TURKISH PRESCHOOLERS' QUESTION AND RESPONSE INTERACTIONS DURING THE EVALUATION OF THE DAY

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ABSTRACT

Research has shown that children's responses differ depending on the questions asked. These differences alter the questions that can be posed to children in an educational environment and the expectations about their possible responses. Understanding children's questions and the abstract level of their answers is key to support their development in this direction. The current study analyzed the questions that 211 five-year-old children in kindergartens and preschools in Turkey asked during the "evaluation of the day" activity and the characteristics of their responses to these questions. Language interactions occurred between children, and 268 questions and 2,574 responses were transcribed. The analysis utilized the coding scheme developed by Bay (2020) with reference to the works of Zucker et al. (2010) and Chen and Liang (2017), which delineate various levels of abstraction. Children's questions were coded according to the four abstraction levels defined and their answers were coded according to the three abstraction levels defined on the coding scheme. The results revealed that children's questions were mainly at the recall level (45.9%), seeking direct information. Their responses to the questions were mainly at the factual level (56%), reflecting the known reality. In addition, it was also found that (a) children least preferred to ask creation questions (5.2%), which were aimed at expressing their original thoughts; (b) children mostly preferred to give realistic responses to recall, inference and creation questions, and personal preference responses to preference questions; and (c) children gave creative responses to creation questions. The research findings provide a foundation for future studies on the nature of children's questions and responses in the coming years.

Keywords: Preschool, children, question, response.

INTRODUCTION

Preschool education has an important place in Turkey's educational goals, as in every country. Preschool education, provided by public schools free of charge, offers every child an equal opportunity in education. Public schools implement an eclectic program based on preschool education approaches developed and approved by the Ministry of National Education. Preschool education, which aims to support and improve children in all developmental areas, is based on 18 fundamental principles. One of these principles is that "Children's imagination, creative and critical thinking skills, behaviors of communicating and expressing their feelings

should be developed" (MoNE, 2013). Question-response interactions should be considered building blocks in achieving this principle in education. Understanding how children realize this interaction will support teachers pedagogically.

The studies on question-response interactions in the educational environment involve teacher-child interaction (e.g., Başalev & Soysal, 2021; Bay & Alisinanoğlu, 2012; Bay & Alisinanoğlu, 2013; Bay, 2020; Chen & Liang, 2017; de Rivera et al., 2005; Işıkoğlu Erdoğan & Akay, 2015; Kaya & Ahi, 2022; Kurkul et al., 2022; Mascareno et al., 2017; Massey, et al., 2008; Zucker et al., 2010; Zucker et al., 2020). However, no studies looked into how these interactions occur between children. For example, Bay and Alisinanoğlu (2012) examined teachers' questions according to Bloom's taxonomy and concluded that teachers mostly asked questions at the knowledge level, but did not provide any information about any interaction with children. In another study by Kurkul, Dwyer and Corriveau (2022), children's questions and teachers' answers were analyzed, and while it was found that children mostly asked knowledge questions, the characteristics of children's answers were not analyzed. This study examined the characteristics of question-response interaction among 211 children in 14 classrooms of 4 preschools in Turkey. To our knowledge, no such research has been conducted on this cultural structure.

Preschoolers' questions and responses

Preschoolers are curious and full of questions by nature. They seek responses to help them understand and make sense of their experiences as they learn about the world around them. Preschoolers engage in various question-and-response interactions, ranging from simple or straightforward to complex and thought-provoking ones. Children ask information-seeking questions until age 3, and they can formulate complex and cogent questions to solve problems by age 5 (Kurkul et al., 2022). For children, asking their own questions is the first step in filling knowledge gaps and solving riddles. The process of asking questions allows them to express their current understanding of a topic, grasp other ideas, and become aware of what they know and do not know. Thus, child-generated questions are essential for individual and peer assessment (Chin & Osborne, 2008). Previous studies have contributed to our understanding of preschool children's questions. For example, Lillard and Else-Quest (2006) found that preschoolers ask an average of 3.3 questions per hour during their time in classrooms, that most of the questions originated from their curiosity to explore the world and their immediate experiences, and that most were directly related to explanation or understanding. As can be seen from the study results, children display their developing understanding of cause-and-effect relationships and their interest in learning about the physical world by asking questions. It is because questions are seen as a mechanism and a powerful knowledge acquisition tool that allows children to obtain information when needed at the point of imbalance between the existing knowledge about a phenomenon or subject and their knowledge (Chouinard, 2007).

Children take control of their learning by developing the important habit of asking questions (Costa & Kallick, 2015). Children's first questions are usually the informative "what?" and "where?" questions that require simple one-word responses. On the other hand, as they develop, children typically begin to ask more "How?" or "Why?" questions that require more complex explanations from the adults around them to get an adequate response (Chouinard et al., 2007; Kurkul & Corriveau, 2018). Regarding children's responses, they give more complex responses to cognitively more challenging questions such as why and how (Chen & Liang, 2017; Massey et al., 2008; Zucker et al., 2020). Therefore, interactions through questions enable children to develop logical and systematic thinking skills (Bay &

Alisinanoğlu, 2012). Since asking questions is a fundamental element in developing skills such as reasoning, problem-solving, and critical thinking, it should be the focus of education (Zoller et al., 1997).

