualized conversations at mealtimes, even more often than their fathers. There were mainly two ways in which children engaged in such talk, namely elaborations and associations. First, children as young as 4 and 5 years old were able to respond to others' requests for new information about decontextualized topics. The excerpt below qualitatively illustrates how a child engaged in a decontextualized conversation about rope jumping tests that would occur in the near future.

> Mother: 你们什么时候考跳绳啊?(When will you take rope jumping tests?)
>
> Mother: 老师不是说跳到六十个?(Didn't the teacher say jump to sixty?)
>
> Mother: 差不多吧。(More or less.)
>
> Yi: 下学期。(Next semester.)
>
> Mother: 哦。(Oh.)
>
> Yi: 就是跳绳。(Just jump rope.)
>
> Yi: 然后有花式跳绳。(Then there is fancy rope jumping.)
>
> Yi: 有单脚跳的啊。(There is jumping on one foot.)
>
> Yi: 有跑着跳的啊。(There is jumping rope run.)

The mother drew the child's attention to an upcoming event by explicitly requesting information about its time, for example, 什么时候？What time?). She further referred to the teacher's past speech about the test (i.e., 老师不是说跳到六十个? Didn't the teacher say jump to sixty?). The mother's reference to the teacher's speech might help the child recall the details about the test and discuss the present topic about the future. In the meantime, it possibly indicated that mother was not aware of the specific requirements of the rope jumping test. To

respond, the child didn't simply supply a short description (i.e., 下学期。Next semester), but he

spontaneously provided richer details to help his mother understand the requirements and the

structure of the test. Clearly, Yi was able to quickly pick up some contextualized cues from

mother's questions and contribute to the decontextualized conversation that required him to

recall the past and prepare for the future.

Moreover, these children were able to make associations between different physical,

social, and historical contexts. On the one hand, they demonstrated abilities to connect the

present context to remote contexts, for example, comparing an object at the dinner table to that in

a different physical and historical context (Child: 我们家的好吃，姑姑家里的不好吃。Our

family's dish is delicious, Aunt's food is not delicious.). On the other hand, some children could

draw connections between two or more different remote contexts as is illustrated by the

following excerpt.

Mother: 哎，我告诉你给小朋友起外号是不礼貌的。(Hey, I told you it's impolite to nickname children.)

Shudi: 都是刷子啊。(They are all "Shuazi" (Brushes).）

Mother: 他的名字就叫刷子啊？(Is his name "Shuazi" (Brush)?）

Shudi: 嗯啊。(Yes)

Mother: 我才不信呢，你是不是看的电视上的？(I don't believe it. Did you watch it on TV?)

Shudi: 不是，跟那个刷子不一样。那个电视的刷子没扎辫子，那个刷子扎辫子了。(No, different from that "Shuazi" (Brush). The "Shuazi" (Brush) on the TV is not braided. That "Shuazi" (Brush) is braided.)

Mother: 哦。(Oh.)

Shudi: 那不一样，他的名字跟她一样，可他的形状跟他不一样。(That's different. His name is the same as hers, but his shape is different.)

The mother asked the child, Shudi, about who she played with at preschool. After hearing an unexpected name "Shuazi" (Brush) in Shudi's response, she made an evaluation of the child's behavior ("不礼貌""impolite"). After answering Yes/No, Shudi took the response a step further and explicitly explained the differences and similarities between "Shuazi" (Brush) in a TV show and her friend at school, both of which were not visually present. This explanation indicated Shudi's awareness of her mother's confusion, disbelief, and knowledge about the "Shuazi" (Brush) she referred to. Such an ability of perspective-taking was fundamental to crafting the response and helping the listeners to understand. These two excerpts jointly suggest that young children are able to draw from both contextualized and decontextualized linguistic resources. Contextualized language, where they utilize knowledge inferred from previous utterances or the immediate conversational context, is combined seamlessly with decontextualized information that extends beyond the present context. Furthermore, these children also exhibit the ability to engage in recontextualization using exclusively decontextualized information. For instance, in Shudi's example, the child adeptly compares characters from a TV show with real-life school friends, effectively applying abstract concepts from one context to another.

DL is often considered cognitively and linguistically more demanding than contextualized language that focuses on more concrete here and now (Snow, 1983). However, both forms of language are likely used to effectively recontextualize non-present events or ideas for listeners (Bailey, 2020). The qualitative excerpts above made it clear that children actively engage in discussions of the events in different physical and historical contexts, such as describing what happened at school and discussing future events. They also attend to others'

perspectives, beliefs, and knowledge to craft their language by drawing from their previous experiences and various linguistic resources. In this process, they are developing linguistic and socio-cognitive abilities required to explicitly make meaning of the remote and the abstract for their listeners, especially when they do not share their knowledge. At the same time, they also acquire a sense of agency as evidenced by their substantial contributions to decontextualized conversations with their parents.

It's crucial to clarify that recontextualization, at its core, is about providing the appropriate context necessary for comprehensive understanding. This includes the adept use of both contextualized language (CL) and DL to create a narrative that is fully explanatory and comprehensible to listeners. A notable limitation of this study is the absence of a measure assessing its quality. Specifically, I did not evaluate whether the mix of CL and DL in children's language effectively facilitated recontextualization for the listener. This gap suggests an important direction for future research. Future studies should incorporate an assessment of the quality of children's recontextualization, examining how well they integrate CL and DL to construct meaningful, explanatory discourse. Such research would not only address this limitation but also deepen our understanding of how children skillfully navigate and blend different language forms to communicate effectively with their audiences.

Joint Language Environment Created by Mothers and Fathers

The results highlight unique patterns and contributions of both mothers and fathers in influencing the family's linguistic environment. One of the most salient findings from the analysis is the considerable diversity in mothers' language use. Mothers not only engage in a wider range of topics but also incorporate a broader spectrum of decontextualized language types, content, and responsiveness strategies into their discussions. The richness and

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diversification in maternal talk potentially suggests a more proactive role played by mothers in facilitating a dynamic and multidimensional linguistic setting for their children.

In contrast, while fathers were found to contribute less frequently, it's essential to acknowledge that their contributions were far from insignificant. Take fathers' use of supporting conversation as an example. Among the six fathers who participated in the study, two fathers employed this strategy more frequently (M = 12) than the remaining four fathers, who used it sparingly, typically only once or twice during the entire mealtime. Notably, the children of fathers who provided more supporting conversations exhibited more decontextualized language (M = 31 vs. M = 11), a greater number of word tokens (M = 91 vs. M = 23), and a more extensive range of word types (M = 66 vs. M = 18) compared to the children of fathers who offered fewer supporting conversations. An illustrative example is provided below to showcase how Yunmu's father effectively employed supporting conversation to facilitate her discussion of plans.

> Father: 明天是星期六，你打算咋过呀？(Tomorrow is Saturday, what are you going to do?)
>
> Yunmu: 明天星期六不上学呀。(No school tomorrow Saturday.)
>
> Father: 不上学呀。(No school.)
>
> Yunmu: 那我就起来打扮的漂漂亮亮的买点气球吧。(Then I'll get up and get dressed up and buy some balloons.)
>
> Father: 好的。(OK)
>
> Mother: 挂在上边就可以很漂亮啦。 (It will be beautiful to hang on it.)
>
> Yunmu: 还可以把这里整理干干净净。(I can also clean up here.)
>
> Father: 啊，真棒！(Ah, great!)
>
> Yunmu: 那就要买个圣诞树放在家里。(Then buy a Christmas tree and keep it at home.)

Father: 圣诞树啊。(Christmas tree.)

Father: 还有呢？啊，还弄什么东西呀？(What else? Ah, what else are you going to do?)

Yunmu: 没有了。(Nothing.)

Initially, the father introduced a new topic by prompting Yunmu to plan for the following day and then echoed part of her response ("No school"), signaling his interest in understanding her plans. As Yunmu provided further details about her plan, he consistently affirmed her choices ("Ah, great!") and demonstrated his attentive engagement ("OK"). In this exchange, the father assumed the role of an attentive listener rather than dominating the conversation with his elaborations. He utilized various techniques, such as repetition ("Christmas tree") and backchanneling ("OK"), to maintain the flow of conversation and support a child-centered and child-led decontextualized discussion. These supporting conversations enabled Yunmu to fully capitalize on the opportunity for meaningful back-and-forth adult-like conversations and gradually develop her autonomy in elaborating on her plans.

Despite differences in quantity and quality of mothers' and fathers' language, there is a salient similarity in the topics and content of their DL. Both mothers and fathers frequently engage their children in discussions about behaviors, other people, and plans. These content characteristics documented in mothers' and fathers' DL corroborate with findings from previous literature (Miller et al., 1997; Wang, 2001; Doan & Wang, 2010; Wei et al., 2020) when DL is discussed in different contexts and through different tasks, suggesting overarching cultural effects and functions Chinese families' DL might serve. The mention of behaviors and reference to other people jointly reinforce children's social awareness, such as social norms and how their behaviors and social interactions may influence others. Parents' discussions about plans often intend to prepare their children for upcoming events and anticipated consequences of children's

present behaviors, which are instrumental in cultivating children's proper behaviors in line with social norms and expectations. DL produced by Chinese parents at mealtimes serves as a site for "opportunity education" (Miller et al., 1997), instilling children with important social, moral, and cultural values and expectations.

While frequency and rate data undoubtedly offer valuable insights into the sheer volume and pace of maternal and paternal contributions, the intricacies revealed by proportion data (Hoff-Ginsberg, 1992) should not be overlooked. Although differences between maternal and paternal language contributions are highlighted through frequency and rate metrics, these disparities become less pronounced when analyzed using proportion data. This is because proportion data focuses on the distribution of specific linguistic features relative to overall language output, highlighting the relative consistency of such features between mothers and fathers. It is crucial to adopt a multifaceted approach, incorporating various metrics, to gain an in-depth understanding of parental linguistic contributions. It is not just about how much is spoken, but also about what is being emphasized within those spoken words. For example, the total frequency of certain linguistic features influences the rate of child acquisition of that particular language feature (Ambridge et al., 2015). In contrast, the relative proportions of linguistic elements in parental speech might shape the conversational styles children adopt.

Role of Parental Language on Children's Development

The present study further investigates parents' role in supporting their children's recontextualization ability. The findings highlight that mothers are more frequently involved in using DL, with a mean rate of 1.52, in contrast to fathers, who engage less often in this type of talk, averaging only 0.28 DL per minute during mealtimes. Results of more nuanced analyses comparing mother and father DL production and their use of different forms of parental

responsiveness suggests that mothers are not only more elaborative and talkative but also exhibit a greater diversity in their language use. Specifically, mothers are more actively involved in a variety of DL types, including both past and future-oriented conversations. They demonstrate a wider range of language functions, are more responsive in conversations, often initiating new topics, and expanding discussions. In comparison, mothers also use a larger number of words, a more diverse vocabulary, and exhibit higher lexical density than fathers. These patterns underscore the crucial role of mothers in shaping the family's linguistic environment and highlight their significant contribution to children's language development through diverse and complex conversational dynamics. These findings agree with previous research (e.g., Leaper et al., 1978; Huttenlocher et al., 2007) and indicate that mothers take a primary role at mealtimes in interacting with children and supporting their language development.

The present study distinguishes itself from prior research by adopting a more holistic approach to language analysis. Unlike earlier studies that typically concentrated on a singular aspect of language, such as mental state-related talk e.g., Mullen & Yi, 1995; Wang, 2001), this study utilized a comprehensive coding scheme. This extensive approach facilitated an in-depth examination of the varied DL employed by parents. It delved into a wide array of DL aspects, encompassing specific topics, content, language functions, and forms of responsiveness. The outcome of this multifaceted analysis revealed a significant diversity and richness in the DL produced by mothers, extending beyond the traditional focus on mental-state talk. These findings highlight the complexity and depth of mothers' conversational styles, uncovering layers of linguistic interaction that previous studies might have overlooked. The observed richness and diversity in the language of Shanghai-based Chinese mothers, contrasting with earlier depictions of them as low-elaborative and authoritative conversation partners in cross-cultural studies, may

indicate evolving parenting practices over recent years. Such changes could be linked to broader socio-cultural shifts, including the impacts of globalization and the increasing use of smartphones and the internet in China, as suggested by Luo et al. (2014) and CNNIC (2016) respectively. Considering the data was likely collected between 2013 and 2015, it captures a period marked by significant technological advancement. This era may have broadened Chinese mothers' exposure to diverse values and parenting knowledge, influencing their interactions with their children. However, it's crucial to interpret these findings within the specific context of the sample, characterized by its Shanghai location, diverse socioeconomic backgrounds, and families from various regions speaking different regional languages. Therefore, while providing valuable insights into the parenting styles of this particular group of parents, these findings should not be overgeneralized to all Chinese families.

The findings from this research shed light on the profound roles that various contents of decontextualized talk assume within Chinese culture, particularly in nurturing children's abilities for recontextualization, socio-cognitive awareness, and prospection. At the heart of this is the discourse around past events, future events and causal relationships between mothers and their children. For example, mothers' past-oriented discussions serve a crucial role in fostering their children's recontextualization skills and deepening their socio-cognitive understanding. More than just reminiscing about prior events, these conversations offer a comprehensive platform for cognitive enrichment and socio-emotional learning. A significant portion (27.5%) of such past-oriented dialogues references other individuals, enhancing children's grasp of interpersonal dynamics and nurturing empathy through understanding others' perspectives. Emphasizing behaviors, which make up roughly 20% of the narratives, equips children with a framework to interpret actions and their outcomes, sharpening their ability to recognize behavioral patterns and

predict future occurrences. Our findings align with prior research suggesting that, in contrast to Western mothers who often emphasize mental states during storytelling, Chinese mothers lean towards detailing behaviors and moral guidelines (Doan & Wang, 2010; Wang, 2001; Wang et al., 2000). Notably, Liu et al. (2016) found that behavior-focused discourse can be pivotal in the development of Chinese children's theory of mind, a critical cognitive ability. Overall, by focusing on the actions and words of those around them, Chinese mothers' past-oriented talks play a pivotal role in sculpting children's cognitive and emotional growth, underscoring the profound influence of cultural narratives on individual development.

Moreover, the tendency for imparting tangible knowledge is particularly strong, accounting for over 30% of maternal causal dialogues on average. This suggests that Chinese familial interactions are not just about recognizing events or outcomes but also delving deep into the tangible 'whys' and 'hows' underpinning them. Such a focus aligns seamlessly with the broader Chinese pedagogical philosophy that emphasizes concrete learning and the acquisition of factual knowledge as a personal virtue (2–11, 7–20, Analects of Confucius; Li, 2005; Luo et al., 2014). The exploration of motivations behind behaviors, which constitutes 16% of maternal causal talk, signals a nuanced approach to socio-cognitive development. It hints at the importance placed on introspection, self-awareness, and the need to understand others' actions within the broader fabric of interpersonal relationships and societal norms. This aligns with the Chinese cultural ethos, where understanding personal and others' motivations isn't just a cognitive exercise but a critical social skill. The capacity to discern motivations fosters harmony in interpersonal relationships and is instrumental in navigating the complex web of social dynamics prevalent in many Chinese communities (Luo et al., 2014). Compared to Western paradigms that often prioritize individual autonomy, Chinese mother-child interactions tend to

emphasize broader societal values and norms. This distinction is highlighted by studies indicating that, for example, when interacting with their 3-year-olds, Mainland Chinese mothers highlight moral standards and societal norms, whereas European American mothers more often delve into children's mental states and perspectives (Doan & Wang, 2010). This underscores the significant cultural nuances in parental dialogues that shape children's socio-cognitive development across diverse cultural contexts.

