The Development of Questions in Child and Child-directed Speech in Turkish

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ABSTRACT: Child-directed questions are significant in high-quality mother-child interactions (Ninio, 1980; Rowe, Leech & Cabrera., 2017). This paper examines the probable effects of Turkish child-directed speech (CDS) on the acquisition of *wh*-words of a Turkish child. In this study, the spontaneous speech of a Turkish boy and his mother was video recorded weekly between the ages of 20 and 22 months by his mother during day-time activities such as play, meals and leisure time. Then, it was studied to identify the frequency and the form as directed to the child. The results were compared to understand how the frequency and form of questions changed over three months. While *yes/no* questions and *wh*-pronominals with the copula and with semantically general verbs were the question forms found substantially in child-directed speech, the child only produced intonation questions. It was revealed that there is a close relationship between input and acquisition at the sentence and verb level in the present data. This study contributes to language acquisition studies by enhancing our knowledge of how Turkish children acquire questions.

Keywords: child language, child-directed speech, Turkish language acquisition, order of questions, development of questions

Çocuk Dili ve Çocuğa Yönelik Dilde Türkçe Soruların Gelişimi

ÖZ: Çocuğa yöneltilen sorular, anne-çocuk etkileşiminde önemli bir role sahiptir (Ninio, 1980; Rowe, Leech & Cabrera, 2017). Bu makale, çocuklara yönelik konuşmanın, bir Türk çocuğunun soru edinimi üzerindeki olası etkilerini ve gidişatını incelemektedir. Bu çalışmada, 20-22 ay yaşları arasındaki bir Türk erkek çocuğu ile annesinin spontan konuşmaları, oyun, yemek ve boş zaman gibi günlük aktiviteler sırasında annesi tarafından haftalık

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olarak videoya kaydedilmiştir. Daha sonra çocuğa yönelik soruların hem sıklığı hem de tarzı tespit edilmeye çalışılmış ve sonuçlar, üç aylık süre zarfında soru sıklığı ve tarzının nasıl değiştiğini kayıt altına almıştır. Çalışmadaki çocuğa yönelik iletişimde evet/hayır soruları ve isim ve semantik olarak genel fiillerle birlikte soru zamirleri en sık kullanılırken, çocuk yalnızca tonlama yaparak soru üretti. Mevcut verilerde cümle ve fiil düzeyinde girdi ve edinim arasında yakın bir ilişki olduğu saptandı. Bu çalışma, Türk çocuklarının soruları nasıl edindiklerine dair bilgimizi artırarak dil edinimi çalışmalarına katkı sağlamaktadır.

Anahtar Sözcükler: çocuk dili, çocuğa yöneltilen dil, Türkçe dil edinimi, soru sırası, soru gelişimi

1 Introduction

Children spend most of their time asking questions as they explore the world. These questions and their forms change during a child's physical, cognitive and social development. The order of acquisition has received attention from scholars who have studied the topic from different perspectives. The taxonomy introduced by Bloom, Merkin and Wootten (1982) suggests that children acquire some question words earlier than others for various reasons, such as the complexity of the question and response. According to this taxonomy, children initially start acquiring what, where and who (*wh*-pronominals), which is followed by when, how, and why (*wh*-sentential), and finally, they acquire and use which and whose (*wh*-adjectivals). As the last two groups require more complex answers than the first group, such as a reason, manner, or time, they are expected to be acquired later in the acquisition order. Bloom et al. (1982) also develop the taxonomy by highlighting the syntactic complexity of the wh-questions. Different verbs are frequently used in each group. While the *wh-pronominals* are primarily used with the copula (i.e. where is the cat?) or general verbs (i.e. where is the cat going?), the *wh*-sententials (why is the cat licking his paws?) are used with descriptive verbs. Finally, *wh*-adjectivals (whose cat yawned and scratched his leg?) are used with more complex verbs. Türkay and Akyol (2012) and Rowland, Pine, Lieven and Theakston (2003) also highlighted that the verb used with the question in CDS can help or challenge the child's comprehension and hence directly influence his/her speech production.

These acquisition theories all operate under the premise that there exists a limited set of semantically general verbs, sometimes known as "light verbs" (e.g. *go* (git-), *do* (yap-), *play* (oyna-), *put* (koy-), *get* (al-) and *come* (gel-)), which are in some way semantically privileged (Bloom, 1991; Clark, 1978; Pinker, 1989; Goldberg, 1998; Ninio, 1999). Many researchers believe these verbs are essential to understanding because they help humans describe their experiences. Clark's (1978) work on early verb use is mirrored in the belief that children

acquire semantically general verbs early because they encode highly general meanings. She claims that children substitute more general verbs with more specific ones they have not yet learned. For example, they often acquire the general verb to eat before they acquire to gulp. Clark (1978) states that many uses of these verbs are replaced as children get older. General purpose verbs continue to be used but become proportionally less frequent as children acquire more words for specific categories of actions. In other words, many researchers assume that semantically general verbs have a privileged status in acquisition. For this study, Theakston et al.'s (2004) list of semantically general verbs provided by Pinker (1999) and Ninio (1999) is studied and selected to be used. Questions directed by the parents are considered to be vital for high-quality parent-child interactions, especially in toddler years (Ninio, 1980; Rowe et al., 2017) since they hold children's attention (Robinson et al., 2009), help comprehension (Weinstein et al., 2017), promote critical thinking and increase children's language use (Honig & Wittmer, 1981; Mol et al., 2009). The verbal and nonverbal responses parents get to their questions help parents evaluate the child's current knowledge. Thus, they can fine-tune their language use accordingly to manage successful communication (Bailey et al., 2013). Especially between 18-24 months, children rapidly increase in verbal abilities (vocabulary spurt) (Carey, 1978; Nelson, 1973). Therefore, parental input gained more importance during these years (Iverson et al., 1999). The contribution of the parent's input and frequency should be considered. Some studies (Clancy, 1989; Rowland et al., 2003) proved that caregiver speech dramatically affects a child's question acquisition. Recently, more studies have focused on the relationship between children's language production and caregiver speech (Naigles & Hoff-Ginsberg, 1998; Türkay-Altınkamış, 2005). Some studies (Forner, 1977; Savic, 1975) revealed a positive connection between mothers' use of question forms directed to children and children's order of *wh*-question production. In this respect, these studies claim that children's question acquisition is positively affected if they are exposed to specific forms at specific stages at which their cognitive development functions at its best. In other words, the input children are exposed to should match their immediate cognitive development. If these forms are accessible to children from their linguistic repertoire, they can be processed, understood and produced successfully.

