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Investigation of Inference Skill Development Levels in Children

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ABSTRACT
This study aimed to determine the inference skill levels of preschool children aged between 5 and 6 and their development within a six-month period. The study that was conducted with the survey model involved 91 preschool-level children. As the data collection tool, two equivalent Inference Achievement Tests were used. Based on Chikalanga's inference types, the Inference Achievement Tests each consisted of 14 open-ended questions. During the data collection process, participants were interviewed face-to-face with questions in the tests. The second achievement test was administered under the same conditions after six months. Responses of participants were recorded to be analyzed by two scholars. Answers were transferred to the statistical software after coding them as true or false, and the data were examined in relation to research questions. As a result of the analyses, it was determined that participants were successful at making inferences and that they showed statistically significant improvement in the six months. Based on the findings, it was suggested that children's inference skill levels must be considered in preschool comprehension activities.

Keywords: Comprehension, inference, language acquisition, preschool period.

INTRODUCTION

Inference is one of the cognitive ways of comprehending numerous phenomena in daily life. Understanding that it will rain based on the clouds or assuming that there is a fire looking at the smoke is knowledge obtained through inference. Inferences that hold a vital place in language communication as well as natural phenomena help obtain the covert meaning in words during oral or written communication. Therefore, inference gains importance as a type of skill that every individual, from adults to children, needs to possess.

With inference, individuals experience a sense-making process about the deep structure of narration rather than the surface structure. The listener or reader completes the gaps in the text and expands the given language with interpretation by using the feedback in words and the information present in mind (Keenan et al., 1984; van Dijk & Kintsch, 1983). Making inferences earns its place among high-level cognitive activities such as asking questions, critical thinking, synthesis, and evaluation with this function (Zoller, 2000). Inference skill as a high-level cognitive activity directly affects the comprehension of children as it affects adults (Cain & Oakhill, 1999; Kendeou et al., 2008). This way, the adequate development of inference skills in childhood lays the foundation for comprehension skills that will be effectively used in years to come.

Inferential comprehension starting with the help of listening skill lays the foundation for reading comprehension in the future. Listenin comprehension that helps lay this foundation gets better with inferences (Tompkins et al., 2013; Cain et al., 2001; Lepola et al., 2012). Listening comprehension is a sub-skill that increases reading comprehension achievement (Kleeck, 2008). These skills develop much with inference, and, over time, become an important predictor of all types of comprehension. Therefore, development of inference skill that starts in childhood and increases the comprehension level as it should is quite a crucial point. To understand it, one needs to understand the nature of inference.

Inference is simply the act of intuiting covert knowledge using information that comes verbally or in writing. Chikalanga (1992) considered inference as a cognitive process used to obtain the implicit meanings underlying the words in a text. In addition, he states that textual information and the recipient's world knowledge are together on the basis of inference. Comprehension takes place using this information. It is necessary to go beyond this in order to fully understand the explicit information in the text (Kispal, 2008). Therefore, it is a prerequisite for the receiver of the text to make inferences for the realization of comprehension (Elbro & Buch Iversen, 2013). With this function, inference not only results in obtaining the implicit meaning, but also providesa better understanding of explicit knowledge.

To make inferences in the process of comprehension, textual knowledge and world knowledge must be synthesized. For instance, making sense out of the statement, "*It was cloudy, so he took his umbrella with him."* made for a character the information, "*the weather being cloudy and umbrella having been taken"* and the world

knowledge, "*it gets cloudy before the rain"* must be synthesized. These syntheses help make the meaning generated from the text consistent (Elbro & Buch Iversen, 2013; Ferstl et al., 2001). In cases where consistency is not ensured, textual knowledge becomes no more than a fragment of missing information. This hinders listening or reading comprehension activities from resulting with a successful act of comprehension.

Certain prerequisites are needed for successful inference. Primarily, it is necessary to grasp explicit information as it is presented (Cook et al., 2001; Perfetti, 1999). A correct comprehension determines which cognitive processes to operate. It is important for children to have an extensive vocabulary and linguistic knowledge in communication that takes place through language. To comprehend linguistic knowledge, children are expected to employ the necessary world knowledge by using working memory (Kispal, 2008). Therefore, grasping explicit information, carrying out necessary cognitive operations using working memory, and having a good vocabulary and world knowledge are essential for a correct inference.