Furthermore, this study observed a distinct emphasis in maternal discourse on future-oriented events. Through these forward-looking conversations, these mothers equip their children with insights into upcoming events, potential challenges, and the expected attitudes and behaviors for those situations. Supporting the findings of Wei et al. (2020), this study highlighted children's active involvement in co-constructing this future-oriented discourse. In fact, over 50% of their decontextualized talk revolves around such topics. children don't just passively respond to their parents' future-oriented questions; they actively contribute and enrich these discussions. Consider, for instance, a conversation between Yi, a 5-year-old Chinese child, and her mother, where they discuss an upcoming jump rope test. Referencing the conversation excerpt between Yi and her mother, found on page 65 of this document, offers a vivid illustration of the dynamic nature of future-oriented discourse within Chinese familial contexts. While the mother initiates the topic, inquiring about the timing of the jump rope test and recalling what the teacher said about reaching a certain number of jumps, Yi actively expands on it. She provides detailed information about the test, such as different jump rope techniques and variations, demonstrating her anticipation and preparation for the event. This exemplifies children's proactive role in constructing conversations rather than merely being passive recipients. Such interactions highlight the tenets of the language socialization theory, which posits that language is both a

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means of transmitting cultural knowledge and a tool for children to actively participate in and

negotiate their cultural and social worlds (Ochs & Schieffelin, 1994; Schieffelin & Ochs, 1986).

In this context, through active participation in these conversations, Chinese children are

socialized to project into the future and consider possible scenarios, reflecting a broader cultural

value of preparedness and forward-looking perspectives.

Having linked the culture-specific parental scaffolding styles to children's language

production and socio-cognitive awareness, the second part of my dissertation will explore to

what extent parents' scaffolding styles can be enhanced with a cost-effective, technology-

enhanced, and culturally appropriate decontextualized language focused strategies program and

document its possible impact on children's language and socio-cognitive skills.

Table 1-1

Results of Hierarchical Regression Analyses for Child Word Tokens and Word Types from Maternal Vocabulary

Independent Variables	Word Tokens B (SE)	Word Types B (SE)
Step 1: Demographic variables		
Age	-6.50(10.23)	1.18 (2.42)
Step 2: Parental vocabulary		
Mother word types	1.45(0.43)**	0.32 (0.10)**
R2	0.29	0.27
F	5.98**	5.26*
χ2	11.56**	10.28**

Standard errors are reported in parentheses. *$p<.05$; **$p<.01$; ***$p<.001$

Table 1-2

Results of Hierarchical Regression Analyses for Child Recontextualizing from Maternal

Decontextualized Language Types, Content and Forms of Responsiveness

Independent Variables	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)
Step 1: Child variables				
Age	0.26 (0.16)	0.01 (0.11)	0.00 (0.02)	0.05 (0.13)
Word types	0.02(0.01)*	0.00(0.01)	0.00(0.00)*	0.00(0.01)
Step 2: DL type				
Mother past-oriented talk		0.65(0.14)***	0.72 (0.23)**	0.71(0.24)**
Mother future-oriented talk		0.31 (0.15)+	0.42 (0.19)*	0.19(0.17)
Mother causal talk		-0.05 (0.16)	0.42(0.10)***	–0.10(0.17)
Step 3: DL content				
Mother socio-cognitive awareness			-0.05(0.20)	-0.26(0.21)
Step 4: Parental responsiveness				
Mother responsive modification				0.16(0.17)
Mother supporting conversation				0.12(0.22)
R2	0.25	0.72	0.76	0.74
F	4.84*	13.12	13.36	8.35
χ2		3.35**	0.39***	0.71

Standard errors are reported in parentheses. *$p<.05$; **$p<.01$; ***$p<.001$

Table 1-3

Results of Hierarchical Regression Analyses for Child Socio-Cognitive Awareness from

Maternal Vocabulary, Decontextualized Language Types, Content and Forms of

Responsiveness

Independent Variables	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)	Model 5 B (SE)
Step 1: Child variables					
Age	0.25(0.15)	0.24(0.14)	0.03(0.09)	0.03 (0.09)	0.04 (0.10)
Word types	2.28(0.80)**	0.02(0.01)*	1.14(0.48)*	1.13(0.49)*	1.23(0.51)*
Step 2: Parental vocabulary					
Mother word types		1.06 (0.66)	-2.00(0.69)**	-1.99(0.74)*	-2/08(0.78)*
Step 3: DL type					
Mother past-oriented talk			0.80(0.11)***	0.80(0.14)***	0.74(0.18)***
Mother future-oriented talk			0.23(0.13)+	0.23(0.13)+	0.18(0.15)
Mother causal talk			0.26(0.13)+	0.26(0.13)+	0.21(0.14)
Step 4: DL content					
Mother socio-cognitive awareness				-0.01(0.15)	-0.03(0.16)
Step 5: Parental responsiveness					
Mother responsive modification					0.10(0.13)
Mother supporting conversation					0.10(0.17)
R2	0.26	0.36	0.85	0.81	0.85
F	5.08**	5.24**	22.82***	18.78***	14.17***
χ2		2.52	28.34***	0	0.54

Standard errors are reported in parentheses. +$p<.1$; *$p<.05$; **$p<.01$; ***$p<.001$

Table 1-4

Results of Hierarchical Regression Analyses for Child Prospection Awareness from Maternal Decontextualized Language Types and Forms of Responsiveness

Independent Variables	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)
Step 1: Child variables			
Age	0.26(0.15)+	0.09(0.14)	0.08(0.14)
Word types	1.63(0.81)+	0.12(0.80)	0.14(0.83)
Step 2: DL type			
Mother past-oriented talk		0.17(0.18)	0.14(0.27)
Mother future-oriented talk		0.46(0.19)*	0.46(0.21)*
Step 3: Parental responsiveness			
Mother supporting conversation			0.04(0.26)
R^2	0.18	0.45	0.45
F	3.27	5.61**	4.33*
χ^2		6.67**	0.02

Standard errors are reported in parentheses. $+p<.1$; $*p<.05$; $**p<.01$; $***p<.001$

STUDY 2

Parent-Child Decontextualized Conversations Supporting Early Language and Socio-Cognitive

Development of Chinese Preschoolers: A Feasibility and Impact Study

Parent-Child Decontextualized Conversations Supporting Early Language and Socio-Cognitive Development of Chinese Preschoolers: A Feasibility and Impact Study

The intricate relationship between parent-child language interactions is a cornerstone in child development, where the role of decontextualized language (DL) is particularly significant. DL, characterized by discussions beyond the immediate 'here and now' (Snow, 1983), is recognized as a high-quality language input that plays a crucial role in fostering children's language and socio-cognitive development (Imbens-Bailey & Snow, 1997; Rowe, 2012; Sparks & Reese, 2013; Demir et al., 2015; Liu et al., 2016; Chernyak et al., 2017; Leech et al., 2019). Numerous intervention studies have established that parental language behaviors are malleable and can be modified to create a supportive language environment for children (Roberts et al., 2019; Heidlage et al., 2020). However, most existing research has focused predominantly on English-speaking populations in Western countries, often targeting children with developmental language disorders or those at risk due to socio-economic factors (Walker et al., 2020). This leaves a significant gap in our understanding of how parental DL use might influence child development in non-Western, non-English-speaking contexts, such as among Chinese families. Notably, cultural patterns of Chinese parental DL use have received limited attention in existing literature (Chow & McBride-Chang, 2003; Ganotice et al., 2017).

This pilot intervention study aims to evaluate the feasibility and impact of a parent-focused decontextualized conversation training program within the Chinese cultural context. Specifically, it examines how this program influences Chinese parents' use of DL and, subsequently, its effects on children's linguistic and socio-cognitive skills. Given the unique aspects of Chinese family dynamics and communication patterns, this research also assesses the cultural relevance and acceptability of such an intervention among Chinese parents. This

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research contributes to a broader understanding of the impact of parental language on child development, advocating for a more inclusive and culturally sensitive approach in developmental language research.

Values of Parent-Focused Naturalistic Conversational Intervention

Parents are commonly recognized as children's first language teachers, but there are observed variations in the quality and quantity of parents' language directed to their children (e.g., Hart & Risley, 1995; Rowe, 2008; Rodriguez & Tamis-LeMonda, 2011; Yu, 2023, this document, Study 1). In the past three decades, hundreds of studies have confirmed that parental communicative behaviors can be changed to create a supportive language environment (Roberts et al., 2019; Heidlage et al., 2020). Most studies have focused on children with a developmental language disorder. An increasing number of studies have begun to include children at risk for language impairment associated with disadvantageous backgrounds such as SES and parental characteristics (e.g., teen, or single parent, parental depression; see Walker et al., 2020 for a review). Over three-quarters of studies were conducted in North America and European countries (Roberts et al., 2019). The majority of interventions were implemented by education and research professionals, with only one-third of studies involving parents (Walker et al., 2020). To date, there are only very few studies examining discourse-based parental training with Chinese families, and these studies exclusively focused on shared dialogic reading and its effects on children's vocabulary, emergent literacy skills and parent-child relationships (Chow & McBride-Chang, 2003; Chow et al., 2008; Ganotice et al., 2017).

Regarding the language feature these intervention programs targeted, the contextualized aspects of parental language, such as responsiveness and gesture/visual cues, have received the most attention, and there have been fewer attempts to investigate the effect of parental

decontextualized language. Some exceptions have targeted increasing parental elaborative reminiscing, that is, parent-child narrative conversations about past events (Peterson et al., 1999; Boland et al., 2003; Reese & Newcombe, 2007; Bergen et al., 2009; Reese et al., 2010; Taumoepeau & Reese, 2013; Thierry & Sparks, 2019). Most studies reported interventions lasting between one week and nine months, with the total intended duration of intervention sessions ranging from 20 minutes to 2.5 hours. These studies suggest an overall positive effect of teaching parents the strategies such as using open-ended questions and being responsive while engaging in the shared reminiscing on increasing the quality of parental language and subsequently enhancing children's productive language. Notably, there might be a "sleeper effect" in those changes in particular children's outcomes take longer to appear (Reese et al., 2010). For example, children in the training condition did not show superior performance on emotion cause knowledge tasks than those in the control condition until six months after the training ended (Bergen et al., 2009). Similarly, Reese and colleagues (2010) found significant differences in narrative quality and narrative comprehension between children in two conditions one year after the training session.

Recently, several studies have begun to extend beyond reminiscing conversations to other types of DL, including explanations and future events (Leech et al., 2018; Leech & Rowe, 2020). Their studies pilot a brief intervention with thirty-six college-educated, predominately White parents who received only one training session and four reminders, resulting in increases in parental DL use and dyadic conversational turn-taking. The success of this parent-focused decontextualized language training has determined the viability and efficacy of a small dosage of training.

Parental Decontextualized Language and Child Development

The process of language acquisition and socio-cognitive development in children is deeply intertwined with the linguistic input they receive from their caregivers (Vygotsky, 1978). Among the various facets of language input, parental decontextualized language (DL), characterized by conversations removed from the "here and now" (Snow, 1983), emerges as a crucial determinant of children's developmental trajectories.

Parental DL plays a pivotal role in shaping children's linguistic capabilities. Extensive research highlights that parental DL use significantly predicts various aspects of children's language proficiency, including their own DL production, vocabulary expansion, narrative skills, and emergent literacy skills (Imbens-Bailey & Snow, 1997; Peterson et al., 1999; Rowe, 2012; Sparks & Reese, 2013; Demir et al., 2015; Uccelli et al., 2019). This effect is not limited to a specific demographic but appears to be a universal phenomenon with far-reaching implications. Studies conducted among diverse populations, encompassing immigrant families from various racial, ethnic, and socioeconomic backgrounds in the United States, consistently underscore the instrumental role of parental DL in child language development (Curenton et al., 2008; Escobar et al., 2017; Ribner et al., 2020; Tabors et al., 2001; Kelly & Bailey, 2013a, 2013b). These findings emphasize the universality of the impact of parental DL, transcending cultural and socioeconomic boundaries.

Beyond its influence on language development, parental DL exerts a profound effect on children's socio-cognitive skills. Research consistently documents the positive impact of parental DL on domains such as theory of mind performance and emotion understanding (Peterson & Slaughter, 2003; LaBounty et al., 2008; Doan & Wang, 2010; Gola, 2012; Reese, Sparks, & Leyva, 2010; Taumoepeau & Reese, 2013).

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Moreover, there is a growing body of evidence highlighting the positive effects of future-oriented talk on children's prospection abilities. Future-oriented conversations, encompassing discussions about plans and decisions, have been associated with enhanced future-oriented decision making, delay of gratification, and prospective memory (Chernyak et al., 2017; Leech et al., 2019). These findings indicate that parental DL extends beyond language skills, playing a pivotal role in preparing children for future-oriented thinking and decision-making processes. Findings of these correlational and experimental studies are encouraging, and more research is required to determine whether extended participation in such conversations beyond the traditionally examined populations might confer similar benefits.

Study Two

Extending the existing studies, this pilot study evaluates the feasibility of conducting a parent-focused decontextualized conversation training program at home. It explores key factors essential for effective scaling up of such initiatives. Additionally, the study assesses the impact of these conversational strategies on the decontextualized language use of Chinese parents and investigates their influence on children's developmental outcomes in language and social-cognitive domains. This study will address the following research questions:

A. How feasible, in terms of acceptability and logistics, is it to implement a parent-focused decontextualized conversation training program with Chinese parents, and how do they perceive the cultural validity of the program in terms of cultural relevance and suitability?

B. To what extent does a parent-focused decontextualized conversation training program increase parents' use of decontextualized language?

C. To what extent does a parent-focused decontextualized conversation training program enhance children's linguistic and socio-cognitive skills?

Method

Participants

The study's sample size was calculated based on the statistical power required to identify significant differences between the control and treatment group on the measures of efficacy of the training program. This estimation was grounded in prior knowledge of the impact of similar interventions on parental and children's decontextualized language use (Leech et al., 2018; Peterson et al., 1999), emotion knowledge (Pons et al., 2004; Tang et al., 2018), and narrative skills (Lindgren, 2019). Tabachnick and Fidell's (2007; Ch. 4) formula for mean differences in a t-test context was used for the analysis. The power analysis results indicated a sufficient sample size of 18 to 27 participants per condition to detect a moderate effect size ($> .5$), assuming a power of $\beta = .80$ and an α level of .01.

Approval of the Institutional Review Board of the University of California, Los Angeles, was received prior to the start of the study. Interested parent-child dyads (n=127) were recruited from 10 provinces across Mainland China via local schools, social media advertisements or by referral. Parents first filled out a background questionnaire to assess their eligibility. The inclusion criteria were a) the target child is between four and five years old, b) the child has no known developmental and language delays, c) parent-child dyads can speak Mandarin Chinese (*Putong hua*), d) parent has access to cell phone and internet to receive training materials and text messages, e) parent and child currently lived together. An overview of participant enrollment and the participation process is depicted in Figure 2-1. Sixty-two out of the initial one

hundred and twenty-seven families were excluded either for not meeting the inclusion criteria or they decided not to participate in the study after learning about the process. The remaining sixty-five parent-child dyads were assigned a random number identifier following confirmation of eligibility and they were randomized to either a training (treatment) condition or an active control condition who received a placebo training. Randomization was performed at an individual dyad level using the random-sampling base function in R (RStudio Team, 2021).

