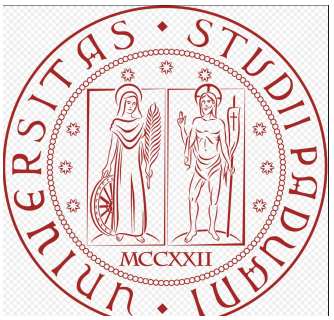

UNIVERSITY OF PADUA

Department of General Psychology

Master Degree in Developmental and Educational Psychology

Final Dissertation

Examining the Language Development of Turkish Children in Kindergarten Through The Storytelling Method

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This thesis was inspired by my childhood experience with dyslexia and my love for psychology. My family has been a constant source of support and encouragement, and I am deeply grateful for their efforts. I hope to make them proud by becoming a scientist who contributes to the field of psychology.

The University of Padua has played an important role in my academic journey. I would like to thank my supervisor, Professor Judit Gervain, for believing in me and guiding me throughout this research.

I also want to thank the Department of General Psychology and all the faculty members for their support and resources. Your help has been invaluable.

Finally, I hope that my future research will help children who face challenges like dyslexia. My goal is to make a positive impact on their lives through my work.

Thank you all for your support.

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Abstract

This thesis investigates the language development of Turkish children in kindergarten, utilizing the storytelling method. The study focuses on linguistic errors such as omissions, substitutions, insertions, phonological mistakes, and neologisms made by children aged 3 to 6 years. The research involved 36 participants from three preschools, who were asked to narrate stories based on the wordless picture book "Chalk" by Bill Thomson. The storytelling sessions were recorded and analyzed to identify patterns and frequencies of linguistic errors.

The findings indicate that the complexity of linguistic errors increases with age, reflecting children's increasing ability to attempt the production of ever more complex linguistic production. Omissions and substitutions were the most common errors, particularly prevalent in children aged 72-95 months. Phonological errors were more frequent in younger children (48-71 months), highlighting a critical phase in phonetic development. The study also observed that boys and girls exhibited different error patterns, suggesting the influence of social and cultural factors on language acquisition.

In conclusion, this study contributes to the understanding of language acquisition in Turkish-speaking children, highlighting the interplay between cognitive development, social interaction, and linguistic environment. Future research should expand to include diverse demographics and explore the impact of bilingualism and digital media on language acquisition.

1. Introduction

Language studies attract much attention due to their great importance in our daily lives. Examining this topic enriches our understanding of cognitive processes. A complete understanding of language acquisition involves going beyond basic and theoretical principles, delving into the mechanisms of individual trajectories of language development, its impact on society, and language use.

Examining the process of language acquisition and use allows us to understand the importance of language in society, in interpersonal communication, and the preservation of our cultures. The purpose of the current study, therefore, is to document the language development trajectories of a group of Turkish preschoolers, aged 3-6-years, a developmental period where children already show productive language, but their productions are far from being adult-like. This developmental phase is thus ideal to investigate the growth of language, typical errors and the developmental trajectories in general.

Turkish was chosen as the language of study, as it is an understudied language, and has linguistic properties that are very different from the more commonly investigated Indo-European languages.

1.1 Language Acquisition

Human beings believe that the process of learning language is an aspect of our existence. The journey of how children pick up language skills is intricate and captivating. From the early

stages of life children have a skill for understanding and reacting to the sounds in their environment even before they start speaking. Like a sponge absorbing water, infants begin to mimic the rhythm and speech patterns of those around them (Saffran et al., 1996; Dehaene Lambertz et al., 2002).

During their language development, babies explore auditory signals from their surroundings and start distinguishing words in spoken language. By age 7-10 months, infants start to recognize familiar words (Jusczyk et al. 1999).

Transitioning from babbling to uttering their first words marks a stage for children as they expand their vocabulary. By interacting with family members, siblings and others, children acquire words and hone their ability to express thoughts and emotions (Hoff, 2006).
As children grow they learn more about how words fit in sentences and grasp the basics of grammar and using language correctly in situations (Tomasello, 2003; Bloom, 2002).