If there is a lack of world knowledge in the textual context, consistency in understanding cannot be achieved. The gaps in the meaning produced from the text are filled by inference by referring to world knowledge (Cain etal., 2001; Thurlow and van den Breok, 1997). Thus, the information produced by the inferential process becomes a part of the textual information. The information produced by inference not being included in the text arises from the need to create a certain language economy. However, producer of the text assumes that the missing information will be completed by inference. This applies to both adults and children.

Constructivist and minimalist approaches have an important place in the literature on inferences. According to the constructivist approach, the gaps encountered are filled using schemas to ensure textual consistency. The minimalist approach, on the other hand, is of the opinion that receiver of the text establishes consistentconnections between textual knowledge and world knowledge, makes automatic inferences and makes sense of the text quickly and accurately (Graesser et al., 1994; McKoon & Ratcliff, 1992). Both of these approaches statethat inference is the skill needed in the process of making sense by elaborating a linguistic code and emphasizes the importance of world knowledge (Katsos, 2003). Therefore, this underlines that that inference is an importantcognitive operation.

In another approach related to inference types, text-connecting and knowledge-based inferences are included. Text-connecting inferences ensure the integration of the knowledge in the text through comprehension to protect the integrity of the text. Knowledge-based inferences, on the other hand, requires the receiver of the text to complete the text with general knowledge. There are different names given for these types in the literature. For instance, while Cain and Oakhill (1998) name them text-connecting and gap-filling, Cromley and Azevedo (2007) referred to them as anaphoric text-to-text inference and background-to-text inference. Barnes et al. (1996), Calvo (2004), and Bowyer-Crane and Snowling (2005) named these inference types coherence inferences and knowledge-based inferences.

Covert knowledge obtained through inference can be in different types. Nicholas and Trabasso (1980) stated that covert knowledge to be obtained through inferences can be reached with five different ways. Covert knowledge can be reached with words whose meanings are vague, references made to pronouns, identification of the context in which sentences are present, construction of the framework necessary for the interpretation, cause-effect relationships related to the phenomena, and noticing the contradictory situations. These situations may not be given in the text explicitly, but it functions in the sense-making of the text and in ensuring the consistency by giving the feeling within the text.

In addition to the categories presented above, there are other approaches. Some of the prominent categorizations are as follows: propositional and pragmatic inferences (Chikalanga, 1992); logical, informational, and evaluative inferences (Warren, Nicholas & Trabasso, 1979); lexical, space-time, predictive, and evaluative inferences (Nicholas & Trabasso, 1980). Chikalanga (1992) makes a new classification based on all these categories. In this new classification, they were all reducted to lexical, propositional, and pragmatic inferences. Lexical inferences are used to comprehend unknown words and pronouns. Propositional inferences are types of inferences that are made in logical knowledge and logical explanation sub-categories. In addition, concerning propositional inferences, the text recipient uses to seek answers for who, what, and when questions in terms of logical knowledge whereas the recipient tries to answer why and how questions for motivating, causative, and enabling types in the context of logical explanation. Pragmatic inferences include the knowledge obtained by referring to covert information and world knowledge. These inferences are divided into three types as information, detailed explanation, and evaluative inferences. Chikalanga's (1992) categorization is the most frequently used approach in the research.

The development of inference skill, which is so important in comprehension, begins in childhood. Children lay the foundations for inference skills using non-linguistic symbols soon after they are born. By interpreting the symbols in the environment, children form the infrastructure of the inference skill, and after a short time, they become in a position to explain what they think with symbols. As their knowledge of symbols and world knowledge increase, their success in making inferences begins to develop. There have been studies proving that children make inferences starting from an early age (Botting & Adams, 2005; Lynch et al., 2007). Chidren

trying to understand the world make inferences using the scraps of information around them and try to go beyond them.

Linguistic inference skills develop through certain stages. The increase in vocabulary seen in childhood plays an important role in linguistic inference. Vocabulary is one of the important predictors of listening comprehension (Kendeou et al., 2008). With the development of vocabulary, children can form consistent meanings by making more accurate inferences. Verbal memory, which is strengthened with vocabulary, also plays an important role in keeping the meaning in memory and forming sentences by combining the meanings of other words (van den Broek & Lorch, 1993). This skill is an important step in textual comprehension (Cain et al., 2001). Texts consisting of connected sentences are made sense by synthesizing linguistic knowledge and world knowledge.