Acquiring *wh*-question formation is an arduous and lengthy process since it requires the integration of several pieces of knowledge. Several studies conducted in English proved that children aged four or younger make errors such as not using an auxiliary/untensing (e.g. When you drive?), misplacing it in the sentence (e.g. When you can drive?), or using double-tense (e.g. When can he drives?) in producing *wh*-questions (Bloom et al., 1982; 1984; Klee, 1985; Klima & Bellugi, 1966; Labov & Labov, 1978; Stromswold, 1990). However, children do not make errors in positioning the wh-word; they always place it at

the front. Errors such as "Can you drive when?" are unexpected (Stromswold, 1990). Rowland and Pine (2000) suggest that errors become less common as they are frequently used in the input. Even if children start using *wh*-questions (e.g. What's that?, Where daddy go?) as early as 1 year old as formula-like *wh*-questions they do not reflect being acquired by the child, it is impossible to say that they have fully acquired these forms. Input is crucial in mastering questions, but how the child uses input remains a mystery across language acquisition.

2 Literature Review

2.1 Turkish Question Formation

Acquisition of Turkish question formation is considered relatively more straightforward than the acquisition of English since speakers do not have to deal with inversion of the subject. Turkish questions can be formed by;

(1) using a wh- phrase
Otobüs durağı ***nerede****?*
"Where is the bus stop?"

The insertion of a *wh*-question word forms *wh-q*uestions into the sentence (Göksel & Kerslake, 2005). The wh- phrases in Turkish are the following:

Table 1. Wh-phrases in Turkish

Wh-questions in Turkish	*Wh*-question*s* in English
Kim	Who
Ne	What
Hangi	Which
Nerede	Where
Hani	
Ne zaman	When
Kaç	How many/what time
Ne Kadar	How much
Nasıl	How
Niye /Neden/Niçin	Why

Adapted from Göksel & Kerslake's definitions of wh-phrases (2005, p. 258).

Wh-words can be inflected just like nouns (Aksu-Koc & Slobin, 1985) following the order: stem + (plural) + (possessive) + (case) as seen in Appendix 1.

(2) insertion of the question particle *mI* and personal endin gif available (*yes/no* questions or alternative questions)
Bahçeye ağaç dikiyor ***mu****yuz?* (*yes/no* question)
"Are we planting trees in the garden?"

The literature review below presents a review of studies examining parental input and its effect on question acquisition.

2.2 Recent Studies

Children develop their language skills by interacting with more knowledgeable adults around them (Rogoff, 1993; Vygotsky, 1978). Parents contribute to their child's language development by asking questions (Yu, Bonawitz, & Shafto, 2019). Research examining the effect of interaction between parent and child on language acquisition (Cengiz & Çakır, 2016; Choi, 2000; Fernald & Morikawa, 1993; Tardif et al., 1997) and the acquisition of *wh*-questions in various languages (Ekmekçi, 1990; Rowland & Pine, 2000; Sofu, 1998; Türkay-Altınkamış & Sofu & Uçar, 2010) show that parents direct questions to their children even when they are too young to answer (Bornstein et al., 1992). Although parental input is critical, most studies focus primarily on child language, which is only one side of the interaction. Thus, only a few studies focused on CDS's effect on acquiring questions (Rowland et al., 2003; Türkay & Akyol, 2012; Ünlütabak et al., 2022).

The studies also showed that the acquisition order of questions was studied (Ekmekçi, 1990; Rowland et al., 2003, 2005; Ünlütabak et al., 2012). Studies revealed that parents ask simple labelling questions (What is this?) and *yes/no* questions to direct children's attention and elicit short responses. When children are 20 to 32 months of age, the complexity of parents' questions increases. They start forming *wh*-questions with more grammatically complex sentences and ask *how* and *why* questions targeting more abstract information in interaction (Ekmekçi, 1990; Rowland et al., 2003; 2005; Ünlütabak et al., 2012). The same trajectory from what questions to more complicated *wh*-questions is also traced in children's acquisition of *wh*-questions, which clearly shows the role of input in children's language communicative development (Rowland et al., 2003). Parents' question-asking behaviour and the question types directed are highly connected with children's language production. For maintaining successful communication, the function of questions was also explored, and it was found that children use questions for various reasons, such as clarification and requesting from a very early age (Sofu, 1998). Another study examined the relationship between the socioeconomic level of parents and the range of questions they ask during play and book reading and found similarities at the remembering level. It revealed that parents of high socioeconomic status asked

more open-ended questions at remember and understand levels (Cengiz & Çakır, 2016).

Some studies have contributed to the field of drawing comparisons of parental input cross-linguistically (Choi, 2000; Fernald & Morikawa, 1993; Tardif et al., 1997; Tribushinina et al., 2013), which revealed the influence of cultural differences in CDS between languages. Furthermore, some studies proved that not all parents begin asking questions with "What's this?" (Heath, 1983; Schieffelin & Eisenberg, 1984). In other words, the differences in the exposure/input can cause differences in the distribution of verbs, adjectives and nouns in language acquisition (Choi, 2000; Fernald & Morikawa, 1993; Sofu & Türkay-Altınkamış, 2005; Tardif et al.,1997; Tribushinina et al., 2013).