During this stage the influence of a child's surroundings and their parents is crucial. Cildrenpick up language effectively through interactions with their surroundings and real life experiences. Parents help boost their children's language skills by talking to them, reading stories aloud and engaging in activities that provide linguistic input (Snow, 1977). Moreover the social and cultural environment where children are raised also plays a role in shaping their language development.

1.1.1 Theories of Language Acquisition

People's remarkable ability to learn language has long been a subject for researchers in fields like psychology, neuroscience and linguistics. One key area of interest is understanding how young children develop the vocabulary and grammatical skills to speak and comprehend language. Language acquisition involves more than memorizing words and grammar rules; it also encompasses using language in various situations without direct teaching.

Experts have proposed theories to explain this process. Some argue that children possess a capacity for language acquisition making it easier for them to learn new languages during this critical period (Hartshorne,2018). Conversely, other perspectives highlight the significance of communication and social interactions in the language learning process (Verga,2013).

The ongoing debate centers around whether our language abilities are innate or shaped by our experiences. Current thinking suggests that learning is influenced by a combination of genetic predispositions and environmental factors. While our genetic makeup provides us with the potential to learn, our surroundings offer opportunities for application and development. Research on brain function during language learning reveals brain regions that activate during this process.

Below, I will illustrate the major theoretical positions in language acquisition.

1.1.1.1 Behaviorist Theory

The behaviorist theory asserts that the acquisition of language largely hinges on interactions between individuals and the environment. Pioneered by B.F. Skinner posits that a person's language development is primarily shaped by stimuli in their environment through

mechanisms like reinforcement, imitation and conditioning. According to Skinner, young children learn language by observing and mimicking the language input they experience in their lives. When a child repeats a word accurately and receives reinforcement from their surroundings, such as praise, this positive reinforcement motivates them to repeat the behavior and thus fosters language development (Skinner, 1957).

This theoretical framework underscores the role of statistical distributions in the input and feedback processes in influencing language-related behaviors. It illustrates how an individual's environmental influences, when coupled with reinforcement strategies, significantly impact children's acquisition and growth of language abilities.

For instance when a child consistently receives feedback for identifying objects in their surroundings or expressing their needs they are more likely to stick to the language they use leading to gradual enhancement in language skills over time (Cherry, 1979). Showing gestures like hugging the baby or patting their back when they effectively communicate a desire or requirement serves as an example of the reinforcement the child receives and can strengthen the behavior.

While behaviorist theory offers insights into how environmental cues impact language acquisition, it has received criticism for oversimplifying the process of learning human language. Critics of this theory argue that focusing excessively on external factors overlooks innate abilities for language development. They contend that acquiring language involves cognitive processes beyond mere imitation and reinforcement enabling children to comprehend and produce language in ways that extend beyond mimicking observable behaviors in their surroundings. Further, Cheng and Sybesma (2014) criticize the behaviorist

model for not explaining children's capabilities to generate sentences and acquire language swiftly.

Furthermore, even though behaviorist theory has made progress in explaining how our environment shapes our language learning process, its limitations have spurred the development of holistic approaches. These new methods seek to blend the emphasis on stimuli with an acknowledgment of the cognitive processes that individuals possess as crucial for language acquisition. These aforementioned viewpoints advocate for a perspective on language development recognizing the role of children's cognitive abilities and their interactions with their surroundings (Tomasello 2000). An intricate understanding emerges regarding the interplay between innate capacities and learned behaviors (Bates, 1979).

1.1.1.2 Nativist Theory

Those who support the nativist perspective as opposed to those who favor the behaviorist viewpoint argue that humans possess an innate, genetically endowed language faculty. Scholars, like Noam Chomsky or Leonard and Kegl (1957) suggest the existence of an understanding or a unique mechanism called the "language acquisition device," which is the driving force in an individual's language learning journey. Noam Chomsky, an advocate of this theory, introduced the concept of Universal Grammar, suggesting that all individuals are equipped with a foundation of linguistic principles that significantly influence their ability to learn languages (Chomsky, 1965). According to this concept, children are born with a set of principles that aid them in comprehending and mastering any language they are exposed to (Tager Flusberg, 1999).