Teachers who ask questions to understand a child's thinking encourage the child's pursuit of knowledge rather than learning (Pelo, 2014). Teachers' questions also display their expectations about children's potential as thinkers. Reflecting on the types of questions teachers ask is a metacognitive activity that helps teachers to become more self-aware. Likening is a powerful form of learning; therefore, much of what children learn about questioning and problem-posing results from the teacher's modeling (Costa & Kallick, 2015). Children, therefore, learn to ask questions from their teachers, whom they model. The cognitive levels of teachers' questions and children's responses are similar (Bay, 2020; Chen & Liang (2017). It can be seen that qualified teacher questions are essential for the development and quality of children's questions and responses.

In preschool, asking questions that lead children to think also develops their language use (Chen & Liang, 2017; Zucker et al., 2010) because they tend to give longer answers to such questions (de Rivera et al., 2005). Increasing children's talk in the classroom gives them more substantial vocabulary knowledge (Hindman et al., 2019). Answering children's questions enables them to acquire vocabulary and knowledge they cannot encounter through exploration or observation (Frazier et al., 2009; Hindman et al., 2019). Therefore, this two-way question-response interaction enables children to use language more effectively. Justice, Weber, Ezell, and Bakeman (2002) showed that the complexity of children's responses to teachers' questions in kindergartens is closely related to the nature of the question. Another study by Bodrova and Leong (2007) found that preschool children's responses to questions can vary depending on the type of question and the context in which it is asked. Children are more likely to give detailed responses to open-ended questions. As shown in the studies, children should be given opportunities to be in language-rich environments with questions (Chen & Liang, 2017; Zucker et al., 2010).

Children's questions can be triggered by unknown words or inconsistencies between children's existing and new knowledge, leading to cognitive dissonance (Chin & Osborne, 2008). Teachers can scaffold and transform cognitive dissonance into learning opportunities by asking further questions based on children's responses (Zucker et al., 2020). For this, open-ended questions, the primary way for teachers and children to interact, should be considered a tool to open discussion, often surpassing the limits of knowledge and skills (Ritchhart, 2015; Zucker et al., 2020). Such questions allow children to discover and express their thoughts and develop confidence when others value their responses. In other words, the quality of questions can stimulate or inhibit children's curiosity and thinking. High-quality questions help children succeed in the expected cognitive task and also aid them in acquiring the knowledge required to develop all domains (Costa & Kallick, 2015). Therefore, teachers should tend to ask questions and know when to ask the right questions (Salmon & Barrera, 2021).

The ability to ask questions also leads to the creation of new ideas, new inventions and better solutions (Pelo, 2014; Ritchhart, 2012). The objective of questions is not for the child to learn facts or arrive at appropriate responses but to help them develop into individuals who think quickly and deeply, have big ideas and can analyze them in critical and creative ways (Pelo, 2014). However, Engel (2011) observed that children's questioning interactions decline from kindergarten to 5th grade. Such changes in knowledge-seeking are likely due to children adapting their knowledge-seeking strategies to meet the demands of formal education. Similarly, Berger (2018) found that when children's questions are not valued or supported in

educational settings, especially when teachers emphasize responses rather than questions, children's question-asking behavior shows a particular decrease around the ages of 5 or 6. Children's questioning behavior can be challenging for teachers. Still, it is a natural part of a preschool child's learning process and should be encouraged and supported (Graesser & Person, 1994).

In conclusion, the questions preschool children ask and answer in the classroom are diverse and reflect their rapidly developing thinking skills. The questions that children ask, ranging from questions about their immediate environment to questions about abstract concepts and relationships, help us learn about their developing understanding of the world around them. Understanding the characteristics of their responses allows us to assess their learning and thinking processes. Teachers can use this information to adjust their teaching strategies and create a more efficient learning environment for preschool children. In this context, there is a need to investigate preschool children's questions and responses regarding language production in different cultural settings. This study was designed to investigate how preschool children demonstrate their language interactions in question-respond interactions.

Theoretical framework

Various theories in child development explain the importance of preschool children's question-and-response interactions. These theories include Piaget's theory of cognitive development and Vygotsky's sociocultural theory. Both theories emphasize the critical role that language and social interaction play in shaping a child's intellectual and social development during the critical preschool period, Piaget's theory of cognitive development suggests that children actively construct their understanding of the world through their experiences and interactions with others. In preschool, children are in the pre-operational stage of development, where they learn to use words to express their experiences. Question-response interactions allow children to understand the world, receive feedback and improve their thinking (Piaget, 1952). Vygotsky's sociocultural theory emphasizes the role of language and social interaction in shaping a child's development. According to this theory, children learn best by interacting with more knowledgeable or skilled individuals than themselves. Question-response interactions provide children with learning experiences by creating "scaffolding" through which they receive support from others as they try to understand new concepts and ideas. Through these interactions, children can internalize new knowledge and develop their own understanding of the world (Berger & Luckmann, 1967; Vygotsky, 1978). When children begin to talk socially about shared problems or tasks, the questions encourage them and their peer group to use thinking strategies to seek responses. Questions embedded in peer groups conversations help children co-construct knowledge (Chin & Brown, 2002).

In conclusion, the importance of question-response interactions in preschool children can be explained by Piaget's cognitive development theory and Vygotsky's sociocultural theory. These theories emphasize the importance of question-response interactions in shaping children's thinking skills and social development. In this study, we tried to understand how children show this interaction and express their thinking skills.

The current study

There is a gap in the literature in Turkey on the levels of preschool children's questions and responses. It has been identified that no national study in Turkey has considered the levels of preschool children's questions and the relationship between the questions they ask and the

responses they give to these questions. This study aims to fill the gap in the literature by examining child-child language interaction through questions and responses that occur during "the evaluation of the day" activity in the daily educational flow of preschool education in Turkey. In doing so, we can understand the effect of children's questions on their responses. "The evaluation of the day" activity, a large-group activity, is a period in which the children actively participate. The questions and responses the children posed each other during this activity constitute language interaction.