Table 2. Recent studies about question acquisition and parental input

Study	The focus	Participants	Language	Results
Ekmekçi (1990)	*Wh*-question acquisition	15- 27 months old children	Turkish	what "ne" was used at the beginning of I. MLU period and where "nerede", who "kim" and how many "kaç tane" were used at the end of I. MLU period. At II. MLU period, how much "ne kadar", to whom "kime", for whom "kimin için" were produced and why "niçin" and which "hangisi" were used IV. MLU period.
Fernald & Morikawa (1993)	Universal features and cultural variation in maternal speech	30 American & 30 Japanese infants (6, 12, and 19 months) and their mothers	English, Japanese	American mothers label objects more frequently and consistently than Japanese mothers, while Japanese mothers use objects to engage

				infants in social routines more often than American mothers.
Tardif et al. (1997)	Effect of the input on children's early vocabularies in terms of nouns and verbs	six 2;0 English-, six 1;11 Italian-, ten 1;10 Mandarin-speaking children and their caregivers	Italian, Mandarin, English	Consistent with the children's spontaneous production data. English-speaking caregivers emphasised nouns over verbs, Mandarin-speaking caregivers emphasised verbs over nouns and Italian-speaking caregivers were more equivocal.
Sofu (1998)	Functions of *wh*-words	Four girls from the age of 2;0 to 3;6	Turkish	Turkish children used *wh*-phrases very early, which had many functions, such as clarification, requesting, and confirmation.
Choi (2000)	Structural and pragmatic aspects of caregiver input	20 mothers with their 1;6 year-old children while book-reading and toy-play	English, Korean	English-speaking mothers use more nouns than verbs, focusing more on objects than actions. In Contrastingly, Korean-speaking mothers provide a balanced treatment of nouns and verbs and

				focus on objects and actions similarly.
Rowland & Pine (2000)	An analysis of correct *wh*-question production and subject-auxiliary inversion errors in one child's early *wh*-question data	One child from the age of 2;3 to 4;10	English	Children were able to produce *wh*-questions correctly by learning high-frequency markers.
Rowland et al. (2003)	Effect of complexity and input frequency on *wh*-question acquisition.	12 children from 2;7 to 2;11	English	Acquisition order of *wh*-questions could be predicted successfully from the frequency with which particular *wh*-words and verbs occurred in the children's input. The syntactic and semantic complexity did not reliably predict the acquisition.
Rowland et al. (2005)	Correct use and errors in young children's *wh*-questions to test some of the predictions of current theories of acquisition	12 children from 2;7 to 2;11	English	*Wh*-questions with copula, auxiliary is and auxiliary has may attract higher correct use rates than questions with copula, auxiliary are and auxiliary have.

Sofu & Türkay (2005)	Effects of caregiver speech on children's productive vocabulary	Five female 1;0 year-old children and their caregivers	Turkish	Verbs appeared more in all mothers' talks to their children at different MLU levels. Children's use of nouns or verbs differed by their MLU levels.
Türkay-Altınkamış et al. (2010)	Acquisition of *wh*-words longitudinally	Five female 1;0 year-old children and their caregivers	Turkish	Turkish children acquire *wh-words* earlier than English children but in the same order with Bloom's (1982) taxonomy.
Türkay & Akyol (2012)	Distribution of wh-questions, syntactic trajectory of mothers' speech directed to children	4 girls aged 1;04-2;03 & their mothers.	Turkish	Turkish mothers use *wh*-pronominals significantly more than wh-sententials and adjectivals. This is entirely identical to Turkish children's wh-question acquisition.
Tribushinina et al. (2013)	Adjectives in child speech (CS) and CDS	16 children (16–36 months)	Croatian, Dutch, French, German, Italian, Lithuanian, Russian, Turkish	A strong relation between contrast use in CS and CDS.

Cengiz & Cakir (2016)	Turkish paternal language use including their use of question types and their socioeconomic status	10 fathers and their 5-year old children	Turkish	High and low socioeconomic status (SES) fathers produced the most utterances at the remember level. Both groups produced no utterance at the analyse level.
Ünlütabak et al. (2022)	The effect of parental input on questions and pointing gestures directed to toddlers	30 parents and their toddlers SD age = 1.55	Turkish	Parents' label questions with pointing were positively associated with toddlers' elicited speech, and parents' label and description questions were positively associated with toddlers' elicited pointing.

Focusing on the studies conducted in the Turkish language, it can be argued that studies conducted on Turkish-speaking children-parent interactions are insufficient (Cengiz & Çakır, 2016; Ekmekçi, 1990; Sofu, 1998; Sofu & Türkay, 2005; Türkay-Altınkamış et al., 2010; Türkay & Akyol, 2012; Ünlütabak et al., 2022). Ekmekçi (1990) examined *wh*-question word acquisition by matching the question words with a child's mean length of utterance (MLU), which is a measure of linguistic productivity in children obtained by calculating morphemes in the number of utterances (Ekmekçi, 1990). The study examined a child's language acquisition between his 15-month and 27-month-old period and found that *nerede* (where), *kim* (who) and *kaç tane* (how many) are acquired after *ne* (what) in the same MLU period. However, *ne kadar* (how much), *kime* (who in object position, to whom) and *kim için* (for whom) are produced later on in the second MLU period. Finally, *niçin* and *hangisi* are the question words acquired in the later MLU period.

Sofu (1998) investigated the functions of *wh*- words in Turkish-speaking children-parent interaction (e.g. clarification, requesting and confirmation) and

revealed that Turkish children produce *wh*- words relatively earlier than English-speaking children. Türkay et al. (2010) also validated Sofu's study by confirming this in a study by analysing 9 Turkish-speaking children's interaction data longitudinally. They added that children's *wh*-question acquisition parallels Bloom's taxonomy (1982). Türkay and Akyol (2012) also examined how parents' input affects children's comprehension and production of question words. Cengiz and Çakır (2016) explored the relationship between paternal language use and their socioeconomic status with ten fathers and their five-year-old children. They found that the questions asked by fathers show similarities at the remember level, disregarding their socioeconomic level.

A very recent study by Ünlütabak et al. (2022) examined children's verbal and nonverbal responses to questions directed to the child by their parents. Thirty parents and their toddlers aged around 12-24 months participated in the study. It revealed that parents asked more label questions to their 16- to 21-month-old toddlers than other types of questions (description and self-answered) when interacting with their toddlers. Toddlers responded to parents' questions by speech and/or gestures. It was revealed that parents' question-asking behaviour and toddlers' use of verbal and non-verbal communicative interactions in the conversation are directly parallel with each other. It was found that parents do not usually use gestures while asking a question; however, when they did, they elicited more speech from their toddlers.