Twelve parent-child dyads dropped out of the study prior to the pre-assessment and training, with additional five families withdrawing after taking the pre-assessment (one family only completed part of the pre-assessment). Consequently, the final analytical sample consisted of 48 participants. Results of Welch's t-tests suggest that the families who dropped out marginally differ from those in the final sample in terms of household income ($t = 2.00$, $df = 19.82$, $p = .06$). They were comparable in terms of the highest level of parental education ($\chi^2 = 4.25$, $df = 4$, $p = .37$). In terms of children's demographics, gender distribution was similar between the dropout families and the final sample ($\chi^2 = .20$, $df = 1$, $p = .66$). However, children from the dropout families were older, with a mean age of 67 months, compared to those who completed the study $(t = -3.49$, $df = 20.86$, $p < .05)$. Interestingly, children from families that completed the pre-assessment but later dropped out exhibited significantly higher prospection abilities ($t = -7.28$, $df = 10.14$, $p < .001$) than those in the final sample. Nevertheless, their performance was comparable in other areas of assessment.

To minimize attrition bias, several retention strategies were employed. First, trust relationships were cultivated with participants by offering English language instruction classes to some of the participating children whose parents had expressed interests before the study started. Additionally, all participants were informed about the incentives—equivalent to $40 USD—

before they began their involvement in the study. This served as motivation for sustained participation. Regular communication was maintained through weekly check-ins and reminders via WeChat messages. Furthermore, the study protocol was tailored to meet the needs of participants, allowing for flexibility in scheduling assessments and enabling them to learn training materials at their own pace.

The final analytic sample included 25 parent-child dyads in the training group and 23 parent-child dyads in the control group (see Table 1 for participants' demographics). Children ranged in age from 48 to 70 months with a mean age of 58.8 months (SD = 6.5) for the total sample. There were 28 boys and 20 girls. Parents of these children reported speaking Mandarin Chinese and various regional Chinese languages at home and had completed at least a middle school education. There were forty-three mothers, four fathers and one grandmother participating in the study. The average family income range per annum, in Chinese yuan (RMB) was from ￥200,000 to ￥300,000 (approximately $ 29,313 to $43,970 in U.S. dollars) with a minimum of ￥70,000 ($10,259 in U.S. dollars) and a maximum of over one million Chinese yuan ($146,565 in U.S. dollars). According to the income standard set by China's National Development and Reform Commission (2021) for a family of three, which ranges from ￥100,000 to ￥500,000, 58.3% of the families included in this study fell within the middle-income category. In addition, 23% of the families exceeded this middle-income threshold. In contrast, 18.7% of the families fell below the threshold, with the majority residing in economically disadvantaged regions and having less than four years of college education. The family size in the study varies between two and six people, and there are various family structures represented, including single-parent families, families consisting of two parents and one child or more, and intergenerational families.

Participants in the training group and the control group were comparable in children's age, gender, the grade level they attended in kindergarten, parental education, household income, home language, and which caregiver participated in the study with the child.

Procedure

All participating families in the final analytic sample completed both pre-training and post-training assessments. Prior to data collection, written consent was obtained from participating caregivers. Due to the Covid-19 pandemic, the assessment measures were converted to an online format using PowerPoints and were piloted with three families to ensure its accessibility. The assessments were then administered virtually using Tencent Meeting, which can be easily accessed via a cell phone, tablet, or computer.

Research Assistants Training Procedure

In this study, a group of six Chinese-speaking undergraduate and graduate students were recruited through a nonprofit platform connecting undergraduate and graduate Chinese students in China and abroad. They were trained to collect the assessment data as RAs (Research Assistants) and they were blinded to the study conditions. The training procedure consisted of four key steps:

1) **Familiarization with assessment materials**: Initially, RAs were provided with a comprehensive handbook that detailed the assessment process and a video where I performed the assessment with one of the families participating in the pilot study.

2) **Training meeting**: A one-hour training meeting was conducted, during which I presented an overview of all materials and answered any questions or concerns raised by RAs. 3) Individual pilot testing: To ensure that each RA was fully acquainted with the assessment process and prompts, individual pilot testing was performed. These test runs aimed to prepare the

RAs for any unforeseen or unpredictable situations that might arise during data collection. This was accomplished through role-play scenarios with me playing the role of a participating child.

3) **Follow-up meeting:** Approximately one week after the commencement of data collection, a follow-up meeting was held. This provided an opportunity for ongoing communication and allowed for the clarification of any questions or concerns that had arisen during the assessment process.

4) **Continuous and open communication** between myself and the RAs was maintained throughout the data collection period. This facilitated the resolution of any queries and enabled the provision of guidance on how to address various situations that might occur during assessments.

To ensure the fidelity of data collection, several additional strategies were employed: 1) **Clear guidelines:** Detailed guidelines were established to outline the data collection process step by step. 2) **Double Data Entry:** A double-data-entry system was implemented, with both RAs and me independently entering data for the same participants. Discrepancies were identified and corrected. 3) **Regular Check-Ins:** Regular check-in communications were done using WeChat to discuss progress, address concerns, and provide ongoing support to the RAs. 4) **Documentation:** RAs were instructed to maintain thorough records of their data collection activities, including recording dates, times, and any issues encountered. 5) **Video Monitoring:** Two randomly selected recorded videos of each RA conducting assessments were reviewed. This allowed for a comprehensive fidelity check, and any concerns or discrepancies were promptly addressed to prevent their recurrence.

Data Collection Procedure

Both training and active control groups were instructed to select a daily routine that was convenient for them in which to have conversations with their child. They were prompted to choose from mealtimes, after dinner, on the way to school/home, and bedtime. Families recorded the first 15-minute conversation during their selected routine time, followed by three more recordings spaced out once a week after the pre-assessment. Participants, specifically the parents, were instructed to submit their recordings directly to the research team using a designated WeChat group chat, selected for its convenience and widespread use. Following the submission, each recording was immediately uploaded to a secure cloud storage system. For redundancy and in line with the university's data protection policies, backup copies of these recordings were also stored on a research laptop. This laptop was secured with password protection and was solely accessible by the principal researcher.

Following the pre-assessment, participants in the training group received the training program via WeChat, a messaging platform. The training program, described in more detail below, was designed to boost the quality of linguistic interaction with children. Parents in the active control group received a publicly available educational video that introduced ways of coping with children's fear.

The post-training assessment was taken virtually at least four weeks after the pre-assessment using the same measurement. After completing the post-assessment, parents filled out a social validity questionnaire about the training program.

Training Procedure. The design of the training program was guided by the belief-behavior connection, positing that changes in parental beliefs can lead to corresponding shifts in their behaviors, especially when these beliefs and behaviors are aligned within the same domain

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(Sigel, 2014). This project applies this theory of change specifically to decontextualized language (DL). It is hypothesized that enhancing parental understanding of the significance of DL will encourage them to engage more in such dialogues with their children. This hypothesis aligns with findings from studies involving English-speaking families (Suskind et al., 2016; Leech et al., 2018).

The training program is designed to not only modify parental communicative behavior but also to elevate their awareness of the impact of their DL on the growth of their children's language and socio-cognitive skills, which are vital for future development. In the development of the training program, it first incorporated strategies from previous intervention studies in Western countries (Boland et al., 2003; Reese et al., 2010; Leech et al., 2018). An additional strategy of discussing future-oriented topics was also included, a prevalent practice in Chinese family conversations. This inclusion aligns with findings from previous research and Study 1 of this dissertation, which indicate that discussing future events is not only a characteristic element of Chinese familial interactions but also positively correlates with the language and socio-cognitive development of children (Leech et al., 2019; Wei et al., 2020; Yu, 2023, this document, Study 1). In addition, the training program was thoughtfully designed to include video excerpts and examples featuring both mothers and fathers. This inclusive approach was taken with the intention of engaging fathers as well, especially in light of findings from Study 1 which indicated that fathers tend to use decontextualized language less frequently than mothers. By incorporating models from both parents, the program aims to provide a comprehensive learning experience, encouraging fathers to equally benefit from the training and enhance their use of decontextualized language in family interactions.

The program was further modified to align with shared patterns observed in parents' interviews about their beliefs regarding parent-child conversations. For instance, 81% of parents ranked language development among the top three crucial areas of child development. Consequently, the training program incorporated a message emphasizing the evidence-based benefits of decontextualized language not only on language development but also on other developmental domains. Furthermore, findings revealed that only 25% of parents reported having regular mealtime conversations with their children. In response to this, the study adapted its initial approach to training effects monitoring. Instead of mandating mealtime conversation recordings, the study provided parents with flexibility by allowing them to choose from four different routines for regular conversations with their children.

The training program provided to the parents in the training group included a 15-minute video and four infographics that explained and modeled various strategies using video and written examples (see Figure 2-2 & 2-3 for examples). The strategies covered in the program included:

1. Explaining definitions, mechanisms, processes, and consequences.

2. Asking open-ended questions

3. Engaging in discussions about decontextualized topics, which include reminiscing about past events, envisioning future events, and employing imagination, often involves the use of the conditional phrase 'if... then...'.

4. A message directed at parents to motivate them to use these strategies in daily conversations with their children: "You can create a high-quality language environment and make a difference in your child's development."

After the pre-assessment, the training group received the training video and the first infographic that summarized the key strategies. Then, immediately after submitting their weekly recording, they received three additional infographics that provided different topics for decontextualized conversations that could be discussed during different routines such as mealtime, on the way to school/home, and bedtime. The parents in the active control group received the same decontextualized conversation training program after the post-assessment.

Fidelity check. Regular check-ins were conducted to monitor fidelity and track the implementation of the training program. These sessions assessed whether participants 1) studied the training materials, 2) applied the strategies, and 3) recorded their routine conversations with their child. If participants provided a negative response to any of these queries, they were urged to implement the necessary adjustments. This cycle was repeated every two to three days until affirmative responses were received for all three queries. All corresponding responses and relevant dates were documented.

Measures

Parent-Report Questionnaire. At the pre-training assessment, the primary caregiver was asked to complete a background questionnaire that included 30 items designed to collect information about demographic characteristics and home literacy practices. This questionnaire was adapted from the family questionnaire in Kids in Taiwan: National Longitudinal Study of Child Development and Care (KIT; 2016). At the post-treatment assessment, parents were asked to complete a questionnaire about the utility of the training program, perceptions about the procedure, satisfaction, and their willingness to continue using these strategies.

Parent-Child Routine Conversations. Parents in both conditions were asked to record their interaction with the child during their selected routine for at least 15 minutes before the pre-

training assessment and three additional recordings spaced once a week after receiving the training program or placebo video. Out of the four recordings collected from each parent-child dyad, three were transcribed, coded, and analyzed in this study. These recordings consisted of one recorded routine prior to the pre-assessment, one recorded within a week after the parents received the training video (or viewed the placebo video), and one recorded three weeks after the parents received the training video or placebo video. Routine conversations provided unique insights into how parents incorporated the training strategies into everyday linguistic practices.

Child Narrative Skills. Children's narrative production and narrative comprehension were assessed using the Mandarin version of the Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2019; Luo et al., 2020). It contains four stories that are designed for three tasks of story-tells, story-retells, and story comprehension. These tasks target children aged 3 – 12 years old, and they are age-appropriate for the current sample. All the stories have been piloted for 15 languages with over 500 children, and the results confirm its cultural appropriateness. Different stories were used at each assessment, ensuring comparability of plotline, characters, and comprehension questions.

Children were presented with three color books in PowerPoint slides containing the same story, and they were asked to select one book. The experimenter revealed the pictures in the selected book and then read the script while showing each picture. The experimenter then asked the child to retell the story to a toy bear picture, "Could you tell the story to the little bear because it did not hear the story the first time around?"

This was followed by story-tells and story comprehension tasks using a different story. Children were asked to choose a story from another three books containing the same story, and they were asked to tell the story from the pictures with minimum support, such as, "What else?"

or "Tell me more." After children indicated that they finished telling the story of two pictures on the screen, the experimenter changed the pictures to the next two pictures until children finished telling the story of all six pictures. Children were then asked ten comprehension questions, including simple inferences about character motivation and causes of specific behavior or emotions. Children's story comprehension was scored at the time of assessment. Children received one point for each correct answer to ten questions. Their narratives in two production tasks were scored for the number of macrostructural elements, including setting, complicating actions, and evaluations, following the standardized scoring procedure (Peterson & McCabe, 1983).

Child Theory of Mind. Children's theory of mind was assessed by a five-task scale of ToM adapted from Wellman and Liu (2004), Burnel et al. (2018), and Zhang et al. (2016; for a Chinese adaptation). This scale has been used with typically developing children aged between 2.5 and 11.9 years, and results suggest that these tasks of different difficulty levels are suitable for children of a wide age range (Burnel et al., 2018). This study used the following five tasks: diverse desire, diverse belief, knowledge access, content false belief, and explicit false belief. Instructions for each task are provided in Appendix H. The emotion-related tasks such as hidden emotion and real-apparent emotion tasks that were originally included in the studies discussed above were excluded; instead, a standardized emotion understanding assessment was separately administered. Instructions were given using simple syntactic structures and pictorial illustrations to aid children's understanding of the tasks. Children received one point for correct responses to both the test question and the control question. The final score ranged from 0 to 5.

The items used in the post-assessment were designed to be comparable to those used in the pre-assessment. The only difference was the replacement of objects or characters. This

replacement was done, for instance, by substituting familiar items like apples and candy with different items such as bananas and burgers. This adjustment was made to prevent test familiarity and ensure that participants approached the post-assessment with the same level of novelty and engagement as the pre-assessment.

Child Emotion Knowledge. The Test of Emotion Comprehension (TEC; Pons et al, 2004; for Mandarin Chinese adaptation, see Tang et al., 2018) was used to assess nine components of emotion understanding, including emotion recognition, external causes of emotions, desire, belief, reminder, emotion regulation, hiding emotions, mixed emotions, and morality. TEC has been translated into over 25 languages and used with children between 3-11 years old. Children were presented with a set of pictures with different facial expressions on each PowerPoint slide. The experimenter read the story and asked children to select appropriate emotion by saying the number under the facial expression corresponding to each subtest. Total scores of emotion knowledge could range from 0 to 9. This study employed a consistent set of items for both pre-assessment and post-assessment phases, in line with methodologies adopted in prior research (e.g., Pons et al., 2002). This approach was chosen also due to the demonstrated strong reliability and validity of the measure across various dimensions, including test-retest reliability, concurrent, criterion, and construct validity (Cavioni et al., 2020). The use of consistent items ensures accurate comparative analysis while mitigating concerns related to test familiarity and participant fatigue.

Child Prospection Abilities. Two tasks were administered to measure children's prospection abilities. These assessments have been previously used with children as young as three years old who can understand the task requirements (Leech et al., 2019). First, children's prospective memories were assessed with the task adapted from Guajardo and Best (2000).