Studies that reveal children's inference skills also provide evidence about which inference types are successful in which period. For instance, Decanti and Dickerson (1994) discovered that 3-year-olds can make inferences about the textual context, while at the age of 4-5, they can make information-based inferences. Makdissi and Boisclair (2006) also found that 3-year-old children make on-line inferences, but they can also make off-line inferences as they get older. Similarly, Blanc (2010) revealed that children aged 5-6 can make causal and contextual inferences about the text, and these inferences are elaborated at the age of 6-7.

In the development process, after the age of 4, children can find covert knowledge by using the causalinformation in the stories (van Den Broek et al., 2005; Wenner, 2004). Inferences made to expand comprehension in stories that are mostly comprehended through listening also form the basis of achievement in reading comprehension later on (van Kleeck, 2008). For this reason, it is important to determine at what level children's inference skills develop and what kinds of inferences they can make better. In particular, revealing thedevelopment of the inferences made for the stories heard around 5-6 years old, when linguistic acquisition is realized and a rapid development is seen, can be a guide in the conduct of many related studies. In this direction,answers were sought for the questions presented below:

1. What are the scores of participants in inference achievement tests administered at a six-month interval?
2. To what extent did inference success levels of participants improve in the six months?
3. What is the relationship between mean scores obtained from sub-dimensions of Inference Achievement Tests?
4. Do the inference achievement scores of participants show any difference in terms of age?
5. Do the inference achievement scores of participants show any difference in terms of age?

METHOD

The study that aims to determine the level of development of the ability to make inferences used to increase the success of listening comprehension, utilized the longitudinal survey model. Longitudinal studies focus on the change of a variable over time and are repeated at least twice (Fraenkel & Wallen, 2005). In this study, data were collected at two different times to describe the change observed in the inference levels of children aged 5-6years after six months. Therefore, the research was carried out within the framework of the longitudinal survey model.

Research Group

Participants of the research consisted of 91 children attending preschool institutions in the center of Antalya in the 2019-2020 academic year. Participating children between the ages of 5-6 were primary school kindergarten students and independent kindergarten students. The reason why the participants, consisting of 40 boys and 51 girls, were selected from the 5-6 age range, was that they were in a position to provide clear evidence for the inference skill, which is a high-level cognitive process in terms of language development.

Measurement (Data Collection) Tools Used in Research

The data of the study were collected using two different Inference Achievement Tests, which were equivalent to each other. Inference achievement tests were prepared by taking Chikalanga's (1992) category of inference into account. In the mentioned category, inferences are handled in lexical, propositional and pragmatic types.Pronouns and unknown words are determined in lexical inference type, logical information and logical explanation inferences are in propositional type, and detailed information, explanation and evaluation inferences are determined in pragmatic inference type. For the preparation of achievement tests, in line with expert opinions, Leo Lionni's books, Swimmy and Pezzetino, written for children were taken as basis and inference- oriented comprehension questions were developed within this framework.

Expert opinions were sought according with the Lawshe technique for the validity and reliability dimensions of the prepared tests. The Lawshe technique is a technique used to transform qualitative data into quantitative data (Yurdugül, 2005). For this, it is recommended to consult the opinion of 5 to 40 experts. In this study, the opinions of 6 experts, three from the field of language and three from the field of preschool education, were consulted. The experts examined the prepared questions in terms of their suitability for the relevant inference type, whether they were suitable for the developmental level of the children, language, and the equivalence of

the questions in two different tests. Items that were identified as problematic by any of the experts were either removed from the test or changed in line with the recommendation. Thus, the items on which all experts agreed were included in the test. Accordingly, it can be said that the content validity level of the test is complete.
As a result of these processes, a total of 14 questions were included in each achievement test. Of these questions, four included lexical inference, four propositional inference, and six pragmatic inference. This distribution was the same in both achievement tests. The test based on the book named Swimmy was applied in the first measurement, and the test based on the Pezzettino book was applied in the second measurement after six months. As a result, two different Inference Achievement Tests consisting of 14 questions in total were devised.