The studies reviewed here will be considered the point of departure. In light of these discussions, the present study aims to investigate the frequency and form of *wh*-words in the speech of mothers and children in parent-child interactions. The parent's and children's use of these forms will also be compared with the input frequency as the child grows up.

2.3 Research Question

In this study, we build upon and extend the existing literature by examining Turkish CDS's probable effects and trajectory on the acquisition of *wh*-words. In response to the literature, this study was framed according to the research questions given below:

- What is the trajectory in Turkish CS and CDS regarding the distribution of questions (Intonation, *yes/no* and *wh*-questions) as the child ages?

3 Methodology

3.1 Participants

The data involved the records of interactions between a mother and a toddler. The mother regularly took the recordings via a cell phone in the family flat. The

toddler is accustomed to having mobile phones, so it did not distract the child during interaction. The parents are both native Turkish speakers and highly educated; the father is a researcher at a Turkish public university, and the mother is an English language teacher at a public high school. Parents were asked to video record their child in his natural environment and at his own pace, as parents can interact more effectively with their child than a stranger and the child can feel more comfortable asking questions directly to her/his parent than a visitor.

The video-recorded data were dyadic interactions between the mother and the child and lasted about 30-45 minutes every week. Each video was recorded successively on the same day and lasted about 8-10 minutes each. Having data in the form of a video allowed us to analyse paralinguistic features as well. The researcher also visited the family to take notes on the nature and conditions of interactions. During the recordings, the parents were asked to continue their daily lives. As the family's only child, he was cared for by his grandmother when his parents were at work. Overall, no structured activity was planned in advance. The data for this study were based on a longitudinal database by Inci-Kavak (2019) as part of more extensive data. The data collection process took around 12 weeks and was kept as natural and true-to-life as possible. Each video-recorded session was between 30-45 minutes. Considering that children start asking questions as soon as they start speaking and their usage increases around two and a half or three years of age (Tyack & Ingram, 1976; Bloom et al., 1982), we have recorded the child around this age to be able to observe the emergence of the questions (1;8-1;10). The data was transferred into written transcripts describing relevant non-linguistic context (child's and adult's actions accompanying speech) and finally divided into three sets by the child's age as 1;8, 1;9 and 1;10.

3.2 Coding

The data were collected longitudinally and were expected to provide exhaustive material on acquiring questions in the interaction. Three trained researchers, who are PhD holders in the field of English Language Teaching, native speakers of Turkish, and have experience publishing articles on Turkish language acquisition, transcribed and coded the transcriptions using the coding criteria below.

The data for this study does not include every form of question words. A brief explanation of transcriptions' coding criteria is provided below:

(3) *Coding criteria of the transcriptions*
   (a) Utterances, unintelligible exclamations and sentence fragments were removed in the coding.
   (b) Questions used for grabbing attention or expressing surprise or disbelief such as "*Park ettiğim araba ben içinden çıkınca geri gelmesin mi?"* (Would you believe it, the car that I had parked went back after I left) (rhetorical question) were not counted as they do not direct the speaker to action.
   (c) Rote-learned questions with fixed expressions (e.g. *bu ne?* What's this?) were also removed.
   (d) *Wh-questions* in frozen utterances such as songs or rhymes (*Abi parmak abi parmak nerdesin?* Brother finger brother finger where are you?) were not considered since they were not produced intentionally.
   (e) Partially intelligible or incomplete utterances or utterances with parts marked as unclear or questionable quoted were removed.
   (f) Repetitions were counted only once if they met the criteria mentioned above.

Apart from the ones that do not meet the coding criteria above, the data included all varieties of question forms and the verbs (auxiliary, general, or descriptive) used.

3.3 Data Analysis

The questions in the mother-child interaction were analysed. All spontaneous questions directed to and produced by the child were extracted from their speech across all transcripts. As a case-inflected language, Turkish questions were also all case-inflected, so they were counted as tokens. The analysis started with the frequency count of the number of times in CS and CDS. After the frequency was revealed, the data was analysed to reveal the overall trajectory of each group of questions (rising intonation; direct *yes/no* questions- nominal and verbal; *wh*-pronominals-*ne* (what), *kim* (who) *nerede* (where) *hani* (where); *wh*-sententials *ne zaman* (when), *nasıl* (how), *neden/niçin* (why) and *wh*-adjectivals- *hangi* (which), *kimin* (whose), *ne renk* (what colour), *kaç tane* (how many), *ne kadar* (how much) (Bloom et al., 1982; Rowland et al., 2003) together with a syntactical analysis. The form of the questions and the verb choice were studied in each sentence by considering the characteristics of the language. Each classified question was meticulously studied to decide whether it was used as a predicate or with a general verb. However, there were some limitations to working on naturalistic data, which was full of incomplete, interrupted, or inaccurate sentences/phrases. The child did not respond to all the questions directed to him, but it was hard to understand whether it was due to a lack of comprehension or

attention. The parents were informed about the study's aims and stages and assured their child's data would be kept confidential and anonymous.

3.4 Reliability

The process of data collection and coding was carried out simultaneously. Hatch considers coding as a cyclical process because codes are not "rigid regularities with sharp boundaries" (2002, p.155). Saldana (2015) claims that coding should be seen as a cyclical process and informs researchers how it should be adequately implemented. He suggests that the groups should be continuously reidentified as new codes emerge during coding (2015). The intercoder reliability was calculated using Miles and Huberman's (1994) formula: reliability = agreement/agreement + disagreement. If three coders reached at least 90% agreement, the desired reliability level (0.97) was achieved (Miles & Huberman, 1994). When the team members could not negotiate, the sample was discarded. The sample was included if the differences were resolved with two members' agreement (Creswell, 2012; Janesick, 2004; Lincoln & Guba, 1985; Merriam, 1998; Spillett, 2003; Spall, 1998). The transcription was also emailed for parents to check. During this ongoing data analysis process, the researchers had the opportunity for member-checking and peer debriefing from time to time before coming to a decision (Creswell, 2012; Merriam, 1998). All of these techniques used for the qualitative data improved the trustworthiness and credibility of this study (Creswell, 2012; Janesick, 2004; Lincoln & Guba, 1985; Spall, 1998; Spillett, 2003). Briefly, data analysis continues until all groups are clarified and classified appropriately. The traditional paper-and-pencil method was used as it helps ease the comparing and contrasting process (Bazeley, 2007).