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Children were presented a picture of a small box at the beginning of the prospection ability assessments and the experimenter told the children, "I have a gift for you in this box. When I say we are all done playing these games, you have to remind me to open it. " After the children completed the remainder of the prospection ability assessment, the experimenter stated, "We are all done playing the games. " The experimenter waited 5 seconds for the children to remind her to open the gift box. When the children didn't remind the experimenter within the given time frame, the experimenter prompted, "Do you have something to remind me about?" The experiment waited another 5 seconds for the children's responses. Children received a score of 2 if they asked the experimenter to open the box without a reminder cue, a score of 1 if they remembered following the cue, and a score of 0 if they did not remember.

Children's future-oriented decision-making was then tested using the task adapted from Atance and Melzoff (2005). Children were presented with a photograph depicting one of the following four scenes in the pre-assessment: desert, playground, snow path, and forest, and asked to imagine that they are planning to engage in an activity related to each picture, such as walk in the forest and play in the playground. In the post assessment, children were presented with photographs of muddy roads, the Great Wall, beach, and open lawn. The experimenter presented pictures of three items and asked the children, "Which one of these do you need to bring with you?" Only one item could be used to address a future physiological state, for example, a coat for snow path, and could be the correct choice. The other items included a distraction such as a present and something related to the scene such as ice cubes. The children were immediately probed to explain their choice by asking, "Why do you need to bring __ with you?" They received a score of 2 for the correct choice and the on-topic explanation for each item. The total score ranged from 0 to 8 for four items.

Pilot study

During the pilot study phase, three parent-child dyads were recruited from two provinces through social media. The primary objectives of this pilot study were multifaceted. First, it aimed to rigorously evaluate the acceptability of the online format for the assessment. Given the backdrop of the COVID lockdown in China, it was essential to determine whether our assessment could smoothly transition to an online environment. It was crucial to ensure that both parents and children felt comfortable and at ease when navigating our digital assessment tools.

Simultaneously, a strong emphasis was placed on assessing the clarity of the training videos and parent questionnaires. Given our goal of recruiting families from diverse socioeconomic backgrounds, the clarity of these materials held particular significance as it directly influenced the quality of responses and parents' ability to comprehend the materials. Thus, ensuring the comprehensibility and user-friendliness of our training materials and questionnaires remained a top priority.

Incorporating the valuable feedback from these three parent-child dyads, we implemented minor yet impactful adjustments to our assessment procedure. These included simplifying language in assessment materials, extending the allotted time for the narrative production section, reordering assessment sections to enhance children's comfort in providing narratives when necessary, and kindly requesting parents not to provide prompts to their children, allowing them to respond independently.

Transcription and coding

The parent-child conversations recorded during the selected routines were transcribed verbatim using the CHAT conventions of CHILDES (MacWhinney, 2000). The unit of analysis is utterances defined as verbal segments bounded by grammatical closure, or a pause by the

speaker. To ensure the accuracy of the analysis, each transcript was carefully reviewed and verified by both a research assistant and me after the transcription process. The identified utterances were then classified into specific types of decontextualized language (DL; also see Yu 2023, this document, Study 1, for a more comprehensive coding scheme of DL), which allowed for evaluating how parents incorporated the training strategies. These DL include:

1) Past-oriented talk, where caregivers and children discuss details of events that happened in the past, or stories and animations that they heard or watched before.

2) Future-oriented talk, where caregivers and children discuss details of specific future events or prepare for upcoming events or discuss possible outcomes.

3) Hypothetical talk, where caregivers and children discuss hypothetical or imaginary situations, events, or ideas.

4) Causal talk, where caregivers and children discuss causal relationships and explanations, mechanisms, processes, or definitions.

5) Other, defined as utterances about topics such as often recurring scripts, norms, general knowledge, people's mental state, and something that are not visually present, but does not fall under any types mentioned above.

Furthermore, each decontextualized utterance was coded to determine if it was formulated as an open-ended question using who, what, when, where, how, or why. Conversations about the recording process or anything related to the research study were excluded, as they are not representative of typical Chinese parent-child conversations.

The coding process consisted of three phases: preparation, initial coding, and reliability coding. The preparation phase was initiated with the coding of 14% of the total utterances, approximately 5,555 instances, to fine-tune the coding scheme. Seven research assistants were

subsequently trained on the refined coding scheme, using 3% of all utterances previously coded by me as practice. All research assistants achieved a minimum of 80% agreement with my codes before independently coded the transcripts. During the first round of coding, I personally coded the remaining 89% of utterances (approximately 45,787 instances) to identify decontextualized utterances. Subsequently, research assistants categorized these utterances into specific types (i.e., past-oriented, future-oriented, hypothetical discussions, and causal relationships), and I double-checked their coding. The assistants also coded 56% of the utterances for the presence of open-ended questions, of which I double-coded approximately 30%. Regular coding meetings were held to resolve any questions or discrepancies that arose during this stage. Finally, during the reliability coding stage, the remaining utterances that had not been coded by me were stratified based on coding levels (type and open-ended questions). I randomly selected 20% of the utterances from each stratum for reliability coding to ensure a representative sample across different coding categories. Additionally, to accurately reflect the different amounts of coding conducted by the research assistants, I incorporated a weighted approach in the reliability calculations. This involved selecting a proportional number of transcripts for reliability coding based on the amount of initial coding completed by each research assistant. This method took into account the varying amounts of coding completed by different research assistants, thereby providing a more balanced and accurate assessment of coding reliability across all utterances. This process yielded moderate to high reliability, with 89% (ranging from 74% to 98%; Kappa = 0.70) for types of decontextualized talk, and 95% (ranging from 94% to 98%; Kappa = 0.69) for presence of open-ended questions.

Analytic approach

Feasibility and Social Validity of the Training Program

Data from questionnaire responses of parents in the training program was analyzed and reported to investigate the acceptability of the training strategies, procedures, their perceptions of the training program's effectiveness and willingness to continue using the strategies in the future.

Training Effects on Parental Decontextualized Language Use

The dependent variables in this analysis were the rates of each type of parental decontextualized language (DL) of interest. To examine the differences between the training and control conditions, linear mixed effects models were employed, incorporating group indicators and time variables (Time1: prior to pre-assessment; Time2: within a week after receiving videos; Time 3: three weeks after receiving videos) as fixed effects. Interactions between these variables were also evaluated to understand the differences in parental DL across different timepoints. The models also accounted for individual variability in parents' DL use by including random effects.

It's important to note that there was considerable variation in the timing of participants' recorded conversation submissions. For Time2, the range spanned from 0 to 16 days after receiving the training material, with a mean of 3.10 days (SD = 3.66), while Time3 ranged between 13 and 42 days, with a mean of 22.7 days (SD = 8.21). Despite these significant differences in submission timings across various families, no substantial correlation was discovered between these timings and the rate of decontextualized language (DL) (r = -.06, p > .1), or the changes in this rate at distinct timepoints (r = .07, p > .1). Therefore, submission timing was not considered in the model.

Training Effects on Child Developmental Outcomes

The initial equivalence of two conditions was analyzed by calculating independent *t*-tests. For data reduction, a composite prospection score was generated using the mean aggregate of standardized scores (*z*-scores) of two prospection tasks. The effects of parent-focused conversation training on children's outcomes were examined using multivariate regression. The dependent variables included children's performance scores on tasks related to narrative production, story retell, story comprehension, theory of mind, emotion knowledge, and prospection abilities.

Assumptions for linear regression models were evaluated through a series of tests. Descriptive and exploratory statistics were conducted to assess the assumptions of normality, multicollinearity, and homogeneity of variance. Scatterplots were utilized to detect outliers and confirm the assumption of linearity. Most models satisfied the assumptions, except for the model with narrative production as the dependent variable, which violated the assumption of homogeneity of variance. To address this violation, robust standard errors were used as a corrective measure (Hayes & Cai, 2007), and a sensitivity analysis was conducted using the Kruskal-Wallis rank sum test.

Previous research has suggested gender differences in multiple dependent variables, for example, girls tend to be more elaborate than boys (e.g., Reese & Fivush, 1993), perform higher on emotion knowledge tasks (Dunn et al., 1991), and score higher on the theory of mind tasks (Slaughter et al., 2015). The potential gender differences were accounted for by including pre-training performance as a covariate. In recognition of potential over-reliance on *p*-values (Cohen, 1994; Sullivan & Feinn, 2012), I also report confidence intervals and effect sizes expressed in

terms of Cohen's *d* for significant results. All analyses were performed using R (RStudio Team, 2021).

<div align="center">**Results**</div>

Feasibility and Social Validity of the Training Program

Recruitment Dynamics and Data Collection Strategies and Challenges

In assessing feasibility and social validity during the recruitment and data collection stages, several key insights emerged. Firstly, the concept of participating in a research study was relatively unfamiliar to many individuals in non-metropolitan and economically disadvantaged regions of China. This unfamiliarity often manifested as skepticism from both schools and parents. To counteract this, an approach of community engagement was adopted, where I provided free English-language classes to children. Additionally, to incentivize participation, a sum of $40 was offered. Despite these efforts, retention posed a challenge, particularly among the lower-income families. A notable observation was that families who withdrew from the study typically had significantly lower incomes compared to those who remained ($t = 2.00$, $df = 19.82$, $p = .06$). This suggests a potential correlation between economic status and participant retention, indicating a need for more targeted strategies to engage and sustain participation among economically disadvantaged groups.

In addition, the recruitment process for the study was multifaceted and extensive. It involved various strategies including conversations with preschool directors, advertisements in local communities, the use of social media platforms, referrals, and snowball sampling, where existing participants referred other potential participants. Although this strategy was crucial in reaching a broad demographic, it required an extended recruitment period of six months. This

prolonged phase highlights the necessity for persistent and diverse recruitment methods to ensure a representative sample.

Another significant aspect of the study was the adaptation to an online format for data collection, necessitated by the COVID-19 pandemic. While this method allowed for a broader reach, covering families across 10 provinces in mainland China, it also introduced unique challenges. Research assistants required extensive training to adeptly handle unexpected situations that arose during online data collection. Common issues included the focal children's lack of cooperation, disruptions from siblings or other family members, and difficulties in maintaining a controlled environment for assessments, despite prior instructions for conducting these in a quiet area. This experience with online data collection highlights the importance of adaptability and extensive training for research staff in managing the dynamics of remote assessments.

Routine Conversation and Baseline DL Use

Participants reported to engage in decontextualized conversations with their children, but they vary in the types of conversations they have. Specifically, 60.4% of parents reported often or very often discussing past events with their children, 68.8% often or very often discussing future events or plans, and only 16.7% often or very often providing their children with explanations related to general knowledge. Parents engage in conversations with their children during various daily routines. Specifically, 83.3% of parents reported having conversations with their children during bedtime, 75% conversed with their children on weekends, 64.6% routinely chatted with their children on the way to or from school, 58.3% conversed with their children after dinner, and 52.1% chatted during mealtime. Additionally, over 90% of families engage in more than one routine conversation, indicating that daily conversations with children are integral

to family life. Given the frequency of these routine conversations, it is feasible to introduce decontextualized-language-focused strategies to enhance the quality of these interactions during their regular routine time.

Training Adherence

Participants completed weekly monitoring check-ins via WeChat message, during which they reported whether they had completed the training program and applied the strategies they learned in their conversations with their children the week. Fidelity check data was missing from three families. Among the remaining 45 families, 84% of parents reported completing the training materials during the first check-in, with most of the remaining families completing the training at the second check-in. When asked whether they had applied the training strategies in daily conversations with their children, 77% of parents reported positive responses during the first check-in, and all but one of the remaining families reported using the strategies during the second check-in. Only one family required a third prompt to complete the training and apply the strategies to conversations with their child.

Parents were instructed to record four separate 15-minute conversations with their children. The first was to be captured before receiving training materials, the second within a week after receiving the training video or placebo video, the third a week after receiving the second infographic, and the fourth a week after receiving the third infographic. However, substantial variability was noted in the timings of the submitted recordings. On average, the second recording was submitted three days (SD = 3.7) post-training, with a range from 0 to 16 days. This indicates that some parents submitted their recording on the same day they received the training, whereas others, despite regular reminders, only managed to record the conversations two weeks post-training. Regarding the fourth conversation, parents, on average, submitted it 23

days (SD = 8.2) post-training, with a range between 13 and 42 days. Various reasons accounted for these delayed submissions. Some parents reported that their child was unwell, others reported difficulty in finding fresh discussion topics as the ongoing lockdown and constant cohabitation limited new experiences and events to talk about, and yet others cited business trips that took them away from home. In some cases, parents simply forgot to complete the recording task.

Social Validity

All parents from the training group filled out the post-training questionnaire and rated their satisfaction about the training program and strategies. Questions in the questionnaire were on a scale of one to six. Table 2-2 presents participants' ratings of the training program and strategies. The items include statements about the comprehensibility and helpfulness of the training program, the ease of practicing the strategies, and the perceived effectiveness of the training in improving parents' conversations with their children. The table also includes items related to the helpfulness of regular check-ins and the likelihood of recommending the program to other parents and continuing to practice the strategies. The mean scores for all items range from 5.40 to 5.68, indicating that parents generally perceived the training program and strategies as helpful, comprehensible, and easy to practice. The standard deviations for each item are relatively small, ranging from 0.63 to 0.96, suggesting that there was relatively little variability in parents' responses to the questionnaire items.

Overall, the data suggest that parents found the training program to be effective and beneficial for improving their conversational skills with their children, and that they were likely to recommend the program to others and continue to use the strategies in the future. The qualitative comments revealed that some parents encountered minor difficulties and obstacles when attempting to apply the conversation strategies learned during the training program. For

instance, some parents reported forgetting to use the strategies during conversations with their children, and others reported that their children did not always respond as expected or follow their lead during the conversations.

Training Effects on Parental Decontextualized Language Use

Baseline Performance

Descriptive statistics of DL rates produced by parents in the training and control groups before training are presented in Table 2-3. The control group (N = 23) exhibited a mean DL rate per minute of 2.79 (SD = 2.92) for past-oriented talk, 0.86 (SD = 0.90) for future-oriented talk, 0.37 (SD = 0.49) for hypothetical scenarios, 1.05 (SD = 0.70) for causal relationships, and 1.58 (SD = 0.87) for open-ended questions. In comparison, the training group (N = 25) had a mean DL rate of 2.46 (SD = 2.18) for past-oriented talk, 0.59 (SD = 0.63) for future-oriented talk, 0.54 (SD = 1.04) for hypothetical scenarios, 0.78 (SD = 0.62) for causal relationships, and 1.34 (SD = 0.91) for open-ended questions.

Independent t-tests were conducted to examine group differences in DL rates. The results indicated no significant differences between the control and training groups for past-oriented talk, $t(46.6) = 0.44$, $p = 0.66$; future-oriented talk, $t(46) = 1.20$, $p = 0.24$; hypothetical scenarios, $t(46.2) = -0.73$, $p = 0.47$; causal relationships, $t(46.1) = 1.41$, $p = 0.17$; and open-ended questions, $t(46.8) = 0.93$, $p = 0.36$. These findings suggest comparable baseline DL rates between the training and control groups before the training intervention.