Data Analysis

To collect the data, necessary explanations were given to the participating children in the classrooms where the research was carried out. Afterwards, interviews were held in a suitable room. Participants were taken to the interview room in groups of eight. A book was read to each group, and then group members were interviewed one by one. Participating children answered the questions directed to them and the answers were recorded. No intervention was made during the interviews. The same procedure was reapplied to the participating children six months later, in the same order, using the second test. Students who could not participate in the second measurement were excluded from the study.
Responses given by participants to the Inference Achievement Test were scored by two field experts. Answers to each item were separately checked and scored. Correct answers were coded as 1 while the false ones were coded as 0 to enter the data in the statistical software. The analyses were run over these values. To determine the interrater reliability, the Kappa analysis was run. Kappa coefficient for the first measurement was .913 whereas it was .956 for the second measurement. It can be seen that in both measurements, there was a very high agreement level between the researcher and field expert (Landis & Koch, 1977).
For the data analysis, correlation analysis, independent samples t test, Mann Whitney U test, and Wilcoxon Signed Ranks test were administered in accordance with research questions.

Findings

The first research question focused on the scores obtained from inference achievement tests administered in a six-month interval. The diagram that shows related results and the table displaying the relationship between the scores are presented below.

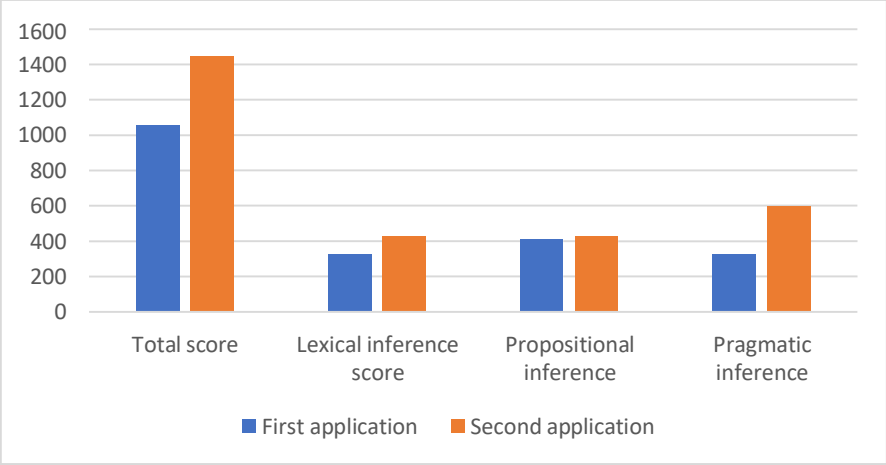

Diagram 1. ***Inference Achievement Test Scores of Participants***

As can be seen in the graph, participating children received a total of 1055 points from the first inference achievement test, and a total of 1448 points from the second administration. Accordingly, there was an increase of 393 points in the inference achievement of the participants in the 6-month period. In the lexical inference type, participants received a total of 322 points in the first administration and 426 points in the second one. An improvement of 104 points was observed between two administrations. In the propositional inference type, the participants received a total of 407 points in the first test and 427 points in the second. An improvement of 20 points was obtained between two tests. In the pragmatic inference type, while the participants got 326 points in the first test, they got 595 points in the second one, which indicated an improvement of 269 points in a six- month period.

Regarding the second research question, a Wilcoxon Signed Ranks test was administered to determine to what extent participants' inference-making levels changed over the six-month period. The results were shown in Table 1 below:

Table 1. Differences between the first and second test scores of participants

Scores	Ranks	N	SO	z	p
Inference Achievement Test First Test Inference Achievement Test Second Test	Negative Ranks	12	26,46	-6,765	,000
	Positive Ranks	75	46,81		
	Equal	4			
	Total	91			
Scores	Ranks	N	SO	z	p
Lexical Inference First Test Lexical Inference Second Test	Negative Ranks	20	27,95	-4,726	,000
	Positive Ranks	56	42,27		
	Equal	15			
	Total	91			
Scores	Ranks	N	SO	z	p
Propositional Inference First Test Propositional Inference First Test	Negative Ranks	38	35,93	-,698	,485
	Positive Ranks	39	41,99		
	Equal	14			
	Total	91			
Scores	Ranks	N	SO	z	p
Pragmatic Inference First Test Pragmatic Inference Second Test	Negative Ranks	14	22,07	-6,803	,000
	Positive Ranks	73	48,21		
	Equal	4			
	Total	91			