4 Results

This study adopted a systematic and in-depth analysis conducted in three sets (1;8, 1;9 and 1;10).

4.1 Child-directed Speech

4.1.1 Question use in child-directed speech

As illustrated in Table 3, nearly half of the CDS is in the form of questions in the first two sets. In the first two sets, the amount of question production stays the same, but it increases by about 10% in the last set. The mother tries to elicit information about the activities from the child. In the final set, 57,5% of the mother's production becomes questions.

Table 3. The frequency of questions used by the mother

Age	Total Utterance	Q. Use	Per cent
1;8	759	379	%49,5
1;9	856	413	%48,2
1;10	898	517	%57,5

Table 4. The distribution of questions used by the mother

Age	Total *Wh-Q*.s	Intonation Q.s	*Yes/no* Q.s		*Wh*-Q.s	
			Nominal	Verbal	Nominal	Verbal
1; 8	368	25	24	34	70	82
1; 9	392	30	21	43	106	56
1;10	483	14	33	50	77	104

Table 4 demonstrates that the exposure to questions increases in the third slot. The mother does not prefer asking questions by rising intonation, and the use of intonation questions by the mother sharply drop in the last set. In all *yes/no* questions, verbal questions always outweigh nominal questions and consistently rise throughout the periods. On the other hand, in *wh*-questions, *wh*-verbal questions are always greater than nominal ones in 1;8 and 1;10 age groups. However, the trajectory of *verbal wh*-questions differs in the 1;9 slot, as *nominal wh*-questions double the verbal ones.

Table 5. The frequency of verbal yes/no questions used by the mother

Age	Total Q. Use	Verbal *Yes/no* Q. Use	Per cent
1;8	379	153	40%
1;9	413	155	38%
1;10	517	236	46%

Table 6. The distribution of wh-questions used by the mother

Age	Total *Wh*-Q.s	what	where	who	when	how	why	which
1; 8	152	94	24	20	0	9	5	0
1; 9	162	103	21	12	3	11	4	8
1;10	183	99	33	14	0	12	19	6

As revealed in Tables 5 and 6, verbal *yes/no* questions are dominant (41% average) in all sets, increasing considerably in the last slot (46%). "What" questions are the second most frequent group in all sets (24,9%). A quarter of the child-directed question data is made of what questions. The number of nominal *yes/no* questions aligns with this trend, although slight changes are observed. "Where" questions are produced more often than the other *wh*-questions except what, but they are all relatively used less, and their number stays nearly the same in the three-month research period.

The dominance in verbal questions (*yes/no* and *wh*-questions) can account for the mother's general trajectory of verb use in her total utterances, which can also be tracked in the child's verb production. Table 7 shows the symmetry between the ratio of rise in verb use by the mother (first lines) and the child (second lines). The difference disappears gradually as the child linguistically improves. In the final set, the gap between the mother's and the child's verb use reduces dramatically, and the child produces more verbs than his mother.

Table 7. The comparison of the mother and child verb use (Inci-Kavak & Kavak, 2021)

Sets	Age	Total Utterance	Verb Use	Per cent
Set 1	1;8	759	412	54% (mother)
		381	56	16% (child)
Set 2	1;9	856	483	56%
		494	96	19%
Set 3	1;10	898	575	64%
		676	295	44%

It can be said that the mother fine-tunes her input to the child's cognitive level (Cross, 1977; Newport et al., 1977; Wanner & Gleitman, 1982) and supports his understanding with a variety of question sets. In this way, she can grasp what kind of interactions the child can hold (e.g. labelling items here and now, the activities that the items can do, why things happen, etc.). The child's responses prove that he can respond appropriately and meaningfully to most of the questions directed to him during three months (See sample extracts). Therefore,

the extracts show that he can comprehend and answer the questions produced in these different forms. However, he cannot cognitively produce them yet, which affects the mother's attempt to introduce the different forms. In other words, fine-tuning the interactions is directly controlled by the child's conceptual level, so the order in which question forms can be understood and introduced is affected by the child's current cognitive status.

4.1.2 Negative Questions

The mother also uses negative questions, and the amount of negative questions increases as the child ages. However, not all types of question forms increase at the same level. While some are never produced by the mother, some (such as verbal *yes/no* questions) grow gradually in each slot, as Table 8 exhibits.

Table 8. The distribution of negative questions used by the mother

Age	Total Q.s	Total Neg. Q.s	Intonation Q.s	*Yes/no* Q.s		*Wh*-Q.s						
				Nom.	Ver.	what	where	who	when	how	why	which
1; 8	379	4	0	3	1	1	0	0	0	0	0	0
1; 9	413	8	0	0	8	0	0	0	0	0	0	0
1;10	517	21	0	1	17	0	0	0	0	0	2	0

Table 9 demonstrates the frequency of questions in CS and CDS. The sample extracts evidence that as the child mentally and linguistically develops, the mother expands the frequency and variety of questions by adapting her/his speech to the child's cognitive capacity. However, the child's question production is not immediately and directly affected by the amount of rise and richness of the input, and thus, there is no recorded improvement in the child's question production.