Nativist theories highlight the underpinnings of language acquisition by noting how infants from different cultural backgrounds can rapidly and effortlessly pick up their native languages despite the vast array of languages spoken worldwide (Lenneberg, 1967). This viewpoint is supported by observations of swift advancements in language proficiency, across cultures and languages. Advocates of nativism argue that this progress can be solely attributed to a biologically given capacity (Ranjit, 2001).

These theories have significantly enhanced our comprehension of how we learn language by presenting a case for the presence of natural language skills that assist in the learning process. Nativist perspectives contest behaviorist frameworks by highlighting abilities in individuals. They propose that our acquisition of language is shaped by both predisposition and interactions with our environment during the learning process.

1.1.1.3 Social Interactionist Theories

Supporters of the social interactionist theory of language learning stress the significance of interactions and communication exchanges in shaping an individual's linguistic development. These viewpoints argue that language acquisition is not just an effort but occurs through active engagement, with caregivers, peers and other members of the community where the child grows up (Vygotsky, 1978; Bruner, 1983). According to these theories children learn language by engaging in interactions that offer them feedback and opportunities to participate in conversational patterns. These processes play a role in facilitating language acquisition among individuals (Tomasello, 2003; Snow, 1977).

Interactionist perspectives underline the interplay between social and linguistic aspects, during language learning. They emphasize how these factors work together to enable infants to comprehend and use language proficiently. These theories propose that the context in which language is used and the purposeful communication associated with it significantly influence the development of language skills. For instance, when a caregiver labels an object that captures a child's attention it helps expand the child's vocabulary. It also aids them in grasping the social functions of language (Bruner, 1983; Tomasello, 2003).

Interactionist theories suggest that how children learn language is closely tied to the environment they grow up in. In addition to picking up grammar rules, children also grasp how to use language in settings through regular interactions with others. This process, known as scaffolding according to Vygotsky (1978) is connected to the Zone of Proximal Development (ZPD) which represents the gap between what a learner can do and what they can achieve with guidance and support. It involves mastering skills like taking turns in conversations using language for purposes (like making requests or expressing opinions) and understanding that different social situations call for ways of using language (Halliday, 1975; Bates, 1976).

Feedback plays a role in this learning journey. Both adults and peers provide feedback to children helping them enhance their language abilities by correcting mistakes and offering examples of complex sentence structures (Saxton, 2010). This feedback is typically given in a manner encouraging children to delve into language exploration and experimentation.

Interactionist theories offer a view on how children learn language considering not the words they hear but also the social and cognitive aspects that help them make sense of and use language effectively. This approach underscores the significance of a nurturing environment and meaningful conversations in nurturing language skills. It stresses the role played by caregivers and the broader community in shaping a child's development (Hoff, 2006; Rowe, 2012).

By focusing on interaction, communication exchanges and community support, for language learning interactionist theories shed light on how children acquire language. These concepts highlight that language learning is inherently tied to children's communicative growth (Tomasello, 2003; Bruner, 1983).

1.1.1.4 Cognitive Theory

Cognitive theories of language acquisition explore the idea that a person's basic cognitive processes, such as attention, memory, and problem solving, are essential to language acquisition. These ideas are based on important knowledge gained from developmental research and cognitive psychology (O'Grady, 2023.; Slater, 1970). These theories encompass the approach that a child's language acquisition involves more than just memorizing words. It involves the use of complex cognitive processes. This approach includes mechanisms such as symbolic representation, which uses symbols or images to represent objects, concepts, or other things. It also includes classification, which involves organizing the information a person has into different groups. Additionally, it includes abstract reasoning, which is a

cognitive process that involves thinking about things in a way that transcends the boundaries of the concrete and observable (Cheng and Sybesma, 2014).