According to Table 1, a statistically significant difference was found between total scores gained from the first and second tests (Z=-6,765, p<0.05, r=0.70). The last scores received from the test (Median=16) were found to be higher than the scores (Median=11) obtained from the first test. Similarly, there was a statistically significant difference between the tests in terms of lexical inference (Z=-4,726, p<0.05, r= 0.49). Scores gained from the second test (Median=1,25) were greater than the ones (Median=1) obtained from the second test. In terms of propositional inference, no statistically significant difference was found between the first and second tests (Z=-,698, p>0.05, r=0.07). However, in the sense of pragmatic inference, a statistically significant difference was found between the tests (Z=-6,803, p<0.05, r=0.71). The scores of participants were greater in the second test (Median=1), compared to the scores they received in the first administration (Median=0,5).

The third research question aimed to determine the relationship between scores gained from the sub-dimensions of inference achievement tests. Results of the correlation analysis to determine this relationship were presented in Table 2:

Table 2. Correlation coefficients between sub-category mean scores obtained from Inference Achievement Test

	First Test Lexical Inference	First Test Propositional Inference	First Test Pragmatic Inference	Second Test Lexical Inference	Second Test Propositional Inference	Second Test Pragmatic Inference
First Test Lexical Inference		,234	,170			

First Test Propositional Inference			,320			
Second Test					,374	,332

Lexical Inference						
Second Test Pragmatic Inference					,553	

According to Table 2, in the administration of the first Inference Achievement Test, the mean score obtained from the lexical inference sub-dimension and the mean scores from the propositional (r=.234, p<0.05) and pragmatic (r=.170, p<0.05) sub-dimensions had a statistically significant correlation at a low level. In the first application, there was a moderately significant correlation between the mean score obtained from propositional inference and the mean score obtained from pragmatic inference (r=.320, p<0.05). Concerning the second Inference Achievement Test, there was a moderately significant correlation between the mean score of the lexical inference sub-dimension and the mean scores of the propositional (r=.374, p<0.05) and pragmatic (r=.332, p<0.05) sub-dimensions. In the second test, there was a moderately significant correlation between the mean score obtained from propositional inference and the mean score obtained from pragmatic inference (r=.553, p<0.05).
The next research question focused on whether the achievement level differed in terms of gender. To answer this research question, considering the normality of the scores gained by participants, an independent samples t test and Mann Whitney U test were conducted. Findings related to these tests were presented in Tables 3, 4, and 5. In Table 3, Mann Whitney U test results conducted for total scores and scores obtained from lexical, propositional, and pragmatic inference sub-dimensions.

Table 3. Inference skill level differences of participants based on gender (First test)

	Gender	N	Rank Mean	Rank Total	U	P
First Test Total Score	Girl	40	50,43	2017,00	843,000	,155
	Boy	51	42,53	2169,00		
First Test Lexical Inference	Girl	40	45,25	1810,00	990,000	,800
	Boy	51	46,59	2376,00		
First Test Propositional Inference	Girl	40	48,89	1955,50	904,500	,347
	Boy	51	43,74	2230,50		
First Test Pragmatic Inference	Girl	40	52,95	2118,00	742,000	,025
	Boy	51	40,55	2068,00		

According to Table 3, total scores in the first test did not indicate statistically significant difference in terms of gender (U=843,000, p=,155). Similarly, average scores from lexical inferences (U=990,000, p=,800) and propositional inferences (U=904,500, p>0.05) did not show statistically significant difference in the sense of gender. However, the average score in pragmatic inferences in the first test indicated statistically significant difference between genders (U=742,000, p<0.05). Pragmatic inference level of girls ($\bar{x}$ =52,95) were significantly higher than the level of boys ($\bar{x}$ =40,55).
In Table 4 below, Mann Whitney U test results of scores received from lexical and propositional inference sub-dimensions in the second administration of the test were given:

Table 4. Inference skill level differences of participants based on gender (Second test)

	Gender	N	Rank Mean	Rank Total	U	P
Second Test Lexical Inference	Girl	40	49,99	1999,50	860,500	,195
	Boy	51	42,87	2186,50		
Second Test Propositional Inference	Girl	40	50,39	2015,50	844,500	,157
	Boy	51	42,56	2170,50		

Based on the data in table 4, scores gained from lexical inference questions in the second test did not show statistically significant difference for genders (U=860,500, p=,195). Likewise, scores obtained frompropositional inference questions did not indicate statistically significant difference in terms of gender (U=844,500, p=,157).
Table 5 below presented results of the independent samples t test conducted for total scores and scores from the pragmatic inference sub-dimension in the second administration of the test.