The goal of the research

The goal of this study was to examine preschool children's question-answer interactions during the day's evaluation time.

Research questions

The following two research questions were addressed in this study:
(1) *What are the characteristics of preschool children's questions and responses to these questions?*
(2) *What is the distribution of preschool children's questions and responses?*
This study can extend the studies on understanding the characteristics of children's questions and responses in Turkey.

METHODOLOGY

The qualitative research method was used in the study. The qualitative research method is preferred for systematically examining the meanings arising from the experiences of individuals participating in the research (Ekiz, 2003). In the study, qualitative coding, one of the qualitative data analysis methods, was used to examine children's questions and the characteristics of their responses. The qualitative textual data is broken down during the coding to see what they produce and is put back together. Coding allows indexing or mapping to provide an overview of different data (Elliott, 2018). Researchers can determine codes by making different and unique nomenclatures. Different researchers can set different codes over the same data set (Roberts & Priest, 2006). The coding system used in the study named children's questions and responses at different levels to express their nature. The questions children asked each other during the evaluation of the day and the responses they gave to these questions were transferred to the coding system.

Participants

The study was conducted in 4 different schools consisting of two kindergartens and two primary schools with kindergartens. The schools were public schools providing half-day education. The common characteristics of public schools in Turkey are that they are non-profit and implement the preschool curriculum determined by the Ministry of Education. This curriculum is an eclectic and holistic education program based on constructivist educational philosophy. The main principles of the program include encouraging children's dialogue and question-posing to support children's sense of curiosity and discovery (MoNE, 2013). 14 preschool classrooms were identified in the schools. The class sizes ranged between 12 to16 children, and all 14 teachers were female with a bachelor's degree in preschool teaching. Teachers' average professional seniority was 10 years, and their ages ranged between 32 and

43. 211 children, 104 girls and 107 boys, in the 5-year age group, participated in the study. The children residing in the school neighborhood were from similar socio-economic statuses.

Data collection and analysis

The data were collected during the "evaluation of the day" stipulated by the preschool education program. The preschool education program includes five sections: starting the day, play, breakfast, activity, and evaluation of the day, respectively. In the "evaluation of the day", children gather together and converse through open-ended questions posed to evaluate the day. Teachers assess the day with children regarding the topics, such as the games they played in learning centers, the environment and materials they used in their activities, happy or sad events they want to share about that day, or positive behaviors observed that day (MoNE, 2013). During the data collection process, the teachers instructed children to ask any questions they wanted and to answer each other's questions during the evaluation of the day. The children were allowed to ask and answer each other's questions without interfering with their questions and responses. One activity was carried out in each classroom over two months, and data were collected through audio recordings of the "evaluation of the day" activities of 14 classrooms.

The researcher transcribed the audio recordings. Sequences containing the questions and responses of 211 children were defined, and these question-response sequences formed the database of the study. The questions and responses were transferred to the coding table. The questions were observed to be multi-word sentences. At the same time, the responses included both sentences and single-word expressions. In the study, the coding table developed by Bay (2020) using Zucker et al. (2010) and Chen and Liang (2017) was used. In the coding table, the questions are grouped under 4 categories: Level 1 (Recall-RC), Level 2 (Preference-PREF), Level 3 (Inference-INF), and Level 4 (Creation-CRE); and the responses are grouped under 3 categories: Level 1 (Personal Preference-PerPREF), Level 2 (Realistic- REAL), Level 3 (Creative-CRET). Each level is explained below.

Level 1 (RC) questions are expected to remember and restate previously learned knowledge. "Where do fish live?" is an example of an RC question. Level 2 (PREF) questions are asked for the responder to make a choice among known people, events and phenomena according to the responder's feelings and thoughts. An example is, "If you were a bird, where would you like to live?". Level 3 (INF) questions are asked to make predictions and inferences about situations that may occur due to different conditions. For example, "What would happen if it rained all the time?" is a question belonging to this level. Level 4 (CRE) questions are asked for the responder to express any real or imaginary situation, event, phenomenon or object unusually and originally or to create a product. "If you were a flower in space, what kind of flower would you be?" is an example of a CRE question.

Regarding the definitions of the responses' levels, there are three levels: Level 1 (PerPREF) response involves choosing among the objects, people, facts and events encountered in daily life and expressing what is valuable for the responder. An example is the "I wish it were a daisy". Level 2 (REAL) response is seen as statements reflecting the known truth in line with prior factual knowledge. For example, "We get sick when we overeat sugar." Level 3 (CRET) response expresses an individual's unconventional, original idea or product. For example, "What would happen if it rained all the time?" "The children would swim in the puddles by tying the umbrella to the rope." All transcriptions were made in Turkish; the examples from the questions and responses have been translated into English for illustrative purposes only, to provide a general understanding of the excerpts given in the paper.

The coding consistency of transcribed 268 questions and 2,574 responses was tested for intra-coder reliability, and approximately 10% of the questions and responses (27 questions and 258 responses) were randomly selected. When there is only one coder, it is recommended to recode some of the qualitative data at the beginning and recode it after a while (approximately ten days) (Miles, Huberman, & Saldana 2014). Intra-coder reliability assessments showed that the researcher's coding is highly stable (Cohen's κMs.G = 92.48%, Cohen's κMs.T = 94.37%).