From this perspective, infants are not passively absorbing language, but rather actively exploring the complex nature of language. They use their innate curiosity and abilities to find solutions to deal with the complex rules of language, building grammar and vocabulary by identifying patterns and participating in exchanges of ideas. Cognitive theories emphasize the active participation of the learner, arguing that language comprehension and use are dynamic processes closely linked to the child's cognitive development. This includes developing critical thinking abilities, improving concentration and attention, and improving memory capacities (O'Grady, 2023; Slater, 1970).

In addition, cognitive theories emphasize the importance of cognitive resources and strategies in language acquisition and suggest that language acquisition and cognitive development have complex connections rather than independent processes. As children develop and their cognitive abilities increase, their ability to understand and produce language also improves. This approach to language learning emphasizes the importance of promoting cognitive development to increase language proficiency. It suggests that creating an environment that encourages cognitive development will naturally support language acquisition efforts (Cheng and Sybesma, 2014).

1.1.1.5 Synthesizing theories for a more complete account of language acquisition

Understanding the process of children gaining language skills, both in understanding words in their daily lives and in communicating with their environment, can be likened to building a complex puzzle consisting of several pieces that belong together. Various experts have contributed their thoughts to this important and complex field over the years, each providing a valuable piece of the puzzle. According to experts advocating the behaviorist view, children acquire language skills by imitating what they hear from their environment and by receiving positive reinforcement from their environment when they successfully produce new words. Some researchers believe that infants have an innate capacity to acquire language, similar to an innate mechanism that exists specifically for acquiring speech (nativist theory). According to those who support the interactionist view, people acquire language skills by participating in conversations and activities with family and friends, and this is very important for them. Finally, some experts highlight the importance of cognitive abilities such as attention, memory and problem solving in the language acquisition process (cognitive theory).

All of these views argue that language acquisition is more complex and multifaceted than previously thought, and that we need to take all these theories into account. Our language acquisition reflects a coordinated process that involves our innate abilities, the support and participation we receive from others, and our own cognitive and analytical abilities. Rather than a single theory offering comprehensive explanations, it appears that some truth may be found in each perspective and may contribute to a more comprehensive understanding of how language develops in infants. This general perspective allows us to understand the importance of providing children with a stimulating environment filled with vocabulary, conversations and interactive learning, thus ensuring the optimal development of their communication abilities.

1.1.2 Turkish Language

In this study, we investigate the linguistic development of Turkish children. The Turkish language was chosen, because it is heavily understudied in developmental literature, and because it is typologically different from Indo-European languages, making it a highly relevant and complementary language to look at.

Turkish is classified under the Turkish language family. It is thought to have a family map dating back to the 8th century, the oldest evidence of its existence being found in the Orkhon inscriptions. These ancient historical ruins shed light on the culture as well as the early literature of those who communicated using Turkic languages, and especially Turkish. Imagine Turkish as a tree that has experienced significant growth and increase in use over several centuries, shaped by the influence of neighboring languages such as Persian and Arabic, as well as newer European languages.

Unlike Indo-European languages, Turkish has agglutinating morphology. It includes suffixes added to words to indicate their grammatical function in a sentence, such as defining the subject and object of an action (for example: Okuyorum - I am reading). Vowel harmony is another interesting feature of Turkish. Vowel harmony is a phenomenon, where the vowels in a word must match in some of their features, such as height or lip rounding (for example: ‘dudak’ (lip) instead of ‘dudek’) (Göksel, Kerslake, 2005).

Turkish is currently spoken as a native language by more than 80 million people in the Republic of Turkey, and it is also spoken as a second language by a significant number of people around the world.

1.3 Mistakes Made by Turkish Children During Language Acquisition

In the current study, I assess and evaluate children's language production. To do that, I will use elicited production method on the basis of a wordless story book. Children's productions will then be analyzed by identifying and classifying their errors. Below, I provide a list of the most commonly recognized errors in the literature on language development in Turkish. Typical mistakes frequently seen in Turkish children and language learning children in general include skipping some parts of the words they use, replacing a sound or word they are trying to use with another sound or an incorrect word, adding unnecessary features, mixing sounds, and even inventing new words.