Table 5. Inference skill level differences of participants based on gender (Second test)

	Gender	N	$\bar{X}$	Std. Deviation	T	sd	P
Second Test Total Scores	Girl	40	16,7250	5,54694	1,203	89	,232
	Boy	51	15,2745	5,82779			
Second Test Pragmatic Inference	Girl	40	1,1167	,51640	,424	89	,672
	Boy	51	1,0686	,55094			

According to Table 5, the total scored gained from the second test ($t(89) = 1.203$, $p>0.05$) and the average score of the pragmatic inference dimension ($t(89) = 0.424$, $p>0.05$) did not show statistically significant difference.
The next research question aimed to determine whether there was any difference between participants' inference achievement levels in terms of age. The obtained results were shown in Table 6.

Table 6. Inference skill level differences of participants based on age

	Age	N	Mean Rank	Rank Total	U	P
First Test Total Scores	59-65	52	34,78	1808,50	430,500	,000
	66-72	39	60,96	2377,50		
First Test Lexical Inference	59-65	52	41,52	1808,50	781,000	,048
	66-72	39	51,97	2377,50		
First Test Propositional Inference	59-65	52	37,67	1959,00	581,000	,000
	66-72	39	57,10	2227,00		
First Test Pragmatic Inference	59-65	52	35,78	1860,50	482,500	,000
	66-72	39	59,63	2325,50		
Second Test Total Scores	65-71	52	38,14	1983,50	605,500	,001
	72-78	39	56,47	2202,50		
Second Test Lexical Inference	65-71	52	39,63	2061,00	683,000	,007
	72-78	39	54,49	2125,00		
Second Test Propositional Inference	65-71	52	40,26	2093,50	715,500	,016
	72-78	39	53,65	2092,50		
Second Test Pragmatic Test	65-71	52	40,26	2093,50	715,500	,016
	72-78	39	53,65	2092,50		

According to Table 6, total scores ($U=781,000$, $p<0.05$), propositional ($U=581,000$, $p<0.05$), and pragmatic ($U=482,500$, $p<0.05$) inference achivement scores obtained in the first indicated statistically significant difference. Total scores gained by students in the 66-72 age group were significantly higher than students in the 59-65 age group. Total scores ($U=605,500$, $p<0.05$), lexical ($U=683,000$, $p<0.05$), propositional ($U=715,500$, $p<0.05$), and pragmatic ($U=715,500$, $p<0.05$) inference achievement mean scores indicated statistically significant difference in terms of age. Total scores received by students in the 66-72 age group and the mean scores based on inference types were higher than participants in the 59-65 age group.

CONCLUSION AND DISCUSSION

The study that aimed to determine the development of children aged 5-6 in inference skills within a six-month period yielded results as interpreted above. Accordingly, children showed significant improvement in their inference skills in six months. Scores between 4 and 19 were gained from the first test while they obtained scores between 4 and 26 in the second. Maximum score that could be obtained from the test was 28. These scores indicate the degree of improvement in children's skills in six months.
The main result obtained from the research is that there was a significant difference in the development of children's inference skills within the six-month period. There were many studies showing that children could make inferences on different subjects at an early age. In some studies, it was revealed that children could begin to interpret gestures and facial expressions when they were 14 months old and could understand emotional reactions through inference (Liebal et al., 2009; Moll et al., 2006; Moll et al.,2008). In addition, researchfindings that emphasized that inference is an act of filling the gap and that this skill develops at an early age were also obtained (Hamlin et al., 2008; Schulze et al., 2013; Woodward, 2009). In addition to these studies, which included a general approach covering many areas of inference, there were studies revealing that children

could make inferences by listening to stories directly (Gernsbacher et al., 1990; Kendeou et al., 2008). In these studies, children's inference was regarded as a necessity for comprehension.