RESULTS

The children's questions and responses analyzed in this study revealed significant results in line with the research questions. The presentation of the results includes (a) the characteristics of children's questions and responses and (b) the distribution of children's questions and responses among levels.

The Characteristics of Children's Questions and Responses

Children asked 268 questions in 14 preschool education classes during the evaluation of the day and gave 2,574 responses to these questions. Children's questions were analyzed according to 4 defined levels: recall, preference, inference and creation. The distribution of children's questions according to level is given in the figure below.
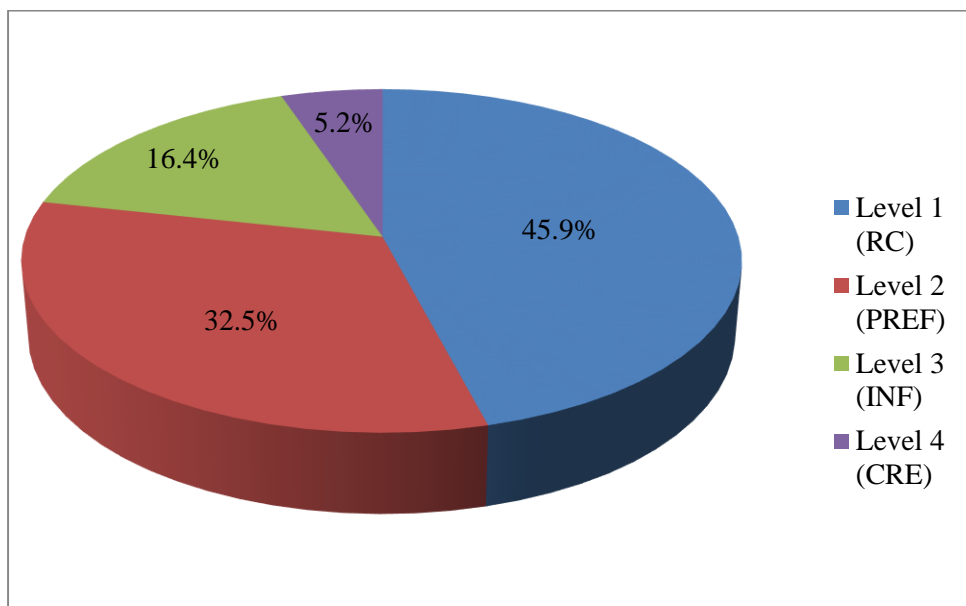
Figure 1. Levels of Children's Questions

According to Figure 1, children asked questions at all levels, with the highest number of questions at Level 1 (RC) (45.9%), followed by level 2 (PREF) (32.5%) and level 3 (INF) (16.4%) questions. The least observed question level was level 4 (CRE) (5.2%). Another important finding is the low number of Level 4 (CRE) questions, where children are expected to express an event or phenomenon subjectively with their original feelings and thoughts. The following questions are examples for each level, "Why do we come to school?" (RC), "Where would you want to go if you were the blowing wind?" (PREF), "What would happen if the snow does not melt?" (INF), and "How can we drink soup without a spoon?" (CRE).

Children's responses to the questions were defined and analyzed at three levels: Personal Preference, Realistic and Creative. The distribution of children's response levels is shown in Figure 2.
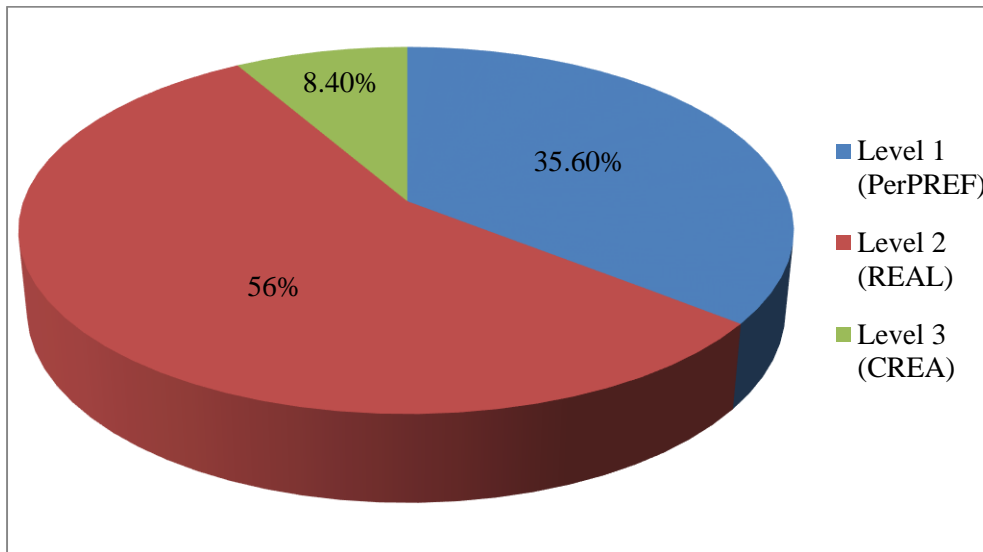

Figure 2. Levels of Children's Responses

According to Figure 2, children gave the most responses at level 2 (REAL) (56%). Realistic responses are the level at which children give responses that reflect reality in line with their knowledge. They were observed to give level 1 (PerPREF) responses (35.6%) second and level 3 (CREA) responses the least (8.4%). The low number of creative responses, where children are expected to express their original thoughts, is noteworthy. The responses to the question "What would you like to eat if you were a dinosaur?" show all three response levels: "Ice cream" - Level 1 (PerPREF), "Meat or grass" - Level 2 (REAL), and "I would taste clouds" - Level 3 (CRET).