Training Effects

The linear mixed effects model investigated the effects of a training intervention on the rate of parents' DL, with group and time as predictors. In the context of discussing past events, the intercept coefficient was significantly different from zero ($\beta = 2.79$, $SE = 0.47$, $t(136) = 5.97$,

$p < .001$) with both groups of parents combined talking about the past at a rate of 2.79 per minute. All fixed effects were not significant, including the main effect of group ($\beta = -0.34$, $SE = 0.65$, $t(114) = -0.52$, $p = .603$), Time2 ($\beta = 0.03$, $SE = 0.55$, $t(92) = 0.05$, $p = .96$), Time3 ($\beta = -0.62$, $SE = 0.55$, $t(136) = -1.13$, $p = .26$), and the interaction between group and Time 2 ($\beta = 0.48$, $SE = 0.76$, $t(92) = 0.64$, $p = .53$), and interaction between group and Time3 ($\beta = 0.84$, $SE = 0.76$, $t(92) = 1.11$, $p = .27$). The random effects showed that there was significant variability between participants in terms of their rate of talking about the past.

The results also showed that parents as a whole talked about future-oriented topics at a rate of 0.86 per minute. The main effect of the group was not significant ($\beta = -0.27$, $SE = 0.29$, $t(131) = -0.95$, $p = .35$). Similarly, there were no significant main effects of Time2 ($\beta = 0.00$, $SE = 0.27$, $t(92) = 0.02$, $p = .99$) or Time3 ($\beta = 0.42$, $SE = 0.27$, $t(92) = 1.56$, $p = .12$). The interaction effects between group and Time were not significant for Time2 ($\beta = 0.18$, $SE = 0.37$, $t(92) = 0.49$, $p = .63$) and Time3 ($\beta = 0.16$, $SE = 0.37$, $t(92) = 0.43$, $p = .60$).

When predicting parents' hypothetical talk, the intercept was found to be only marginally significant ($\beta = 0.37$, $SE = 0.20$, $t(125) = 1.85$, $p = .07$), indicating that parents rarely engaged in hypothetical talk. There was no significant main effect of group on parents' hypothetical talk, $\beta = 0.17$, $SE = 0.28$, $t(125) = 0.60$, $p = 0.55$. There was also no significant effect of Time2 ($\beta = -0.03$, $SE = 0.25$, $t(125) = -0.12$, $p = .91$) or Time3 ($\beta = 0.28$, $SE = 0.25$, $t(92) = 1.11$, $p = .27$) on parents' hypothetical talk. The interaction effect between group and Time2 ($\beta = -0.05$, $SE = 0.35$, $t(92) = -0.15$, $p = .88$) and group and Time3 ($\beta = -0.46$, $SE = 0.35$, $t(92) = -1.33$, $p = .19$) on parents' hypothetical talk was not significant. Overall, the results indicate that there were no significant training effects on talk about hypothetical scenarios, with both the training group and

the control group showing a decrease in such talk. However, it is noteworthy that the training group exhibited a smaller but non-significant decrease compared to the control group.

In the case of parents' talk about causal relationships, neither the main effect of group (β = -0.27, SE = 0.21, $t(105)$ = -1.31, p = .19) nor the Time2 effect (β = -0.16, SE = 0.16, $t(92)$ = -0.96, p = .34) were found to be significant. However, there was a marginally significant interaction effect between group and Time2 (β = 0.41, SE = 0.22, $t(92)$ = 1.83, p < .1), suggesting that the influence of Time2 differed based on group membership. Additionally, a significant effect of Time3 on parents' talk about causal relationships (β = -0.33, SE = 0.16, $t(92)$ = -2.05, p < .05) was noted, along with a significant interaction between group and Time3 (β = 0.46, SE = 0.22, $t(92)$ = 2.06, p < .05). This implies that although parents generally talked less about causal relationships at Time3, those in the training group engaged in such discussions more frequently compared to those in the control group.

Regarding the training effects on parental use of open-ended questions, the analysis revealed no significant main effect of group (β = -0.24, SE = 0.28, $t(86)$ = -0.86, p = .39), Time2 (β = -0.10, SE = 0.19, $t(92)$ = -0.55, p = .59) or significant interaction effects between group and Time2 (β = 0.36, SE = 0.26, $t(92)$ = 1.38, p = .17). However, there were marginally significant training effects at Time3 (β = 0.44, SE = 0.26, t = 1.66, p = .10). These findings suggest that the relationship between group membership and the rate of open-ended questions may vary depending on the specific time point.

To summarize, results of linear mixed effects models show that parents in the training group engaged significantly more in talk about causal relationships three weeks after receiving the training video compared to parents in the active control group.

Training Effects on Child Developmental Outcomes

Baseline Performance

Table 2-4 displays the descriptive statistics of the children's baseline performance in the training and control groups. The control group exhibited slightly higher performance compared to the training group in most tasks, except for the prospection task and the retell task. However, the only significant difference was found in theory of mind performance. Specifically, the control group had a mean score of 3.61 (SD = 1.44) at baseline, while the training group had a lower mean score of 2.72 (SD = 1.4), with a significant difference ($p < .04$).

No significant differences were observed between the control and training groups in unique word types produced by children (control: M = 209, SD = 83; training: M = 200, SD = 78; $p = .67$), emotion understanding (control: M = 3.48, SD = 1.50; training: M = 2.72, SD = 1.70; $p = .11$), prospection ability (control: M = -1.86, SD = 2.68; training: M = -1.12, SD = 2.27; $p = .17$), reading comprehension (control: M = 5.65, SD = 2.71; training: M = 4.96, SD = 2.39; $p > .05$), storytelling (control: M = 7.23, SD = 1.69; training: M = 6.52, SD = 1.83; $p = .17$), and retell (control: M = 9.29, SD = 2.26; training: M = 9.44, SD = 2.15; $p = .82$).

Overall, results of *t*-tests indicated a significant difference only in theory of mind performance, but performances of two groups were comparable in other areas of assessment, including word types, emotion understanding, prospection ability, reading comprehension, storytelling, and retelling (ps > .05) at the baseline. However, given the randomized controlled trial design, the difference in theory of mind is likely due to chance.

Training Effects

The linear mixed-effects model was utilized to assess the impact of a training intervention on children's word types, incorporating Group, Time, and their interaction as fixed

effects. Individual children were accounted for with random intercepts. The model's intercept suggests that the average baseline word type count was 218.65 words. The effect of Group did not show a significant difference in word types between the groups (β = -20.32, *SE* = 24.19, *t* = -0.84), indicating no substantial difference in word types between groups. Similarly, the Time effect was also non-significant (β = -0.53, *SE* = 4.49, *t* = -0.12), as was the interaction between Group and Time (β = 1.85, *SE* = 6.29, *t* = 0.29), suggesting no notable change in word types across different time points.

Additionally, Table 2-5 shows descriptive statistics of children's performance in multiple cognitive and language domains four weeks post parental decontextualized conversation training. Results of t-tests showed no significant difference in performance of children in two groups across all tasks (*ps* > .05) four weeks after the parents in the training group received the training.

Subsequent multivariate regression models, which accounted for the children's baseline performance, did not reveal any significant differences between the groups across the tasks. More specifically, upon controlling for the initial theory of mind performance, the model predicting post-training theory of mind did not indicate a significant difference between the two groups (*B* = -.08, *SE* = .33, *t* = .25, *p* = .81, Cohen's *d* = 0.28). Similarly, the models predicting emotion understanding (*B* = -.11, *SE* = .53, *t* = -.21, *p* = .83, *Cohen's d* = 0.06), prospection ability (*B* = .39, *SE* = .55, *t* = .71, *p* = .48, *Cohen's d* = 0.42), reading comprehension (*B* = -.21, *SE* = .39, *t* = -.54, *p* = .59, *Cohen's d* = 0.12), and narrative production (*B* = .26, *SE* = .59, *t* = .44, *p* = .67, *Cohen's d* = 0.31) did not reveal significant group differences after accounting for baseline performance. For the narrative production model, robust standard errors were used, and the non-significant group effect was confirmed by the results of the Kruskal-Wallis rank sum test (*p* = .49). Lastly, no significant group differences were detected in the model predicting story

retell abilities ($B = .01$, $SE = .58$, $t = .02$, $p = .98$, *Cohen's d* $= 0.03$) after controlling for baseline performance.

The overall findings from this study indicate that the intervention did not result in statistically significant improvements in the targeted language and socio-cognitive areas, when comparing the two groups. Notably, the group receiving training initially scored lower across all tasks at baseline. However, their performance in the post-assessment phase revealed a narrowed gap between the two groups in all evaluated tasks. This trend was particularly pronounced in the theory of mind domain, where the gap between the groups, initially evident, reduced significantly post-training to a point where it was no longer statistically significant.

Sensitivity Analysis

To assess the robustness of my findings, I conducted a sensitivity analysis by excluding four families where fathers served as the participating caregivers and one family where a grandparent participated. The primary aim was to determine whether the exclusion of these cases influenced my results. The sensitivity analysis not only yielded results consistent with the original sample but also revealed alterations in the significance of specific effects.

Firstly, consistent with the main analyses, the sensitivity analysis did not produce significant results for parental discussions related to the past, future, or hypothetical scenarios. Similarly, there were no discernible training effects on the children's assessment outcomes.

However, an important finding still emerged from the analyses. There was a significant interaction effect observed between the Group and Time2 variables ($t = 1.62$, $p < .05$), as well as between the Group and Time3 variables *($t = 2.42$, $p < .05$)*, on parents' talk about causal relationships. These findings not only validate but also reinforce the results obtained in the main

analyses, particularly with regard to the effects of Group and Time2, which have now achieved statistical significance at an alpha level of 0.05.

In addition, the sensitivity analysis indicates a significant interaction effect between the Group and Time3 variables *(t* = 1.78, *p* < .05) on parental use of open-ended questions. This result represents an elevation in significance compared to the marginal significance observed in the analysis of the entire sample.

Taken together, these findings underscore the robustness of the interaction effects between Group and certain time points, particularly regarding parents' use of decontextualized language. However, it is important to note that the removal of fathers and grandparents from the dataset had only a minimal impact on the overall results, affirming the stability and reliability of the main analyses.

Discussion

The present study focuses on examining Chinese parent-child decontextualized language (DL) use and investigates the feasibility of a parent-focused conversational strategies program. Furthermore, it explores the effects of this training program on parental DL use and its impact on children's language and socio-cognitive development. The results of this study indicate that the parent-focused conversational strategies program is feasible in the Chinese context, as parents and children already engage in routine conversations during activities such as bedtime, mealtime, and commuting to school. These routine conversations are an integral part of their daily lives, and the training program introduces an additional element of decontextualized language to enhance the overall quality of their interactions.

Feasibility and Social Validity of the Training Program

This pilot study's exploration into the feasibility and social validity of the current training program has yielded essential insights for future research endeavors, particularly in the context of scaling up such interventions. The study's experiences have underscored the critical importance of effectively engaging target communities, especially in economically disadvantaged regions. The initial unfamiliarity with research studies in these areas necessitated the adoption of innovative approaches to foster engagement. Educational initiatives and partnerships with local organizations proved to be effective in building trust and encouraging participation.

The study emphasized the necessity of re-evaluating the incentive structures to more closely match the distinct needs and economic situations of the target communities. This adjustment could play a crucial role in enhancing participant retention rates. A key observation was the higher dropout rates among lower-income families, underscoring the significance of acknowledging the economic backgrounds of potential participants. Future research endeavors should weave these economic factors into both recruitment and retention strategies, ensuring that they are finely attuned to the financial realities and motivations of diverse demographic groups. This approach will be essential in fostering more effective engagement and sustained participation in research studies.

In addition to providing incentives, the recruitment efforts demonstrated the need for a diverse and persistent approach. The strategies used in the present study, including social media campaigns, dialogues with preschool directors, and snowball sampling, were crucial in engaging a wide range of demographics. However, the protracted duration of the recruitment phase revealed the importance of ongoing engagement strategies and a more effective use of local

networks. Future studies might benefit from a more focused recruitment approach, continuously adapting to the changing dynamics of participant engagement.

The shift to online data collection, necessitated by the COVID-19 pandemic, presented a mix of opportunities and challenges. It broadened the study's reach but also required a high degree of adaptability in handling online research environments. This experience underscores the importance of thoroughly training research staff to manage unexpected situations during remote data collection. Future studies should explore more structured online assessment protocols and methods to maintain controlled and consistent assessment environments, particularly with diverse participant groups.

Moreover, the social validity survey revealed a high level of satisfaction among parents who participated in the training program. Parents also expressed a strong likelihood of recommending the strategies to others and continuing to use them in the future. However, it is worth noting that some parents reported occasional forgetfulness in applying the strategies during conversations with their children, and others mentioned that their children did not always respond as anticipated or follow their lead. To address these challenges and make the training program more effective, future programs could consider incorporating more frequent reminders, such as providing reminders every day or every other day, to reinforce the use of strategies. Moreover, concrete examples and strategies that align with children's interests can be integrated, allowing for increased validation and active listening from parents. By tailoring the program to children's individual interests and ensuring consistent reinforcement, parents can further enhance their children's active participation and engagement in conversations.

Training Effects on Parental Decontextualized Language Use

This study contributes valuable insights into the effectiveness of the parent-focused conversational strategies program in enhancing Chinese parents' use of decontextualized language during interactions with their children. First, the results demonstrate that parents in the training group exhibited a significant increase in their engagement in conversations about causal relationships, compared to parents in the active control group who received a placebo video on managing children's fear. This suggests that the training program successfully equipped parents with the necessary skills and strategies to incorporate decontextualized language into their daily conversations with their children.

Interestingly, the selective uptake of various strategies introduced in the training program highlights the nuanced way in which cultural contexts and individual preferences shape parental behaviors. It appears that Chinese parents have particularly valued and incorporated the practices of discussing causal relationships. Conversely, strategies related to talking about past, future events, hypothetical scenarios, and use of open-ended questions saw minimal change. These findings stand in stark contrast to a study conducted by Leech et al. (2018) on a sample from the United States. In their research, the most substantial changes were observed in discussions about the past and the future following a similar intervention. The differing adoption of these strategies by Chinese parents can be attributed to the baseline characteristics of parental decontextualized language (DL) use. Prior research, such as that by Wei et al. (2020), indicates that Chinese parents typically engage more frequently in discussions about future events or plans with their children compared to European American parents. This existing propensity could make it difficult to discern significant changes over time due to the training. In our study, even before the training, Chinese parents showed a substantial engagement in past-related discussions.

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Specifically, decontextualized utterances about the past accounted for an average of 20.5%, equating to approximately 2.93 utterances per minute related to past events. In contrast, discussions involving causal explanations were less frequent at baseline, constituting only about 6.5% of their utterances, or an average rate of 1.07 causal talk per minute. Moreover, it's essential to interpret these results in light of the unprecedented context of the COVID-19 lockdown. During this period, families' daily experiences were significantly confined to their home environment, perhaps limiting the range of decontextualized topics available for discussion. This unique circumstance may have contributed to the observed differences in the impact of the training program between this and the prior Leech et al. study.

Additionally, it can also be seen as a reflection of prevailing cultural and educational values in China. For instance, the emphasis on causal discussions often takes the form of a specific conversational structure. This involves asking purposeful questions and offering relevant and accurate responses. This communication style underscores Chinese parents' priority on imparting concrete knowledge and understanding the motivations behind emotional reactions and behaviors. Such an emphasis is particularly significant within Chinese culture, where grasping the reasons for one's actions and feelings is key to maintaining harmony and effective social relationships (Luo et al., 2014). Further research is needed to fully understand the reasons behind the selective adoption of these strategies by Chinese parents. Qualitative studies exploring parents' perceptions and attitudes towards different communication strategies could provide valuable insights. Moreover, longitudinal research might examine the long-term effects of these parenting practices on children's development in a Chinese context.