The reason why children showed significant success at the level of inference achievement in the six-month period may be related to their general developmental level. Rapid development occurs in early childhood. Alongwith development, an increase in cognitive achievement and concentration was observed. Gerstadt et al. (1994) stated that children show significant success in concentrating attention between the ages of 3.5-6. Concentration is an important point that also includes inference skills and affects cognitive performance (Carlson & Moses, 2001). It is thought that the successful development of the participating children in inference was due to the development of their concentration levels and other cognitive skills.

The rapid development seen in childhood leads to progress in cognitive skills on the one hand, and on the other hand, it provides an increase in world knowledge. When considered in terms of inference, world knowledge is a variable that highlights the gaps in stories listened and other narrative genres. Especially around 5-6 years of age, such details become more noticeable. In the study of Freed and Cain (2016), in which preschool children and the 3rd and 5th grade students were examined, listening comprehension and inference skills were emphasized, and it was determined that there was a small increase in holistic inference, but a significant increasein local consistency with increasing age. It can be argued that this increase was partly due to the expansion of world knowledge.

The results obtained from the research revealed that there were some correlations between the types of inferences. In the first Inference Achievement Test administered, it was observed that there was a low level of correlation between the mean score obtained from lexical inferences and the mean scores obtained frompropositional and pragmatic inferences. Propositional and pragmatic inferences were close to each other because they were cognitively more complex than lexical inferences and were more holistic in a way that covered the text in general. This may explain the moderate correlation between pragmatic and propositional inference types in the first test. On the other hand, it can be argued that lexical inferences were easier than others. However, when the scores obtained from the second administration after six months of development were examined, it was determined that there was a moderate correlation between lexical inference achievement and propositional and pragmatic inference achievements. Additionally, there was a moderate correlation between propositional and pragmatic inferences in the second administration of the test.

Considering the results obtained in terms of genders of the participants, it was determined that gender was not a variable that made a difference in the level of inference achievement in the 5-6 age range. This was applicable in both tests. There were other studies that showed that gender did not lead to a significant difference in early age. In a two-year longitudinal study, in which Lepola et al. (2012) investigated the effect of inferences on the comprehension of narratives, it was found that the gender variable did not make a difference in comprehending the narratives and making inferences. This result supports the finding from this study. On the other hand, in the first administration of the achievement test, it was concluded that girls were more successful only in the pragmatic inference type. Although this result is thought to be a group-specific situation, it can be argued that due to the nature of pragmatic inferences requiring more world knowledge, the questions in the first test attracted the attention of girls more. Girls develop faster than boys in terms of world knowledge (Zambrana, 2012). However, it can be said that gender was not a significant variable in studies on language skills around 5-6years of age, so different results were obtained from the studies (Koçak, Ergin, & Yalçın 2014). It is thought thatthe result obtained from this research stems from abovementioned reasons.

The final research question focused on the effect of age on participants' inference achievement levels. Considering both tests administered in a six-month interval, it was found that older participants were more successful both in terms of total scores and each inference type. There are different studies showing that older children are more successful due to the effect seen in different dimensions of development in inference studies (Brey & Shutts, 2014; Freed & Cain, 2016; Lepola et al., 2012; Paris & Paris, 2007). One reason why advancingage increases the success of inference may be the increase in other cognitive skills. It was previously revealed that age improved cognitive skills in general (Diergarten & Nieding, 2015; Kasuto, 2005; Kurtulan, 2015). The increase in cognitive skills also strengthens the basis for the ability to make inferences. On the other hand, advancing age also increases the world knowledge in children, which is an important component of inference. With the developing world knowledge, children between the ages of 4 and 6 grasp contextual clues better than their younger counterparts (Tullos & Woolley, 2009). This is a detail that allows children to make better inferences.

To sum, findings obtained from this study revealed that children showed significant progress in making inferences at the age of 5-6 years, in the six-month period. While the gender of the participant children was not avariable that made a difference in the improvement in inference achievement, the increase in age was a variable that led to a significant elevation in six-month development. This result should be taken into account in activities of language skills and comprehension with children. Studies that are consistent with the developmentallevels of children will support development and learning.

It is recommended that studies be conducted on other inference types with the consideration of the results of this study. In addition, children in younger age groups should be examined, and correlation of inferences made in reading comprehension area should be focused on. Inference studies to be conducted on Turkish language acquisition and teaching will potentially open new spaces for the research on development and language acquisition and teaching alike.

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