Table 9. The comparison of the mother and child question use

Age	Total Utterance	Q. Use	Per cent
1;8	759	379	49,5% (mother)
	381	8	2,0% (child)
1;9	856	413	48,2%
	494	11	2,2%
1;10	898	517	57,5%
	676	15	2,2%

4.1.3 Samples from child-directed questions

(4) Extract 1 (1;8)

1	MOT: *adı ne onun?*	"what is it called? (pointing a car)
2	CHI: *düt düüt*	"düt düüt (he makes the sound of the car)
3	MOT: *nereye gidiyorsun?*	"where are you going?
4	CHI: *okıla (okula)*	"to school
5	MOT: *okula mı gidiyorsun?*	"are you going to school?
6	MOT: *napıyosun okulda?*	"what are you doing at school?
7	CHI: (he is showing a notebook and a pencil.)	
8	MOT: *yazı mı yazcaksın?*	"are you going to write?
9	CHI: (he nods)	

Extract 1 shows us a sample from when the child was only 20 months old. The child rides a toy car in the living room and talks to his mother. The samples used here are clearly representative of mother-child interaction, and they show how questions are frequently used in their daily interaction in variety and in different forms (e.g. *ne* (what), *nereye* (where), *-mI* (predicate), *n'apıyorsun* (what)). Even at the first slot, the child can comprehend and successfully answer all the questions directed to him. He uses some paralinguistic strategies to convey the meaning, such as making onomatopoeic sounds (*düt düüt* for referring to the car), role-playing (pretending to write instead of producing the word), pointing (showing the notebook and pencil), etc. which help him to get the meaning across and prevents a breakdown in the communication.

(5) Extract 2 (1;9)

1	MOT: *bak otobüs te geçiyor*	"Look, a bus is passing by"
2	MOT: *ne renk otobüs?*	"what colour is the bus?"
3	CHI: red (tr: kırmızı)	"red"
4	MOT: yes (tr: evet)	"yes"
5	MOT: *kediler nasıl yapıyor oğlum?*	"how do cats sound?"
6	CHI: *miyav miyav*	"meow meow"

7	MOT: *eveet*	"yees"
8	MOT: *köpekler?*	"dogs?"
9	CHI: *hav*	"hav"
10	MOT: *hav*	"hav"
11	MOT: *humm*	"humm"
12	MOT: *başka?*	"what else?"
13	MOT: *başka?*	"what else?"
14	MOT: *at nasıl yapıyor?*	"how do horses sound?"
15	CHI: *neee*	"neey (he pretends the sound of a horse)"
16	MOT: *eveet*	"yes"

Extract 2 was taken from the second slot (1;9). The mother and the child are in the car waiting for his daddy to arrive, and the child looks outside from the car window and talks about their surroundings. In this slot, we observe that the mother uses *wh*-sentential *nasıl* (how) and *wh*-adjectivals *ne renk* (what colour) and the questions were successfully comprehended and responded to by the child at 21 months old. There is no sign of him producing these in the data, but he proves that he understands these structures and answers them successfully, but he is not ready to produce them yet.

(6) Extract 3 (1;10)

1.	CHI: *a aah*	"a aah (a discourse marker to show suprise)
2.	MOT: *noldu?*	"what happened?"
3.	CHI: *gitti*	"it's gone"
4.	MOT: *ney gitti?*	" what's gone?"
5.	CHI: *altına gitti*	"it's gone under (the sofa)"
6.	MOT: *altına ney gitti?*	"what's gone under (the sofa)?"
7.	CHI: *siya(h) araba aşşaya gitti*	"the black car's gone underneath"

In Extract 3, the child is playing in the living room with a toy car, and the car goes under the sofa by accident. He asks his mother for help. When asked about her questioning style, the mother said she elicits more information if she asks questions broken into pieces. She clarified that she does this tactically but unconsciously, as she does not plan this while discussing here-and-now objects and situations. She stated that the answers or silences she gets as a response decide the next interactional move. She highlighted that her main aim is maintaining successful communication without breakdowns. The mother does not prefer asking a complicated question at one turn; she prefers cutting it into pieces and knows she has more chances of getting a clear answer. She tactically cuts the long answer into relatively shorter but grammatically, semantically and syntactically-meaningful pieces. As reflected in this extract, the mother makes the child's answer easier. The child effectively follows the pattern of producing

one element at a time in each line. First, he produces only the verb and adds place *altına* (under) preposition to clarify the meaning. Then, his mother asks him what went under (the sofa), and he clarifies further with *siyah araba* (black car). Therefore, if all lines are considered in this extract, it is apparent that he answers all the questions meaningfully.

4.2 Child Speech

4.2.1 Question use in child speech

Table 9 reveals the number of questions used by the child. In sets 1, 2 and 3, his production of questions stays stagnant and does not show any drastic changes. Although a regular rise in the child's general speech production is seen between the ages of 1;9 and 1;10 (from 33% to 43%), it does not reflect the amount of question production. As a result, the percentage of the child's use of questions stays nearly the same in all three slots.

Table 10. The frequency of questions produced by the child

Age	Total Utterance	Q. Use	Per cent
1;8	381	8	2,0%
1;9	494	11	2,2%
1;10	676	15	2,2%

As can be seen in Table 10, the child asked a total of 34 questions mostly by playing with his voice, which increased slightly in each slot in the period from 20 to 22 months of age (3 months) (Please see Appendix 2 for complete child-produced questions). He produced only two *wh*-questions in three months. In set 2, the child used "*kim*" who question word in "*kim o*?" "who is it?" after hearing a bang at the door. However, this phrase could be memorised from the riddle "*tık tık tık kim o, ben kapıcı ibo*" as the child and the parent were traced playing this in the data. In set 3, the child produced "*nerde*" where in "*ayla yıldız nerdesin*?" "crescent and star where are you?" after seeing a Turkish flag in the street. As these are the only representatives of *kim* and *nerde* question words, they could be memorised as a chunk from a song, a riddle or a poem. For the second example, there were no more traces that the child heard or produced this question, and the parents confirmed that he could have heard it from his grandparents, TV or a guest.

Two major analyses were performed on this corpus of questions: recording the frequencies of questions and identifying different forms of the questions produced by the child, all of which were discussed and confirmed by the mother.