Distribution of children's response levels according to question levels

The distribution of the 2,574 responses given by children to the 268 questions asked is given below.

Table 1
Distribution of children's responses according to questions

Question Level	Level 1 (RC) (n=123)		Level 2 (PREF) (n=87)		Level 3 (INF) (n=44)		Level 4 (CRE) (n=14)		Total (268)	
Response Level	n	%	n	%	n	%	n	%	n	%
Level 1 (PerPREF)	162	13.1	606	79.0	123	25.1	25	32.0	916	35.6
Level 2 (REAL)	1018	82.1	90	11.7	301	61.4	32	41.0	1441	56.0

continued

Level 3 (CRET)	59	4.8	71	9.3	66	13.5	21	27.0	217	8.4
Overall	1239		767		490		78		2,574	

According to Table 1, children mostly gave Level 2 (REAL) responses to Level 1 (RC), Level 3 (INF) and Level 4 (CRE) questions (82.1%, 61.4%, 41.0%) in line with previously learned known facts. Notably, they gave significantly more Level 2 (REAL) responses to Level 1 (RC) questions. Regarding Level 2 (PREF) questions, children mostly gave Level 1 (PerPREF) responses (79.0%) by choosing the object or situation they prefer among the objects or situations they encounter around them. The distribution of children's responses across levels showed that Level 3 (CRET) responses, defined as the expression of the child's unique thought, were the lowest (8.4%), while Level 2 (REAL) responses were the highest (56%). Another significant result is that the levels of the responses given to Level 4 (CRE) questions are distributed more evenly, and Level 3 (CRET) responses are given the most (27%) to Level 4 (CRE) questions.

The analysis of children's questions showed that 123 out of 268 questions (45.9%) were Level 1 (RC). Children mostly tended to give realistic responses to the recall questions in line with the knowledge they remember. Examples of RC questions and children's responses are given below.

Table 2
Example questions and answers

Question: How does it rain? (RC)   "A drop comes from the sky." (REAL)   "It rains when the lightning flashes."(REAL)
Question: How are day and night formed? (RC)   "One side of the world is getting dark. One side is sunny. For example, right now it is night in other countries." (REAL)
Question: What is done on new year's eve? (RC)   We eat chocolate. (PerPREF)   We celebrate the new year (REAL)
Question: How can we keep our environment clean? (RC)   "The garbage truck comes and takes the garbage." (REAL)   "By making a magic broom." (CRET)
Question: How can we keep our environment clean? (RC)   "The garbage truck comes and takes the garbage." (REAL)   "By making a magic broom." (CRET)

The preference question, defined as questions asked for the responder to choose among known people, events and phenomena according to feelings and thoughts, is children's second most frequently asked question level, where 87 (32.5%) of the 268 questions were Level 2 (PREF). Below are examples of PREF questions and the responses given to them.

Table 3
Example questions and answers

Question: If we brought a toy from home to school, which would you want to bring? (PREF)   "Car" (PerPREF)   "Doll" (PerPREF)   "Pearl necklace" (PerPREF)
Question: If you were a tree, what color would you want your branches to be? (PREF)   "I would not want to be a tree (PerPREF)   "Pink" (CRET)
Question: Which fruit would you like to be? (PREF)   "I would like to be a watermelon." (PerPREF)   "I would like to be a human-like fruit." (CRET)

As seen in the examples, children mostly showed Level 1 (PerPREF) responses to the preference questions in which they chose what was valuable to them.

Level 3 (INF) questions, which aim to derive inferences about situations that may arise as a result of unusual events or phenomena, were asked less frequently (16.4%) than Level 1 (RC) and Level 2 (PREF) questions. Children mostly gave Level 2 (REAL) responses to these questions based on their knowledge. Some examples of Inference (INF) questions and responses are given below.

Table 4
Example questions and answers

Question: How would the car go if it had no wheels? (INF)   "It will not go." (REAL)   "It will wear wings." (CRET)
Question: What would happen if we could not talk (INF)?   "We could not say what we want." (REAL)   "My eyes would speak and say what I wanted." (CRET)
Question: What would we do without our boots when it snows? (INF)   "We would wear a bag on our feet first, then our shoes." (CRET)   "Our feet would be cold." (REAL)
Question: What would we do without our boots when it snows? (INF)   "We would wear a bag on our feet first, then our shoes." (CRET)   "Our feet would be cold." (REAL)
Question: Why are parrots colorful? (INF)   "Because his feathers are colorful." (REAL)   "Because the rainbow came out." (CRET)

Finally, the analysis of Level 4 (CRE) questions showed that children least asked this type of question (5.2%). The responses given to this question level, defined as expressing any real or imaginary situation, event, phenomenon or object originally and uniquely, are more evenly distributed across levels than other question levels. In other words, children can answer Level 4 (CRE) questions with Level 1 (PerPREF), Level 2 (REAL) or Level 3 (CRET) responses. In addition, the percentage of Level 3 (CRET) responses in which children responded with original expressions was higher (27%) for Level 4 (CRE) questions than for other question levels. Examples of Level 4 (CRE) questions and responses are given below.