The results also revealed that the significant effects on parental language were observed three weeks after receiving the training video, rather than immediately within a week. This

suggests that the structure of the training program, which allows parents to learn the strategies online at their own pace and implement them without supervision, may require a longer timeframe to yield significant differences. This finding underscores the importance of considering the duration and timing of training effects in the design of future programs. For example, future programs should extend training durations to account for delayed effects, implement more or longer lasting progressive learning modules, and offer scheduled check-ins for further ongoing support. Additional strategies to consider include adding more intensity to the training with interactive practice sessions embedded within training videos, and peer support through anonymous forums, which can promote active engagement and collaborative learning.

These findings hold promising implications for promoting parental language skills through a low-cost, self-paced, and easily accessible online training program. By introducing DL-related conversational strategies, providing concrete examples, and raising parental awareness of the importance of parent-child conversations, this program offers a valuable tool for enhancing the quality of parent-child language interactions. It empowers parents to create a language-rich environment that supports their children's language and socio-cognitive development. Moreover, the success of this program with Chinese parents from diverse socioeconomic and geographic backgrounds hints at its adaptability and scalability. Such adaptability suggests the program's potential for broader applications. With slight modifications, it could be extended to cater to a wider demographic, thus magnifying its positive influence on child development through enriched language environments.

Training Effects on Child Developmental Outcomes

When examining the impact of the training program on children's socio-cognitive and language development, no statistically significant differences were found between the control

and training groups across various language and socio-cognitive measures. This finding is somewhat unexpected, given previous observational data that indicates even small amounts of decontextualized input during preschool years can have a unique and lasting positive effect on language and literacy skills, extending from kindergarten entry through middle school (Tabors et al., 2001). Moreover, such input has also been linked to improved academic language proficiency (Uccelli et al., 2017). One plausible explanation could be associated with what's known as the "sleeper effect," where changes in specific children's outcomes may require more time to become apparent. For example, children in the training condition did not show superior performance on emotion cause knowledge tasks than those in the control condition until six months after the training ended (Bergen et al., 2009). Similarly, Reese and colleagues (2010) found significant differences in narrative quality and narrative comprehension between children in two conditions one year after the training session.

It's also important to note that our study primarily aimed to test the feasibility of the training program's implementation in a Chinese cultural context. Consequently, the null findings regarding the program's immediate impact on children's developmental outcomes may reflect the need for a longer-term perspective when assessing its effects. Further research is warranted to explore the potential longer-term benefits of changes (as well as the likely need for longer and more intense training) in parental decontextualized input on child development. Still, it is important to consider the broader Covid-19 context and interpret the findings cautiously.

It is worth noting that the pre- and post-assessment only spanned one month apart, and it is possible that the effects of parent-child conversations may take longer to manifest in more significant changes in children's development. Additionally, the relatively small sample size and the relatively short duration of the training program may have affected the statistical power to

detect significant differences. Therefore, these findings should be considered preliminary and lay the groundwork for future research endeavors. Future research should replicate and expand on these findings, incorporating larger sample sizes and longer intervention periods for a more comprehensive evaluation of the program's effectiveness. Additionally, it should also integrate enhanced parental support, such as online peer groups or forums to encourage interaction and engagement and offer supplementary child development and parenting resources.

While this study provided valuable insights into the training's impact on parental DL use and children's performance on various structured measures, it did not encompass an assessment of how these enhanced parental strategies might translate into changes in children's own use of DL. Future studies should aim to bridge this limitation by specifically examining how children's DL production in naturalistic settings, such as during family mealtimes or other routine interactions, is influenced by the implementation of such training programs. By incorporating measures of children's DL use, subsequent research can provide a more comprehensive understanding of the training program's efficacy, not only in modifying parental behavior but also in directly fostering children's language development. Furthermore, extending the scope of research to include children's DL production would offer deeper insights into the bidirectional nature of parent-child interactions and their cumulative impact on language acquisition and cognitive development. Such an approach would significantly contribute to our understanding of language development processes and the practical application of language intervention programs.

Table 2-1

Demographic Characteristics of Training and Control Groups (n = 48)

Demographic Characteristics		Training	Control	*p value*
Age, months		58.5 (6.21)	59.2 (7.60)	0.71
Gender	Girls	12	8	0.36
	Boys	13	15	
Grade level in kindergarten	Pre-K	9	6	0.72
	Middle K	12	14	
	Senior K	4	3	
Participating caregiver	Mother	21	22	0.26
	Father	4	0	
	Grandparent	0	1	
Household income (Chinese yuan)	< ￥70k	1	2	0.6
	￥70k ~ ￥100k	5	1	
	￥100k ~ ￥200k	2	5	
	￥200k ~ ￥300k	4	5	
	￥300k ~ ￥500k	5	7	
	￥500k ~ ￥1 million	5	3	
	> ￥1 million	2	/	
	NA	1	/	
Home language	Putong Hua (Mandarin)	18	13	0.28
	Fangyan (Chinese language other than Mandarin)	3	3	
	Putong Hua & Other languages	4	7	
Parental education*	Secondary	/	1	0.32
	Trade/Tech school	4	2	
	Undergraduate	11	13	
	Graduate	10	7	
Family structure	Single parent	1	1	0.14
	Nuclear family	13	11	

	One child	0	6	
	More than one child	13	5	
	Extended family**	11	11	

Note.

*Parental education refers to the highest education level achieved by either the mother or the

father.

**Extended family includes parents, their children, grandparent(s) and/or live-in nanny.

*$p<.05$; **$p<.01$; ***$p<.001$

Table 2-2

Descriptive Statistics of Participant Ratings of Training Program and Strategies (Scale 1-6)

Item	Mean	*SD*
I find training program comprehensible	5.56	0.77
I find training strategies helpful	5.68	0.63
I can easily practice training strategies	5.4	0.91
I know better how to converse with child	5.44	0.77
I find training strategies helpful to my child	5.4	0.96
I find regular check-ins helpful	5.48	0.87
I will recommend training strategies to other parents	5.56	0.82
I will continue practice training strategies	5.68	0.69

Table 2-3

Pre-Training Comparison of Decontextualized Language Production Rates Between Parents

in Training and Control Groups

DL Type	Group	N	Mean	SD	Min	Max	*t*	*df*	*p value*
Past oriented	Control	23	2.79	2.92	0	9.77	0.44	40.6	0.66
	Training	25	2.46	2.18	0.07	9.23			
Future oriented	Control	23	0.86	0.9	0	3.56	1.2	39.1	0.24
	Training	25	0.59	0.63	0.07	3.08			
Hypothetical scenarios	Control	23	0.37	0.49	0	2.06	-0.73	34.9	0.47
	Training	25	0.54	1.04	0	4.82			
Causal relationships	Control	23	1.05	0.7	0.13	2.87	1.41	44.2	0.17
	Training	25	0.78	0.62	0.12	2.27			
Open-ended questions	Control	23	1.58	0.87	0.26	3.45	0.93	45.9	0.36
	Training	25	1.34	0.91	0.13	3.62			

*p<.05; **p<.01; ***p<.001

Table 2-4

Initial Performance Across Multiple Tasks: Comparison of Children in Training and Control Groups at Baseline

Test	Group	N	Mean	SD	Min	Max	*t*	*df*	*p value*
Word Types	Control	23	209	83	34	434	0.43	25.07	0.67
	Training	25	200	78	79	361			
Theory of mind	Control	23	3.61	1.44	1	5	2.17	45.43	0.04*
	Training	25	2.72	1.4	1	5			
Emotion understanding	Control	23	3.48	1.5	1	6	1.64	45.94	0.11
	Training	25	2.72	1.7	0	6			
Prospection ability (z-score)	Control	23	-1.86	2.68	-7.08	0.92	1.4	45.72	0.17
	Training	25	-1.12	2.27	-6.08	0.92			
Reading comprehension	Control	23	5.65	2.71	0	10	0.94	44.08	0.35
	Training	25	4.96	2.39	1	10			
Storytelling	Control	22	7.23	1.69	4	11	1.38	44.88	0.17
	Training	25	6.52	1.83	2	10			
Retell	Control	21	9.29	2.26	5	13	-0.22	41.15	0.82
	Training	23	9.44	2.15	4	13			

*p<.05; **p<.01; ***p<.001

Table 2-5

Post-Training Performance of Children in the Training and Control Group across Multiple

Tasks

Test	Group	N	Mean	SD	Min	Max	t	df	p value
Theory of Mind	Control	23	4.04	1.33	1	5	1.41	44.79	0.16
	Training	25	3.52	1.23	1	5			
Emotion Understanding	Control	23	4.09	1.7	0	7	0.94	44.98	0.35
	Training	25	3.56	2.16	0	7			
Prospection Ability (z-scores)	Control	23	-3.04	3.16	-9.08	0.92	0.06	43.88	0.95
	Training	25	-1.16	1.98	-7.08	0.92			
Reading Comprehension	Control	23	6.17	3.01	0	10	0.65	43.99	0.52
	Training	25	5.64	2.64	0	10			
Storytelling	Control	20	8.75	1.52	6	11	0.02	37.26	0.99
	Training	23	8.74	2.45	5	14			
Retell	Control	19	10.9	2.13	8	15	0.28	39.81	0.78
	Training	23	10.7	2.42	5	15			

*p<.05; **p<.01; ***p<.001

Figure 2-1

CONSORT (Schulz et al., 2010) Flow Diagram Illustrating the Disposition of the Entire

Sample
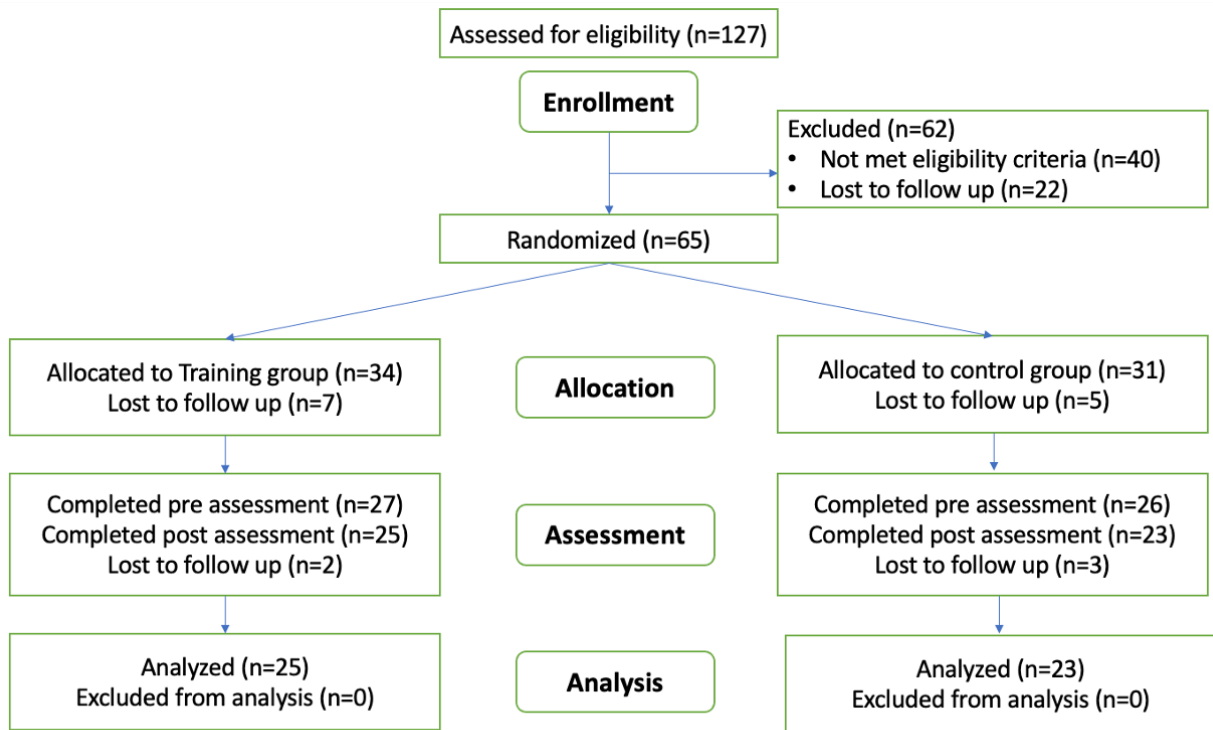
Figure 2-2

Training Video Excerpts: Demonstrating the Use of Open-Ended Questions

Note. These two figures both pertain to the second strategy, "asking more open-ended questions." In the left figure, the central text poses the question "What can parents do?" and is accompanied by two parent figures at the bottom. The right figure provides a list of six example open-ended question formats, which include: what, where, how, when, why, and who.

Figure 2-3

Sample Infographics: Illustrating the Application of Training Strategies in Various Routine Activities

亲子交流：优化孩子大脑发育

善用吃饭时间

每天（或周末）下班、孩子放学后的吃饭时间是珍贵的家人相处时刻，在保证孩子摄入充足营养的前提下，善用吃饭时间，与孩子进行高效的亲子交流。

分享彼此的一天，多问"开放性问题"让孩子多想多说
- "孩子，今天做什么了呀？"
- "今天在幼儿园和谁玩了？"
- "学到了什么本事吗？"

分享你今天做了什么，"解释"词语、概念、过程
- 如果你是开车上班，可以和孩子聊聊重要的交通规则，解释什么是"驾照"，以及你是怎么考到驾照的。
- 如果你今天做了一道新的菜式，分享一下你做这道菜的过程。

聊聊打算
- "孩子，晚饭后，我们一起玩吧。你想和我一起玩什么呢？"
- "明天周末了，你想做些什么呢？"

亲子交流：优化孩子大脑发育

善用睡前时间

每天睡前都是父母和孩子相处的珍贵时刻，给孩子讲讲故事、读读书，也可以安安静静的躺着聊会儿天，你们可以聊聊这些话题：

解释新词汇和逻辑关系
让孩子猜猜什么东西可以飘起来，什么东西可以沉下去。记得解释为什么。还可以给孩子解释一下为什么我们每天都要刷牙。

憧憬新的一天
"明天周末你有没有什么事情特别想和爸爸妈妈一起做的呀？"

"明天去幼儿园你最想和谁一起玩？你想和她/他一起玩什么呀？为什么？"

讨论行为和感受
- "你今天是不是不开心了，可以分享一下你为什么不开心吗？"
- "你今天这件事做的让妈妈伤心了，你知道为什么吗？可以和妈妈说说你当时为什么这么做吗？"

Note. These two figures offer practical insights into engaging decontextualized topics and questions between parents and children. Each figure begins with a brief message underscoring the importance of utilizing routine moments for meaningful interactions.

*The left figure, titled "Maximizing Mealtime," presents three conversation topics: asking about each other's day, providing explanations, and discussing plans.

**On the right, the figure titled "Bedtime Engagement" introduces three distinct topics: explaining new vocabulary and the importance of daily tooth brushing, discussing expectations for the next day (including playmates and reasons), and delving into emotions and behaviors, with a specific emphasis on requesting explanations for feelings and behaviors.