Table 11. The distribution of questions used by the child

Age	Intonation Q.s	*Yes/no* Q.s	*Wh*-Q.s	Total
1;8	8	0	0	8
1;9	10	0	1	11
1;10	14	0	1	15

As can be seen in Table 11, the child only manages to ask questions by playing with his voice, which increases slightly in each slot.

4.2.2 Samples from child questions

(7) Extract 4 (1;8)

1	CHI: *anne otur*	"mummy sit"
2	MOT: *anne oraya oturamaz bebeğim*	"mummy can't sit there, baby"
3	CHI: *Fata? /fʌˈtə/? ↗*	"Fata? (Can Fata sit there?)"
4	MOT: *Fata oturabilir*	"Fata can sit"
5	CHI: *baba? / ˈbaˈba /?↗*	"Daddy? (Can daddy sit there?)"
6	MOT: *baba da oturamaz*	"no, daddy can't sit there, too."

Extract 4 shows us a sample from when the child was only 20 months old. As a representative of the intonation question, the child manages to ask the questions without worrying about all the components of the verbal *yes/no* question. The mental burden of asking "*Fata oraya oturabilir mi?*" (Can Fata sit there?) is reduced by only producing the keyword economically by rising intonation, which is very practical, and by doing so, he manages to continue the interaction and achieves successful communication. He realises that this method works perfectly well, so he uses this in the successive lines too. This extract is an example of how a child can strategically find ways of asking questions by simplifying and modifying his speech to get the message across and hold a successful interaction.

4.3 Variety Sets in Questions

In this data set, there are several "clusters of sequential sentences" (Broen, 1972, p. 29) in which the form keeps changing in terms of "lexical substitution and rephrasing, addition and deletion of specific referential terms, and reordering of constituents" (Küntay & Slobin, 2002, p. 6) but "the meaning remains constant" (Snow, 1972, p. 553). In other words, the mother maintains the conversation purposefully until she gets the message across successfully. Variety sets are ubiquitous in CDS in different structures (see Inci-Kavak, 2018, 2019 for negation samples and Inci-Kavak & Kavak, 2021 for verb samples) in question form as well. The extract below represents how the mother simplifies and

modifies her speech to adapt the conversation level to the child's linguistic abilities until they can communicate effectively.

In this extract, the child is exposed to the different forms of the same verb *ye-* (to eat) in positive and negative questions. The same verb appears in five different question forms in (9).

(8)

1	MOT: *sen bugün ne yedin?*	"what did you eat today?"
2	MOT: *çorba yedin mi?*	"did you eat soup?"
3	MOT: *neden yemedin çorbayı?*	"why didn't you eat the soup?"
4	MOT: *anne sana çorba pişirdi*	"mummy cooked soup for you and
	sen yemedin mi?	"did you not eat it?"
5	MOT: *yemedin dimi?*	"you didn't eat, did you?"

(9) (a) *Ne* *ye-di-n?*
What eat-PST-2SG
"What did you eat?"

(b) *Ye-di-n* *mi?*
eat- PST-2SG QUES
"Did you eat?"

(c) *Neden* *ye-me-di-n?*
why eat-NEG-PST-2SG
"Why didn't you eat?"

(d) *Ye-me-di-n* *mi?*
eat-NEG-PST-2SG QUES
"Did you not eat?"

(e) *Ye-me-di-n* *di mi?*
eat-NEG-PST-2SG TAG QUES
"You didn't eat, did you?"

5 Discussion

The overall aim of this study was to explore the distribution of questions in Turkish CS and CDS (Intonation, *yes/no* and *wh*-questions) and to scrutinise any trajectories in Turkish CS and CDS during the child's 1;8-1;10 age period. The data shows that the child is exposed to verbal *yes/no* questions more often than other forms. Secondly, questions starting with "what" (*wh*-pronominal) with nouns and verbs are used frequently. The other *wh*-questions were not available

in CDS when the data was collected. The mother does not prefer rising intonation questions, which are the simplest way of asking questions and are overused by the child already. As the existing literature shows, children firstly learn *wh*-words (*wh*-pronominals) with the copula, then they acquire these *wh-words* with semantically general verbs and then *wh*-adjectivals (Bloom et al., 1982; Ekmekçi, 1990; Rowland et al., 2003; 2005; Türkay et al., 2010; Türkay & Akyol, 2012). The *wh-* and *yes/no* questions are used sequentially in variety sets that provide the same message in rich and varied form (İnci-Kavak & Kavak, 2021) until the child responds to what s/he is asked to do. Also, the parent's order of introduction shows parallel tendencies with the earlier studies conducted in other languages (Ervin-Tripp, 1970; Ingram, 1974; Tyack & Ingram, 1977; Cairns & Hsu, 1978; Bloom, Merken & Wooten, 1982 in English; Wode, 1974 in German; Savic, 1974 in Serbo-Croatian; Okubo, 1967 in Japanese). All the studies prove that parents start introducing questions with *wh*-pronominals. "What" and "where" questions are introduced earliest because they refer to the objects, relations, or events that are "perceivable in a sensorimotor way" (Blank & Allen, 1976). The earliest *wh*-question, "What is (it/this)?" has the function of eliciting labels. It presupposes the capacity for mental representation enabling object reference (Bates et al., 1975; Forner, 1977) and probably also the categorisation abilities underlying the naming explosion" (Gopnik & Meltzoff, 1987). The *wh*-question "where" is also introduced simultaneously with "what" and it helps the child to understand the relationship between objects and spaces by referring to the locations, objects/people and their relationship (Miller & Weissenborn, 1978). What and where questions accompany pointing out and labelling an object in the immediate context, leading to conceptual overlap (Ünlütabak et al., 2022). The present data reveals that CDS also aligns with this same global developmental composition, and thus parents ask what and where or *yes/no* questions before why, when, and how questions.