Table 5
Example questions and answers

Question: How can we drink soup without a spoon? (CRE) "We buy new spoons." (REAL) "We drink with bread." (CRET)
Question: If you were a cardigan with a button missing, what would you say to the person who would wear you? (CRE) "I would say, Let's go to the tailor?" (REAL) Question: How can we use our comb other than combing our hair? (CRE) "I will turn it into a puppet." (CRET)
Question: If you could build a spacecraft, how would you build it? (CRE) "I will only ride by myself." (PerPREF) "I will make it big, with a red light on the back, and with lots of buttons." (CRET)
Question: If you could build a spacecraft, how would you build it? (CRE) "I will only ride by myself." (PerPREF) "I will make it big, with a red light on the back, and with lots of buttons." (CRET)

As a result, as can be seen in the examples, question level may affect the level of the responses. This fact is most evident in the responses to Level 1 (RC) and Level 2 (PREF) questions. Regarding Level 3 (INF) questions, although Level 2(REAL) responses are high, other-level responses also increase. Responses to Level 4 (CRE) questions show a more even distribution; in other words, children can give responses at all levels.

DISCUSSION

This study addressed two gaps in question-response interaction that emerged from children's responses to questions in the literature. These are (a) examining the language interaction occurring when children ask questions to each other and answer them during the "evaluation of the day" instead of question-response interaction between teacher and student in preschool (e.g., Başalev & Soysal, 2021; Bay, 2020; Chen & Liang, 2017; Işıkoğlu Erdoğan & Akay, 2015; Mascareno et al., 2017; Massey et al., 2008; Salmon & Barrera, 2021; Zucker et al., 2010); (b) examining question-response interaction among children in Turkey which has a different cultural and educational context. Therefore, the study results laid the groundwork for future research and contributed to the existing literature.

Children's questions

Recently, there has been a growing interest in children's questions in educational settings (Chin & Osborne, 2008). In the current study, children asked 268 questions during the evaluation of the day. The analysis of the characteristics of their questions showed that they asked Level 1 (RC) questions (45.9%) the most and asked Level 4 (CRE) questions the least (5.2%). This result is consistent with the studies showing that children's questions are mostly information-seeking (Callanan, Solis, Castañeda & Jipson, 2020; Chin & Brow, 2010; Chouinard et al., 2007; Kurkul & Corriveau, 2018; Kurkul et al., 2022).

In addition, children's questions can also be shaped by adults' responses (Kurkul et al., 2022) because question and response is a pair following each other, and each question requires its pair. Questions are usually answered as required if there is no expansion in the conversational flow (Schegloff, 2007). In their study examining children's questions and teachers' responses, Kurkul et al. (2022) found that children mostly asked questions within the school context, where children were most likely to need permission from their teachers to participate in activities (55.6% low SES; 50.54% middle SES), followed by questions seeking information (44.4% low SES; 49.5% middle SES). Children receiving insufficient responses did not feel the need to ask questions again; on the other hand, they were more inclined to ask more questions when the teacher returned the question to the child. Kaya and Ahi (2022) examined the question-response sequence between teachers and children. They found that children mostly asked questions requiring explanation, followed by information-seeking ones and that children's ongoing conversation was shaped according to the teacher's response. Another result of the study is that children's questions are shaped according to their level of knowledge. Children tended to ask why questions in subjects they do not know, while they tended to ask yes/no questions in subjects they know. In other words, the child's existing knowledge affects the type and characteristic of the question he or she asks. The child's knowledge or familiarity with the topic can be understood from the question (Kaya & Ahi, 2022). The practices that focus on developing children self-questioning lead to learning and knowledge retention (Kurkul et al., 2022). Therefore, teachers can understand children's knowledge level from their questions and expand their learning by encouraging them to ask questions.

In addition, given that teachers serve as models for children (Costa & Kallick, 2015), the questions they ask can impact children's questioning skills. In studies examining teachers' questions, it was observed that teachers asked questions at different levels. Chen et al. (2017) found that in whole-group activities, teachers asked the recall (level 1) questions the most (47.61%) and prediction questions the least (8.6%). Bay (2020) found that teachers asked preference (level 2) questions the most (31.3%) and creation (level 4) questions the least (20.2%) in the question of the day activity. Zucker et al. (2010) found that teachers asked inference (level 3) questions the most (33.95%) and word-matching questions the least (14.6%) in story reading activities. Children tend to give longer, more detailed responses to teachers' higher-level questions that stimulate thinking skills (e.g., Bay, 2020; de Rivera et al., 2005; Zucker et al., 2010), which may indicate that teachers' questions influence children's questions as well. Therefore, these differences seen in the results of the studies may be one of the reasons for the differentiation in children's questioning levels.

Children's responses

In the study, children gave 2,574 responses to the questions asked at different levels, and the highest number of responses were Level 2 (REAL) responses (56%), and the lowest were Level 3 (CRET) responses (8.4%). It was observed that children mostly tried to give Level 2 (REAL) responses to the questions asked at Level 1 (RC) in line with their knowledge. Similarly, studies have shown that children often prefer to give realistic responses (e.g., Chen et al., 2017; Mascareno et al., 2017; Sembiante et al., 2017; Tompkins et al., 2017; Zucker et al., 2010). However, Bay (2020) found that children responded to preference questions asked by preschool teachers at the Personal Preference level, which shows the effect of the question type on the response given. In the current study, most of the children gave Realistic (REAL) responses to Recall (RC) questions and Personal Preference (PerPREF) responses to Preference (PREF) questions. These two question types can guide children on the responses that can be given. The sharpness of children's response distribution is observed to decrease with inference questions. The response levels reach an even distribution for creation questions. Another remarkable result is that creative responses, in which children can express their original thoughts, are mostly given to creation questions. All these results show an undeniable concrete relationship between questions and cognitive demands embedded in questions (Kayima & Jakobsen, 2020; Başelav & Soysal, 2021). The questions children use in interaction are designed according to the responses they want, and each question implies its own response (Gardner, 2004). Indeed, Salmon and Berrera (2021) found that asking the right questions expands children's knowledge-based responses and leads to more productive responses. Therefore, teachers should try to capture the right moments and find ways to combine their interpretations with those of children through a productive dialogue (Malaguzzi, 1994). Especially in line with the preschool curriculum (MoNE, 2013), which aims to develop creativity in children, creative responses can be increased with creation questions. In this way, children will be encouraged to think creatively. This study provides evidence about the responses resulting from thinking that emerges with children's questions.