1.3.1 Omission: Skipping Parts

During the language acquisition period, young children often tend to skip subjects or auxiliary verbs in Turkish. For example, a young Turkish child may use the phrase "Kedi yiyor" instead of "Kedi yemek yiyor" (Cat is eating instead of Cat is eating food), showing sentence simplification by removing specific components. These omissions demonstrate the challenges of producing complex sentences, ones whose complexity go beyond children's limited memory or linguistic skills. Akgül and Aksu-Koç (1996) have observed comparable usages among Turkish-speaking children, identifying these omissions as crucial milestones in

language development, highlighting children's ability to effectively negotiate intricate grammatical constructions by reducing their complexity in systematic ways.

1.3.2 Substitution: Replacing Sounds or Words

Within the scope of their language development, Turkish children, like children in other languages, have a tendency to replace difficult sounds with easier ones. An illustrative instance involves substituting the phoneme /d/ with /l/, resulting in the pronunciation of "kedi" (cat) as "keli." This example demonstrates their progress in phonological development and their tactics for adapting. Göksel and Kerslake (2005) have examined the phonetic and lexical substitutions in Turkish, highlighting their significance in the wider context of language acquisition and improvement of phonological abilities.

1.3.3 Insertion: Adding Extra Material

Children in Turkish frequently incorporate additional morphemes or words into their sentences as a manifestation of their attempts to adhere to grammatical standards. An instance of this would be the addition of an extraneous plural suffix to a noun that is already specified by a numeral, as in Turkish nouns are not marked for plural after numerals. This children often produce "iki kitaplar" (*two books*) instead of the correct "iki kitap" (*two book*). These insertions demonstrate their tendency to apply rules too broadly, known as overregularization. Aksu-Koç (1988) argues that insertion mistakes provide an understanding into how infants employ and occasionally overgeneralize grammatical principles in Turkish.

1.3.4 Phonological Mistakes: Sound Errors

Phonological errors in the language acquisition of Turkish-speaking children frequently consist of misarticulation of sounds or inaccurate application of stress patterns. An instance of mispronunciation can occur when the sounds /ç/ and /ş/ are confused, resulting in the word "çorap" (*sock*) being pronounced as "şorap". Topbaş and Güven (2010) conducted a study on the phonological development elements of Turkish, emphasizing the complexities involved in gaining a high level of proficiency in Turkish phonology.

1.3.5 Neologisms

Neologism refers to the creation or use of new words or phrases that do not exist in the adult language. Children often produce neologisms, which involves the creation of new words or expressions as a form of linguistic exploration. An instance of this creative feature of language formation can be seen in the invention of a term such as "güneşlemek", derived from "güneş" (*sun*), to signify the act of basking in the sun. The innovative utilization of linguistic elements showcases children’s capacity to expand and enhance their lexicon through imaginative methods. Rona (1997) explores the occurrence of new words in the process of learning Turkish, emphasizing the imaginative and ever-changing aspect of children's language growth.

1.4 The Current Study and Hypothesis

This study examines the language errors made by children aged 3 to 6 while telling a story. There is some existing research (Balaban,2020) on how these errors manifest and evolve as

Turkish speaking children narrate stories. Storytelling serves as a natural learning tool for children to develop language skills. This study aims to investigate the progression of mistakes among children of different ages. It is believed that the nature and frequency of errors will vary with age reflecting the growth of children's language abilities and cognitive development.

Using a cross-sectional design, the study will compare the occurrence of errors in younger children (ages 3-4) and older ones (ages 5-6), shedding light on how language skills evolve with age.

One hypothesis, derived from the social interactionist and cognitive theories, may be that as children grow older, they improve in using language. With exposure to and practice with language, children become more proficient in language usage and make fewer errors over time (Brown, 1973; Karmiloff Smith, 1979).