In the present data, *yes/no* questions or *wh*-pronominals with the copula and semantically general verbs were used (e.g. what is the truck driver doing? Is he going fast? Where is he going? He is going to work, isn't he?). Questions such as "what is this?" and "where is the truck?" are relatively less than "what is he doing?" or "where is he going?" (*verbal wh*-questions, 57%; *nominal wh*-questions 43%). Clancy (1989) claims that the ability to name and locate events in *wh*-questions, such as those involving present activities (e.g. *kamyon şoförü ne yapıyor?* "What is X doing?") and visible changes of location *(kamyon şöförü nereye gidiyor?* "Where is X going?"), emerge after the ability to name and locate objects. However, in our data, the parental input is richer in terms of *wh*-pronominals with verbs (e.g. What is X doing? Where is X going?) in 1;8 and 1;10 age slots (1;8, 54%; 1;10, 57%). The parental input can show differences cross-linguistically (Choi, 2000; Fernald & Morikawa, 1993; Sofu & Türkay, 2005; Türkay, Akyol, 2012; Tardif et al., 1997). The studies showed that Turkish

mothers generally ask for the action, not for the object (Altınkamış et al., 2014; Sofu & Türkay, 2005; Türkay & Akyol, 2012; Türkay & Altınkamış; 2005; Türkay et al., 2008).

The other *wh*-questions are expected to emerge later because of their relative difficulty, abstractness and heterogeneity of the underlying notions of means/manner, causality and temporality (Cairns & Hsu, 1978; Johnson, 1981; Tyack & Ingram, 1977). However, some samples with these *wh*-words in the present data produce some caveats. In the data, some of the *wh*-questions expected to be acquired later than are comprehended and answered meaningfully even at the age of 1;10, and their comprehension does not follow this taxonomy strictly. Contrary to Bloom's taxonomy, *nasıl* (how) in the Turkish data emerges earlier than expected, similar to what Clancy (1989) found in his Korean study. In the current study, *nasıl* "how" is asked, and the mother elicits a concrete demonstration and was frequently answered with *böyle* (like this) with its demonstration (e.g. M: *nasıl yapiyim kafamı?* (how do I do my head?) C: *güm yap* (do bang) (by demonstrating a bang), M: *Nasıl çizeceksin anneyi?* (How will you draw your mummy?) C: *böyle* (like this) in mother-child interactions.

Concerning production, the child mostly asked intonation questions by only stressing the word, and most of his questions were in single units. His use of verbs in questions or sentences improved from using onomatopoeic words (e.g. *düt düt yaptı* for played the horn) in the first set to general descriptive verbs (e.g. *durdurdu(m)* (I made it stop), *döktü (m)* (I poured), *çıktı* (it came off)) with here and now objects such as truck, bus, living room furniture in meaningful interactions. Such verbs are descriptive, but they are more semantically complex than some other descriptive verbs since they carry more information, can involve more restrictions on the selection of the other parts of the sentence (e.g. Subject and object), and can involve many more conditions for the appropriateness of their use (Fillmore, 1971). This development can significantly impact the parent's frequent use of verb questions in range questions.

Child question production has not emerged yet in the period this study was conducted (1;8-1;10). There can be long gaps between comprehension and production since the cognitive relationship between the mothers' introduction and the children's production timing is highly complex, personal and unexpected (Clancy, 1989). To summarise, it is hard to estimate precisely when question production emerges and how CDS affects the child's question acquisition. For a meaningful justification, the child should be observed in his later age period. Therefore, it would be erroneous to say there is a(n) (a)synchrony between the Turkish mother's and child's use of questions.

6 Conclusion

The present study has investigated the order and frequency of questions produced in the CS and CDS. The role of the mother's input in the child's early language development was primarily focused on. The study's primary purpose was to identify the Turkish mothers' and children's use of questions and identify the general trends in Turkish mothers' use of questions in their CDS. The relationship between CS and CDS is not as simple as that can be reduced to only one or two reasons. Several aspects of language come together for the child to acquire comprehension and produce questions, such as syntactic and semantic complexity (Rowland et al., 2003). Since the present study is based only on one child, it must be replicated before reaching solid and valid conclusions. Therefore, more research is needed for different age groups (e.g. 2;0 onwards) to understand whether the relationship between CS and CDS regarding the production of questions is valid for only the Turkish child and his parent in this study or other Turkish parents and children who show similar tendencies. The child's comprehension can also be studied as children comprehend earlier than they can start producing. In conclusion, a similar study can be conducted by using the interaction data in other languages, and the results can be compared cross-culturally and cross-linguistically for a more universal perspective and understanding.

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Appendices

Appendix 1

Some possible combinations of question words

Singular	Plural	English
Kim (absolute) who	*Kim-ler* who PLU	Who (subject) Who broke the window?
Kim-i (accusative) who ACC	*Kim-ler-i* who PLU ACC	Who (object) Who do you love?
Kim-in (genitive) Who POSS	*Kim-ler-in* who PLU POSS	Whose Whose jacket is that?
Kim-e (dative) who DAT	*Kim-ler-e* who PLU DAT	Who (to) Who are you giving this to?
Kim-de (locative) who LOC	*Kim-ler-de* who PLU LOC	Who (with)/where Who will you stay with?
Kim-den (ablative) Who ABL	*Kim-ler-den* Who PLU ABL	Who (from) Who do you come from?

Appendix 2

Questions produced by the child

Age	Q.s	Q. Use	Per cent
1;8	Anne (avlıyu der misin)?, anne (ağlıyor mu)?, teyze (nerde)?, fata (oturabilir mi)?, baba (oturabilir mi)?, amca (nerde)?, baba (oturuyor mu)? (x2), fata (oturuyor mu)?	8	2,0%
1;9	Baba (da kabuki var mı)?, sarı (mı)?, anne (uyudu m (nerde)?, annesi (öpücük atar mısın)? Anne ı)?, baba (çalıyor mu)?, fata (çalıyor mu)?, Sema ı)? (x2), kim o?	11	2,2%
1;10	Saltaya çizi (çizgi film) aç (-ar mısın)?, anne (söyler misin)?, bu (tekerlek mi)?, bu (ne)?, bu (var mı)?, hala (nerde)?, Gizem (nerde)?, öbürünü (öper misin)?, baba (nerde)? (x2), baba (basıyor mu)?, bu (napıyor)? (x2), bunu (alcak mısın)?, ayla yıldız nerdesin?	15	2,2%