LIMITATIONS AND FUTURE DIRECTIONS

Despite many strengths, this study focusing on children's question-response interactions in Turkey had some limitations. The study analyzed the questions and responses of 211 children in 14 preschool classrooms, a relatively small group. Therefore, the results of the study should be interpreted with caution. The high percentage of children's questions and responses at some levels may be due to the small sample size. Therefore, evaluating the findings regarding children's questions and responses in larger samples is essential. In addition, the results arising from children's questions and responses may be affected by different variables, such as family and teachers, that were not evaluated in this study. Therefore, future research should also consider variables that may affect children's questioning and answering behaviors. In addition, children's cultural characteristics and individual differences may also have affected their question and response levels. It is the first study on children's asking and answering questions, especially in the Turkish context; therefore, further research is needed to confirm and support the study's results.

Despite its limitations, this study has expanded the scope of related research in understanding how children ask and answer questions. It has identified question-response levels that will allow us to recognize and guide children. In particular, the responses given to certain question levels and the questions answered with more creative responses are critical findings for teachers. In the future, it is recommended to conduct sequential analysis studies,

examining dialogues in which teachers consider the level of children's questions and direct them to ask more questions and expand their knowledge by asking questions about their responses. These studies will increase teachers' awareness of the importance of questions and responses.

REFERENCES

Başalev, S., & Soysal, Y. (2021). Okul Öncesi Öğretmen Sorularının Türleri ve Bilişsel Talepleri. *Yaşadıkça Eğitim*, *35*(2), 546-579.

Bay, D., & Alisinanoğlu, F. (2012). Okul öncesi öğretmenlerine verilen soru sorma becerisi öğretiminin öğretmenlerin sorularının bilişsel taksonomisine Etkisi. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, *8*(3), 80-93.

Bay, D. N., & Alisinanoğlu, F. (2013). Soru sorma becerisi öğretiminin okul öncesi öğretmenlerinin sorularının yapısı üzerine etkisi. *Kuramsal Eğitimbilim Dergisi*, *6*(1), 1-39.

Bay, D. N. (2020). Teachers' Questions and Children's Answers Administered during the" Question of the Day" Practice in a Kindergarten of Turkey. *International Journal of Progressive Education*, *16*(4), 172-191.

Berger, R. (2018). *Here's what's wrong with Bloom's Taxonomy: A deeper learning perspective*. Downloaded on October 2022. Education Week http://blogs.edweek.org/ edweek/learning_deeply/2018/03/heres_whats_wrong_with_blooms_taxonomy_a_deeper_learning_pers pective.html?cmp=soc-edit-tw.

Berger, P. L., & Luckmann, T. (1967). *The Social Construction of Reality: A Treatise in the Sociology of Knowledmann*. Penguin Press, London, United Kingdom.

Bodrova, E., & Leong, D. J. (2007). *Tools of the Mind: A Vygotskian approach to early childhood education* (2nd ed.). Columbus, OH: Merrill/Prentice Hall.

Chouinard, M. M. (2007). Children's questions: A mechanism for cognitive development. *Monographs of the Society for Research in Child Development*, 72, 1– 108.

Chen, J. J., & Liang, X. (2017). Teachers' literal and inferential questions and children's responses: A study of teacher–Child linguistic interactions during whole-group instruction in Hong Kong kindergarten classrooms. *Early Childhood Education Journal, 45*(5), 671-683.

Chin, C., & Brown, D. E. (2002). Student-generated questions: A meaningful aspect of learning in science. *International Journal of Science Education*, *24*(5), 521-549.

Chin, C., & Osborne, J. (2008). Students' questions: A potential resource for teaching and learning science. *Studies in science education*, *44*(1), 1-39.

Costa, A., & Kallick, B. (2015). Five strategies for questioning with intention. *Educational Leadership, 73*(1), 66–69.

de Rivera, L. Girolametto, J. Greenberg, E. Weitzman. (2005). Children's responses to educators' questions in day care play groups. *American Journal of Speech-Language Pathology, 14*(1), 14-26

Dickinson, D. K., & Tabors, P. O. (2001). *Beginning literacy with language: Young children learning at home and school*. Baltimore, MD: Paul H Brookes Publishing.

Elliott, V. (2018). Thinking about the coding process in qualitative data analysis. *The Qualitative Report*, *23*(11), 2850-2861.

Ekiz, D. (2003). *Eğitimde araştırma yöntem ve metotlarına giriş*. Ankara: Anı Yayıncılık.

Engel, S. (2011). Children's need to know: Curiosity in schools. *Harvard educational review*, *81*(4), 625-645.

Frazier, B. N., Gelman, S. A., & Wellman, H. M. (2009). Preschoolers' search for ex- planatory information within adult–child conversation. *Child development, 80*(6), 1592–1611. https://doi.org/10.1080/15248372.2015.1098649 .