GENERAL DISCUSSION

Children's learning is fundamentally rooted in social interactions (Vygotsky, 1978). Although all interactions contribute to development, some prove more potent than others. Research has shown the transformative power of enriched verbal interactions with caregivers in early childhood, catalyzing brain development (e.g., Bernier et al., 2016; Romeo et al., 2018) and laying the foundation for subsequent advancement in areas like language, academics, and social cognition (Bailey & Moughamian, 2007; Bailey et al., 2018; Doan & Wang, 2010; Taumoepeau & Reese, 2013; Uccelli et al., 2019). A type of interaction that has drawn significant attention is decontextualized language (DL)—conversations extending beyond the immediate 'here and now' (Snow, 1983). Such interactions, marked by their interactivity, conceptual depth, and linguistic intricacy (Rowe & Snow, 2020), are considered quintessential high-quality verbal interactions.

However, the bulk of DL research is centered around English-speaking samples from industrialized Western contexts. There's a significant research gap in understanding DL's nuances in settings where non-English languages and diverse dialects prevail, and where unique cultural values shape familial verbal interactions. Existing studies often concentrate on reminiscing or past-focused conversations (e.g., Reese, 1995; Fivush et al., 2006), leaving other DL types like behavior-centric or future-oriented talk less frequently examined (e.g., Rowe, 2012; Demir et al., 2015; Wei et al., 2020). Furthermore, while it's been established that parental communication behaviors can be refined to foster a conducive language environment (Roberts et al., 2019), most such studies emerge from Western contexts. The distinctive cultural communication practices in Chinese families suggest potentially varied developmental impacts, necessitating further exploration.

This dissertation aims to bridge these gaps. It delves into the dynamic parent-child verbal interactions. Specifically, it explores various DL characteristics, children's recontextualization (Bailey, 2020, 2021) strategies, and parental scaffolding strategies. Recognizing the scant literature on fathers, this project also probes their linguistic contributions during family mealtimes. The insights from the first study informs the second, where I evaluate the feasibility and efficacy of a DL-focused parental conversation strategy program within the Chinese context, examining its effects on parental DL production and children's linguistic and socio-cognitive development.

Summary of Key Findings

Study 1 offers an in-depth exploration of decontextualized language (DL) use in Chinese families during mealtimes, highlighting its pivotal role in early childhood development. The data reveals significant variability in DL use among family members, emphasizing the diverse contributions of both mothers and fathers. Mothers, in particular, show extensive versatility in their linguistic interactions, spanning a broader range of topics and incorporating multifaceted DL components. This contrasts with past representations of Chinese mothers as low-elaborative conversationalists, indicating a notable shift in maternal scaffolding styles over recent years. Moreover, discussions surrounding past and future events, as well as causal relationships, emerge as strong predictors of children's abilities in recontextualization, socio-cognitive awareness, and prospection.

The pilot intervention research in Study 2 evaluates the feasibility of a parent-focused conversational strategies program within the Chinese context. The findings suggest that parents and children naturally engage in routine conversations during daily activities like mealtime, bedtime, and commuting, which provide ample opportunities to integrate decontextualized

language. Participating parents expressed high satisfaction with the program and showed a marked increase in discussing causal relationships in contrast to a control group. While no statistical significance is observed in the children's socio-cognitive and language development as a direct result of the program, the data leans towards a potentially positive influence, indicating the program's potential efficacy. This pilot study also provides valuable insights into strategies for future scaling up, particularly addressing challenges in participant recruitment, retention, and data collection. These insights are crucial for effectively managing the complexities of large-scale studies and ensuring successful engagement with diverse participant groups.

Using Multiple Methods in Child Language Research

In the field of child language research, or extensively in social science, determining causal mechanisms remains a critical endeavor. While randomized controlled trials and experimental designs are typically considered as the "gold standard" for assessing intervention efficacy and establishing causal relationships, it is equally crucial to comprehend the baseline patterns of linguistic behaviors targeted for change. Researchers have argued that mixing different types of data and methods can be particularly beneficial to understand child development (Yoshikawa et al., 2008). Along the same line, this dissertation uses an exploratory sequential design (Cresswell & Clarl, 2018) and integrates both qualitative observational data and quantitative experimental data, allowing for capturing the nuances of real-world interactions while also gauging the impact of targeted interventions.

Observational methods, as employed in Study 1, reveal natural dynamics of parent-child interactions by analyzing language corpus from real-world settings like mealtimes. This method captures the richness and authenticity of DL productions, illuminating the inherent patterns, variations, and cultural specificities of parental linguistic input and its influence on children's

language output. In the context of child language research, such observational insights are invaluable. They offer a baseline, revealing what 'typical' linguistic interactions look like in daily routines and thus laying the groundwork for targeted interventions. Observational data paints a vivid picture of the linguistic landscape, helping researchers identify gaps, potential areas of enhancement, and cultural nuances that can guide the design of interventions.

Building upon findings of observational data, I was able to create a culturally appropriate parent-focused conversation strategies program. Experimental methods allow for testing the feasibility and impact of interventions. By creating a structured environment, researchers can introduce specific changes (like DL-enhancing strategies) and directly measure their impact on child developmental outcomes. In this dissertation, the experimental approach not only validated the feasibility of such a simple parent-focused conversation strategies program that is cost-effective, easy to implement, self-paced and flexible, but also hinted at its scalability and adaptability in diverse populations.

Implications

The findings presented in this dissertation have wide-ranging implications for both research and practical applications. These implications can be understood in terms of methodological approaches, the nuances of studying diverse populations, and adapting interventions for cultural relevance.

The study of child development, with its intricate layers and dynamics, necessitates a comprehensive perspective. This research underscores the importance of a multifaceted methodological strategy in capturing the depth and breadth of the child's language environment and development. Firstly, combining observational data, which provides a window into the organic, unscripted dynamics of parent-child verbal interactions, with experimental data, which

offers a structured lens to unpack causative influences, this dissertation provides a more in-depth view of language environment and its influence on child development. The interplay between observational insights and experimental interventions creates an interactive process, making interventions more grounded and relevant. Secondly, this approach places significant emphasis on cultural context, ensuring that the research outcomes resonate with cultural nuances and remain relevant. Rather than making assumptions about patterns of Chinese parent-child DL use based on studies with different demographics, this study systematically analyzed genuine, naturalistic parent-child verbal interactions. Based on these insights, the study tailored training programs specifically for Chinese participants, ensuring a culturally sensitive and effective approach. Furthermore, the use of diverse metrics—frequency, proportion, and rate data— enriches this perspective. Frequency data unveils the sheer volume of linguistic interchanges, rate data elucidates the pace of these exchanges, and proportion data highlights the relative prominence of specific linguistic elements within the broader discourse. This holistic view is pivotal for understanding both the breadth and depth of the linguistic environment children are exposed to on a daily basis. In brief, a multifaceted methodological approach in child development research not only enriches our understanding but also ensures that insights are comprehensive, culturally sensitive, and dynamically informed.

Extending research into DL within Chinese families, a population less emphasized in DL related studies, this dissertation has uncovered both parallels and distinctions in language phenomena compared to findings from studies centered on Western, industrialized, often but not exclusively, middle-class families. The nuanced differences, such as parents' selective uptake of DL-related conversational strategies, highlight the role of cultural and historical contexts in shaping parent-child daily language interactions. It is a stark reminder of the potential influences

of overarching societal factors, including cultural values and significant events like the COVID-19 pandemic, on family communications and, by extension, child development. These results advocate for a more culturally sensitive interpretative lens in child development research, cautioning against blanket generalizations and encouraging consideration of specific socio-cultural dynamics.

Lastly, this dissertation exemplifies the adaptation of language training programs, traditionally designed for Western, white, industrialized, middle-class demographics, making them more culturally responsive and appropriate. The success of the adapted program, evident in the enhanced DL use among Chinese parents, attests to the efficacy of simple, cost-effective, and flexible online programs in fostering quality language environments. Notably, the effectiveness and broader applicability of the culturally adapted language programs, especially in various cultural contexts, remain an empirical question. Future studies necessitate larger sample sizes and extended training durations to corroborate the findings and to explore underlying mechanisms or additional influential factors. These research endeavors would not only validate the current results but also potentially uncover universal or divergent patterns in how to create a quality language environment for optimal child development across different cultures and social contexts.

Conclusions

In conclusion, this dissertation delved into the patterns of decontextualized language (DL) use between Chinese parents and their children during routine activities, specifically mealtime. This study further investigated the feasibility of introducing DL-focused conversational strategies to parents and assessed their impact on both parental DL production and subsequent child developmental outcomes. A key finding of this research is the significant

variability in DL utilization by Chinese parents, a pattern that appears to be strongly influenced by cultural values. This work is pioneering in its empirical investigation of the concept of recontextualization among preschool-aged children. Both quantitative and qualitative analyses have revealed that Chinese children, even as young as four years old, are adept at constructing complex linguistic messages about abstract and remote concepts. A notable aspect of this study is the established direct correlation between the rate of DL used by parents and their children's abilities in recontextualization, as well as socio-cognitive awareness, and prospection skills. Furthermore, this research demonstrates that parental DL use can be effectively enhanced through an online, self-paced program focused on DL conversational strategies.

This research underscores the need for a multifaceted methodological approach in studying children's linguistic environments and their development, especially within under-researched populations. Future research should incorporate larger sample sizes, broader demographic representations, and evaluate the long-term effects of training on children's development to better understand the broader implications of modifying parental linguistic behaviors in support of child development.

APPENDIX A

Descriptive Statistics of Decontextualized Language Types in Chinese Mothers, Fathers, and Children

		Frequency			Rate			Proportion		
Code	Speaker	M	SD	Range	M	SD	Range	M	SD	Range
Past oriented	Mother	9.36	12.53	(0, 57)	0.45	0.51	(0, 1.70)	0.07	0.07	(0, 0.23)
	Father	2.48	5.12	(0, 21)	0.11	0.23	(0, 1.02)	0.04	0.06	(0, 0.18)
	Child	8.53	11.69	(0, 61)	0.41	0.47	(0, 1.82)	0.08	0.1	(0, 0.50)
Future oriented	Mother	5.91	8.37	(0, 38)	0.32	0.53	(0, 2.80)	0.05	0.08	(0, 0.41)
	Father	1.56	2.86	(0, 12)	0.07	0.14	(0, 0.58)	0.02	0.04	(0, 0.12)
	Child	2.97	4.76	(0, 22)	0.18	0.43	(0, 2.46)	0.03	0.05	(0, 0.24)
Hypothetical scenarios	Mother	1.61	3.53	(0, 15)	0.06	0.15	(0, 0.75)	0.01	0.03	(0, 0.13)
	Father	0.26	0.71	(0, 3)	0.01	0.04	(0, 0.15)	0.01	0.03	(0, 0.12)
	Child	0.59	1.23	(0, 6)	0.03	0.07	(0, 0.35)	0.01	0.02	(0, 0.12)
Causal relationships	Mother	10.94	28.52	(0, 16)	0.46	1.12	(0, 6.30)	0.05	0.09	(0, 0.51)
	Father	0.63	1.28	(0, 5)	0.03	0.07	(0, 0.31)	0.02	0.04	(0, 0.14)
	Child	4.53	11.39	(0, 63)	0.2	0.47	(0, 2.48)	0.03	0.08	(0, 0.45)

APPENDIX B

Descriptive Statistics of Decontextualized Language Content and Topics in Chinese Mothers, Fathers, and Children

		Frequency			Rate			Proportion		
Codes	Speaker	M	SD	Range	M	SD	Range	M	SD	Range
Food	Mother	4.64	6.32	(0.00, 24.00)	0.22	0.31	(0.00, 1.33)	0.04	0.05	(0.00, 0.14)
	Father	0.89	1.99	(0.00, 7.00)	0.04	0.1	(0.00, 0.43)	0.02	0.04	(0.00, 0.17)
	Child	3.21	4.65	(0.00, 21.00)	0.15	0.22	(0.00, 0.84)	0.03	0.04	(0.00, 0.14)
Mental state	Mother	2.09	3.53	(0.00, 13.00)	0.09	0.13	(0.00, 0.39)	0.01	0.02	(0.00, 0.07)
	Father	0.33	0.78	(0.00, 3.00)	0.02	0.05	(0.00, 0.19)	0.01	0.02	(0.00, 0.09)
	Child	1.41	2.05	(0.00, 9.00)	0.06	0.09	(0.00, 0.31)	0.01	0.02	(0.00, 0.10)
Metalinguistic	Mother	1.42	2.41	(0.00, 11.00)	0.07	0.1	(0.00, 0.33)	0.01	0.01	(0.00, 0.05)
	Father	0.3	1.17	(0.00, 6.00)	0.01	0.06	(0.00, 0.29)	0	0.01	(0.00, 0.04)
	Child	1.47	2.78	(0.00, 15.00)	0.07	0.11	(0.00, 0.45)	0.01	0.02	(0.00, 0.10)
Behavior	Mother	5.61	8.67	(0.00, 39.00)	0.26	0.36	(0.00, 1.53)	0.03	0.04	(0.00, 0.15)
	Father	1.26	1.97	(0.00, 9.00)	0.06	0.1	(0.00, 0.44)	0.03	0.03	(0.00, 0.14)
	Child	3.59	5.4	(0.00, 25.00)	0.18	0.27	(0.00, 1.12)	0.03	0.04	(0.00, 0.18)
Other-reference	Mother	3.91	6.99	(0.00, 25.00)	0.16	0.26	(0.00, 1.05)	0.03	0.04	(0.00, 0.14)
	Father	0.85	2.03	(0.00, 9.00)	0.03	0.07	(0.00, 0.27)	0.01	0.03	(0.00, 0.12)
	Child	2.62	5.36	(0.00, 30.00)	0.12	0.18	(0.00, 0.90)	0.03	0.06	(0.00, 0.30)
Planning	Mother	3.7	7.21	(0.00, 39.00)	0.19	0.34	(0.00, 1.57)	0.03	0.05	(0.00, 0.23)

	Father	1.04	2.05	(0.00, 9.00)	0.05	0.1	(0.00, 0.44)	0.01	0.02	(0.00, 0.08)
	Child	1.65	3	(0.00, 12.00)	0.1	0.25	(0.00, 1.34)	0.01	0.03	(0.00, 0.13)
Rules and norms	Mother	1.55	2.45	(0.00, 8.00)	0.07	0.11	(0.00, 0.37)	0.01	0.02	(0.00, 0.12)
	Father	0.11	0.32	(0.00, 1.00)	0	0.01	(0.00, 0.05)	0	0.01	(0.00, 0.03)
	Child	0.35	0.77	(0.00, 3.00)	0.02	0.04	(0.00, 0.16)	0	0.01	(0.00, 0.03)
Academic work	Mother	0.79	2.03	(0.00, 8.00)	0.04	0.09	(0.00, 0.34)	0.01	0.01	(0.00, 0.05)
	Father	0.37	1.92	(0.00, 10.00)	0.02	0.09	(0.00, 0.49)	0	0.01	(0.00, 0.07)
	Child	0.85	2.36	(0.00, 11.00)	0.06	0.18	(0.00, 0.90)	0.01	0.02	(0.00, 0.11)
General knowledge	Mother	4.97	19.01	(0.00, 109.00)	0.21	0.75	(0.00, 4.29)	0.02	0.06	(0.00, 0.35)
	Father	0.04	0.19	(0.00, 1.00)	0	0.01	(0.00, 0.06)	0	0	(0.00, 0.02)
	Child	1.91	7.71	(0.00, 44.00)	0.09	0.32	(0.00, 1.73)	0.01	0.06	(0.00, 0.31)
Other	Mother	4.15	5.94	(0.00, 28.00)	0.21	0.28	(0.00, 1.10)	0.03	0.04	(0.00, 0.15)
	Father	0.67	1.88	(0.00, 9.00)	0.03	0.09	(0.00, 0.44)	0.01	0.02	(0.00, 0.08)
	Child	3.71	4.42	(0.00, 17.00)	0.18	0.2	(0.00, 0.67)	0.03	0.04	(0.00, 0.14)

APPENDIX C

Descriptive Statistics of Language Functions in Decontextualized Conversations Among Chinese Mothers, Fathers, and Children

Codes	Speaker	Frequency			Rate			Proportion		
		M	SD	Range	M	SD	Range	M	SD	Range
Repetition	Mother	3.3	4.92	(0.00, 18.00)	0.15	0.2	(0.00, 0.71)	0.03	0.04	(0.00, 0.14)
	Father	0.59	1.45	(0.00, 5.00)	0.02	0.06	(0.00, 0.24)	0.01	0.02	(0.00, 0.07)
	Child	1.56	2.11	(0.00, 8.00)	0.08	0.1	(0.00, 0.34)	0.01	0.01	(0.00, 0.04)
Elaboration	Mother	15.61	19.36	(0.00, 79.00)	0.74	0.83	(0.00, 3.13)	0.11	0.1	(0.00, 0.46)
	Father	3.19	7.03	(0.00, 35.00)	0.15	0.34	(0.00, 1.70)	0.05	0.06	(0.00, 0.26)
	Child	11.38	12.81	(0.00, 50.00)	0.55	0.6	(0.00, 2.46)	0.11	0.13	(0.00, 0.50)
Explanation	Mother	5.45	14.29	(0.00, 80.00)	0.23	0.56	(0.00, 3.15)	0.03	0.05	(0.00, 0.26)
	Father	0.33	0.62	(0.00, 2.00)	0.02	0.03	(0.00, 0.12)	0.01	0.03	(0.00, 0.14)
	Child	2.5	5.14	(0.00, 28.00)	0.13	0.23	(0.00, 1.10)	0.02	0.04	(0.00, 0.20)
Evaluation	Mother	1.76	2.53	(0.00, 11.00)	0.08	0.11	(0.00, 0.43)	0.02	0.02	(0.00, 0.09)
	Father	0.26	0.53	(0.00, 2.00)	0.01	0.03	(0.00, 0.10)	0.01	0.01	(0.00, 0.04)
	Child	0.76	1.74	(0.00, 7.00)	0.03	0.08	(0.00, 0.35)	0.01	0.01	(0.00, 0.07)
Connection	Mother	1.79	4.08	(0.00, 21.00)	0.08	0.17	(0.00, 0.83)	0.01	0.02	(0.00, 0.07)
	Father	0.52	0.94	(0.00, 3.00)	0.03	0.05	(0.00, 0.19)	0.01	0.03	(0.00, 0.09)
	Child	0.71	1.49	(0.00, 6.00)	0.03	0.06	(0.00, 0.20)	0	0.01	(0.00, 0.04)
Poetic speech	Mother	0.48	1.42	(0.00, 7.00)	0.02	0.06	(0.00, 0.28)	0	0.01	(0.00, 0.03)

	Father	0.04	0.19	(0.00, 1.00)	0	0.01	(0.00, 0.04)	0	0	(0.00, 0.01)
	Child	0.68	1.59	(0.00, 7.00)	0.03	0.08	(0.00, 0.36)	0.01	0.02	(0.00, 0.07)
Expressive speech	Mother	0.15	0.44	(0.00, 2.00)	0.01	0.02	(0.00, 0.08)	0	0	(0.00, 0.01)
	Father	0	0	(0.00, 0.00)	0	0	(0.00, 0.00)	0	0	(0.00, 0.00)
	Child	0.06	0.24	(0.00, 1.00)	0	0.01	(0.00, 0.03)	0	0	(0.00, 0.01)
Placeholders	Mother	0.52	1.18	(0.00, 4.00)	0.02	0.04	(0.00, 0.16)	0	0	(0.00, 0.02)
	Father	0.07	0.38	(0.00, 2.00)	0	0.01	(0.00, 0.06)	0	0.01	(0.00, 0.03)
	Child	0.35	0.85	(0.00, 4.00)	0.02	0.05	(0.00, 0.25)	0	0.01	(0.00, 0.05)
Other	Mother	3.73	5.66	(0.00, 23.00)	0.19	0.32	(0.00, 1.57)	0.03	0.04	(0.00, 0.23)
	Father	0.74	1.2	(0.00, 4.00)	0.03	0.06	(0.00, 0.19)	0.01	0.02	(0.00, 0.06)
	Child	2.79	3.98	(0.00, 13.00)	0.15	0.22	(0.00, 0.78)	0.02	0.03	(0.00, 0.10)

APPENDIX D

Descriptive Statistics of Parental Responsiveness Forms in Decontextualized Language Engagement

		Frequency			Rate			Proportion		
Codes	Speaker	M	SD	Range	M	SD	Range	M	SD	Range
Response	Mother	5.3	11.94	(0.00, 67.00)	0.24	0.48	(0.00, 2.64)	0.03	0.05	(0.00, 0.22)
	Father	0.48	0.94	(0.00, 4.00)	0.03	0.06	(0.00, 0.25)	0.01	0.02	(0.00, 0.10)
Supporting conversation	Mother	4.88	7.06	(0.00, 33.00)	0.24	0.33	(0.00, 1.34)	0.04	0.05	(0.00, 0.20)
	Father	1.11	3.24	(0.00, 14.00)	0.05	0.14	(0.00, 0.68)	0.01	0.03	(0.00, 0.14)
Reframe	Mother	0.64	2.45	(0.00, 14.00)	0.03	0.1	(0.00, 0.55)	0	0.01	(0.00, 0.05)
	Father	0	0	(0.00, 0.00)	0	0	(0.00, 0.00)	0	0	(0.00, 0.00)
Initiation	Mother	7.85	13.59	(0.00, 68.00)	0.36	0.5	(0.00, 2.10)	0.05	0.05	(0.00, 0.21)
	Father	1.7	2.83	(0.00, 12.00)	0.08	0.14	(0.00, 0.58)	0.03	0.04	(0.00, 0.12)
Follow-ons	Mother	12.55	17.2	(0.00, 81.00)	0.59	0.72	(0.00, 3.19)	0.09	0.08	(0.00, 0.26)
	Father	2.15	4.06	(0.00, 19.00)	0.1	0.19	(0.00, 0.92)	0.04	0.05	(0.00, 0.15)

APPENDIX E

Results of Pearson Correlation between Children's Language Production and Maternal Decontextualized Language

	C_rex	C_soc	C_pro	C_typ	C_tok	M_soc	M_resp	M_sup	M_pas	M_fut	M_hyp	M_cau	M_typ	M_tok
C_rex														
C_soc	0.96***													
C_pro	0.66***	0.52**												
C_typ	0.40*	0.41*	0.14											
C_tok	0.34+	0.37*	0.03	0.95***										
M_soc	0.69***	0.75***	0.36*	0.39*	0.38*									
M_resp	0.55***	0.58***	0.06	0.23	0.2	0.62***								
M_sup	0.72***	0.69***	0.75***	0.32+	0.27	0.65***	0.22							
M_pas	0.61***	0.64***	0.55***	0.35*	0.34+	0.68***	0.11	0.90***						
M_fut	0.68***	0.57***	0.87***	0.32+	0.21	0.58***	0.17	0.77***	0.63***					
M_hyp	0.22	0.33+	-0.04	0.24	0.26	0.77***	0.34+	0.26	0.43*	0.23				
M_cau	0.52**	0.55**	0.03	0.27	0.24	0.61***	0.97***	0.18	0.05	0.16	0.29+			
M_typ	0.45**	0.51**	0.07	0.50**	0.53**	0.75***	0.64***	0.42*	0.50**	0.33+	0.56***	0.67***		
M_tok	0.39*	0.45**	0.05	0.45**	0.49**	0.74***	0.60***	0.39*	0.46**	0.28	0.54**	0.66***	0.97***	

Note. C = Child; M = Mother; Rex = Recontextualization; Soc = Social-Cognitive Awareness; Pro = Prospection Awareness; Pas = Past-oriented talk; Fut = Future-oriented talk; Hyp = Hypothetical talk; Cau = Causal talk; Tok = Total Number of Word Tokens; Typ = Word Types; TTR = Type-Token Ratio; Resp = Responsive Modification; Sup = Supporting Conversation. *$p < .05$, **$p < .01$, ***$p < .001$

Results of Pearson Correlation between Children's Language Production and Paternal Decontextualized Language

	C_rex	C_soc	C_pro	C_typ	C_tok	F_soc	F_resp	F_repe	F_pas	F_fut	F_hyp	F_cau	F_typ	F_tok
C_rex														
C_soc	0.96***													
C_pro	0.66***	0.52**												
C_typ	0.40*	0.41*	0.14											
C_tok	0.34+	0.37*	0.03	0.95***										
F_soc	0.19	0.24	0.16	-0.06	-0.09									
F_resp	0.28	0.3	0.06	0.13	0.06	0.31								
F_sup	0.32	0.33+	0.33+	0.17	0.11	0.83***	0.24							
F_pas	0.32	0.32+	0.25	0.12	0.06	0.89***	0.34+	0.88***						
F_fut	0.16	0.16	0.22	0.03	-0.06	0.90***	0.31	0.79***	0.86***					
F_hyp	-0.03	0.01	-0.11	-0.21	-0.2	0.01	0.37+	-0.1	-0.16	-0.19				
F_cau	0.19	0.2	-0.02	0.2	0.21	0.19	0.66***	0.13	0.12	0.12	0.42*			
F_typ	0.05	0.1	-0.08	0.1	0.09	0.83***	0.39*	0.63***	0.73***	0.79***	0.04	0.40*		
F_tok	0.06	0.09	0.02	-0.02	-0.02	0.89***	0.31	0.73***	0.77***	0.82***	0.04	0.39*	0.95***	

Note. C = Child; M = Mother; Rex = Recontextualization; Soc = Social-Cognitive Awareness; Pro = Prospection Awareness; Pas = Past-oriented talk; Fut = Future-oriented talk; Hyp = Hypothetical talk; Cau = Causal talk; Tok = Total Number of Word Tokens; Typ = Word Types; TTR = Type-Token Ratio; Resp = Responsive Modification; Sup = Supporting Conversation. *$p < .05$, **$p < .01$, ***$p < .001$

APPENDIX G

Results of Pearson Correlations between Paternal and Maternal Decontextualized Language

	F_soc	F_resp	F_sup	F_pas	F_fut	F_hyp	F_cau	F_typ	F_tok	M_soc	M_resp	M_sup	M_pas	M_fut	M_hyp	M_cau	M_typ	M_tok
F_soc																		
F_resp	0.31																	
F_sup	0.83***	0.24																
F_pas	0.89***	0.34+	0.88***															
F_fut	0.90***	0.31	0.79***	0.86***														
F_hyp	0.01	0.37+	-0.1	-0.16	-0.19													
F_cau	0.19	0.66***	0.13	0.12	0.12	0.42*												
F_typ	0.83***	0.39*	0.63***	0.73***	0.79***	0.04	0.40*											
F_tok	0.89***	0.31	0.73***	0.77***	0.82***	0.04	0.39*	0.95***										
M_soc	-0.1	-0.04	-0.02	-0.09	-0.15	-0.07	-0.06	-0.24	-0.23									
M_resp	-0.15	-0.01	-0.12	-0.09	-0.11	-0.04	0	-0.27	-0.22	0.62***								
M_sup	0.02	-0.04	0.07	0.03	0	-0.15	-0.04	-0.21	-0.19	0.65***	0.22							
M_pas	0.05	0.05	0.11	0.06	0	-0.13	-0.02	-0.1	-0.12	0.68***	0.11	0.90***						
M_fut	-0.12	0.01	-0.05	-0.07	-0.01	-0.15	-0.07	-0.25	-0.23	0.58***	0.17	0.77***	0.63***					
M_hyp	-0.16	-0.01	-0.11	-0.15	-0.2	-0.01	0.04	-0.17	-0.18	0.77***	0.34+	0.26	0.43*	0.23				
M_cau	-0.17	-0.02	-0.1	-0.13	-0.15	0	0.01	-0.29	-0.23	0.61***	0.97***	0.18	0.05	0.16	0.29+			
M_typ	-0.28	-0.09	-0.15	-0.19	-0.24	-0.12	-0.11	-0.41*	-0.40*	0.75***	0.64***	0.42*	0.50**	0.33+	0.56***	0.67***		
M_tok	-0.27	-0.19	-0.12	-0.21	-0.25	-0.12	-0.17	-0.44*	-0.41*	0.74***	0.60***	0.39*	0.46**	0.28	0.54**	0.66***	0.97***	

Note. C = Child; M = Mother; Rex = Recontextualization; Soc = Social-Cognitive Awareness; Pro = Prospection Awareness; Pas = Past-oriented talk; Fut = Future-oriented talk; Hyp = Hypothetical talk; Cau = Causal talk; Tok = Total Number of Word Tokens; Typ = Word Types; TTR = Type-Token Ratio; Resp = Responsive Modification; Sup = Supporting Conversation.

*p < .05, **p < .01, ***p < .001

Theory of Mind Tasks Instructions

Task name	Instructions
Diverse desires	The experimenter presents pictures of two snacks (i.e., apple or candy). The experimenter asks the child what snack he or she prefers. Then a picture of a teacher is presented, and the teacher is introduced as having a different desire than that of the child. The test question is "It's snack time. What will the teacher eat?"
Diverse beliefs	The experimenter presents pictures of a playground, classroom, and a boy. The experimenter tells the child that the boy is looking for his soccer, and asks the child "Where do you think the soccer is?" Then the boy is introduced as having a different belief than that of the child. The test question is "Where will the boy look for the soccer ball?"
Knowledge access	The experimenter presents a picture of a box and asks the child "what do you think is in the box?" Following the child's response, the experiment presents another picture revealing the content in the box (i.e., toy dog). A picture of a teacher is introduced as having never seen inside the box. The test question is "Does the teacher know what is in the box?"
Explicit false belief	The experimenter presents pictures of a box and a backpack. The experimenter tells the child that the box is empty and there is a toy dog in the backpack. A picture of a boy/girl is introduced as looking for his/her toy dog and thinking the toy dog is in the box. The test question is "Where will the boy/girl look for the toy dog?"
Content false belief	The experimenter presents a toothpaste box and asks the child "What do you think is in the box?" Following the child's response, the experimenter reveals the content in the box (e.g., pencil). A picture of a teacher is introduced as having never seen inside the box. The test question is "What does the teacher think in the box?"

Note. This measure is adapted from Wellman and Liu (2004), Burnel et al. (2018), and Zhang et al.

(2016).

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