Gardner, R. (2004). On delaying the answer: Question sequences extended after the question. In R. Gardner & J. Wagner (Ed.), *Second language conversations*, (pp. 246–266). London, England: Continuum.

Graesser, A. J. and Person, N. K. (1994) Question asking during tutoring. *American Educational Research Journal, 31*, 104–137.

Hindman, A. H., Wasik, B. A., & Bradley, D. E. (2019). How classroom conversations unfold: Exploring teacher–child exchanges during shared book reading. *Early Education and Development*, *30*(4), 478-495.

Işıkoğlu Erdoğan, N., & Akay, B. (2015). Okul öncesi eğitimde hikaye okuma ve öğretmen sorularının incelenmesi. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi, 1*(36), 34-46.

Justice, L. M., Weber, S. E., Ezell, H. K., & Bakeman, R. (2002). A sequential analysis of children's responsiveness to parental print references during shared book-reading interactions. American Journal of Speech-Language Pathology, 11 (2002), pp. 30-40. https://doi.org/ 10.1044/1058-0360(2002/004)

Kaya, G., & Ahi, B. (2022). The Epistemic Role of Children's Questions and Teacher's Responses in Preschool Classroom Discourse. *Journal of Education*, 0(0), 1-12. https://doi.org/10.1177/00220574221088486

Kayima, F., & Jakobsen, A. (2020). Exploring the situational adequacy of teacher questions in science classrooms. *Research in Science Education*, *50*(2), 437-467. https://doi.org/10.1007/s11165-018-9696-9

Klahr, D., & Nigam, M. (2004). The equivalence of learning paths in early science instruction: Effects of direct instruction and discovery learning. *Psychological science*, *15*(10), 661-667.

Kurkul, K. E., & Corriveau, K. H. (2018). Question, explanation, follow-up: A mech- anism for learning from others? *Child Development, 89* (1), 280–294. https://doi. org/10.1111/cdev.12726 .

Kurkul, K. E., Dwyer, J., & Corriveau, K. H. (2022). 'What do YOU think?': Children's questions, teacher's responses and children's follow-up across diverse preschool settings. *Early Childhood Research Quarterly*, *58*, 231-241.

Lillard, A., & Else-Quest, N. (2006). Evaluating montessori education. *Science*, *313*(5795), 1893-1894.

Malaguzzi, L. (1994). Your image of the child: Where teaching begins. *Child Care Information Exchange, 3*, 52–61.

Mascareno, M., Deunk, M. I., Snow, C. E., & Bosker, R. J. (2017). Read-alouds in kindergarten classrooms: a moment-by-moment approach to analyzing teacher–child interactions. *European Early Childhood Education Research Journal, 25*(1), 136-152. https://doi.org/10.1080/1350293X.2016.1266226

Massey, S. L., Pence, K. L., Justice, L. M., & Bowles, R. P. (2008). Educators' use of cognitively challenging questions in economically disadvantaged preschool classroom contexts. *Early Education & Development, 19,* 340–360.

Miles, M. B., Huberman, M. a, & Saldana, J. (2014). Drawing and verying conclusions. *Qualitative Data Analysis: A Methods Sourcebook, 11,* 16.

Milli Eğitim Bakanlığı (MoNE). (2013). *Okul öncesi eğitimi programı*. Ankara: Millî Eğitim Bakanlığı Talim ve Terbiye Kurulu Başkanlığı.

Pelo, A. (2014). Finding the questions worth asking. *Exchange, 215,* 50–53.

Piaget, J. (1952). *The origins of intelligence in children*. New York, NY: International Universities Press.

Ritchhart, R. (2012). The power of questions. *Creative teaching and learning, 2*(4), 8–12.

Ritchhart, R. (2015). *Creating cultures of thinking: The 8 forces we must master to truly transform our schools*. San Francisco: Jossey-Bass.

Roberts, P., & Priest, H. (2006).Qualitative Research in Social Sciences. *Nursing Standard, 20*, 41-45.

Salmon, A. K., & Barrera, M. X. (2021). Intentional questioning to promote thinking and learning. *Thinking Skills and Creativity*, *40*, 1-10.

Schegloff, E. A. 2007. *Sequence organization in interaction: A primer in conversation analysis*. Cambridge, England: Cambridge University Press.

Sembiante, S. F., Dynia, J. M., Kaderavek, J. N., & Justice, L. M. (2018). Teachers' literal and inferential talk in early childhood and special education classrooms. *Early Education and Development, 29*(1), 14-30.

Tompkins, V., Zucker, T. A., Justice, L. M., & Binici, S. (2013).m Inferential talk during teacher- child interactions in small group play. *Early Childhood Research Quarterly, 28*(2), 424–436.

Vygotsky, L. S. (1978). Mind in society: *The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Zoller, U., Tsaparlis, G., Fatsow, M., & Lubezky, A. (1997). Student self-assessment of higher-order cognitive skills in college science teaching. *Journal of College Science Teaching*, *27*(2), 99-101.

Zucker, T. A., Cabell, S. Q., Oh, Y., & Wang, X. (2020). Asking questions is just the first step: Using upward and downward scaffolds. *The Reading Teacher, 74*(3), 275-283. https://doi.org/10.1002/trtr.1943

Zucker, T. A., Justice, L. M., Piasta, S. B., & Kaderavek, J. N. (2010). Preschool teachers' literal and inferential questions and children's responses during whole-class shared reading. *Early Childhood Research Quarterly, 25*(1), 65-83. https://doi.org/10.1016/j.ecresq.2009.07.001