Another hypothesis may be that when children engage in storytelling, which requires them to create novel linguistic productions freely, they may produce more or different types of mistakes than when they engage in simpler activities such as answering questions. Crafting stories can be challenging as it involves conceptualizing narratives, characters and sequencing events – tasks that can test their abilities (Nicolopoulou, 1997).

To test these hypotheses, this study investigates storytelling in Turkish children aged 3-6 years. The study involves eliciting stories using a picture book, recording, transcribing and analyzing children's productions, and assessing their errors. By examining these challenges

across developmental stages this research contributes to our understanding of how children develop language skills and ways to support those facing difficulties in learning languages.

2. Materials and Method

2.1. Participants

The research involved a group of 36 children chosen from three preschools. There were 27 girls and 17 boys in the group showing a mix of genders. The average age of the children was 4 years and 6 months (SD: 11 months). Their ages ranged from 3 to 6 years.

All the children showed normal development for their age, with ni known disabilities reported by parents.

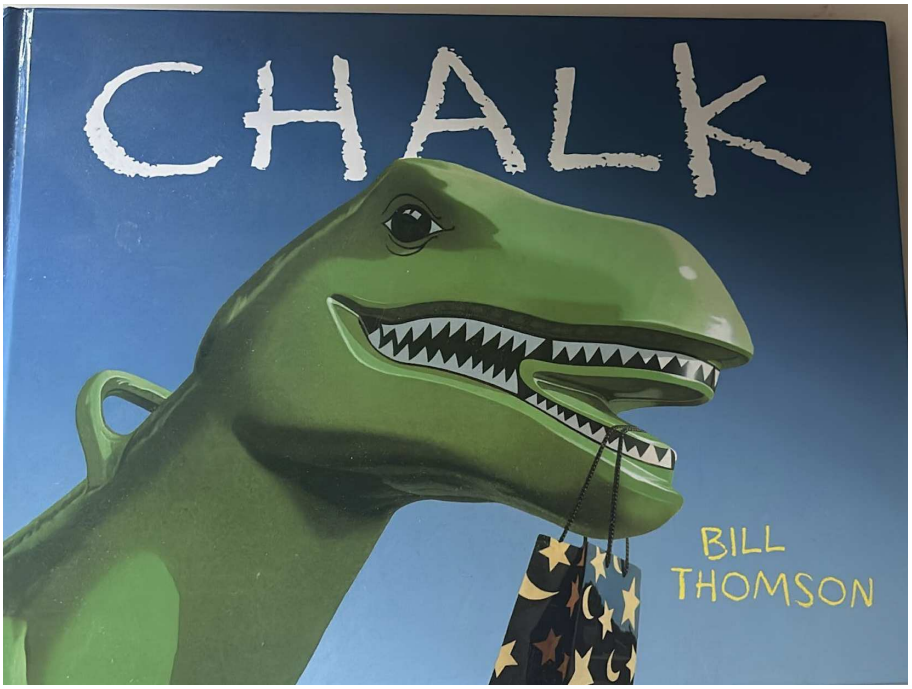
5 participants were excluded from the analysis due to not being able to complete activities or missing scheduled sessions. This was done to ensure that the data accurately represented those fully involved in the task.

Before starting the study, consent was obtained from all participants' parents or legal guardians ensuring they understood the study details and agreed to take part.

The research received ethical permission from the Ethics Committee at the University of Padua adhering to guidelines to safeguard the welfare, confidentiality and protection of all children involved.

2.2. Materials

2.2.1 The storybook entitled "Chalk" by Bill Thomson



The main material used in this study is "Chalk," a wordless picture book by Bill Thomson. This book was chosen, because it tells a story with pictures alone. It's filled with bright, detailed illustrations that show a magical adventure: whatever the characters draw with chalk becomes real. Since there are no words to guide them, children can look at the pictures and come up with their own stories. This book thus serve as a good starting point for elicited language production.

2.3 Procedures

The research was carried out over several weeks. The individual storytelling sessions took place in children's preschools in a quiet room during regular school time. Sessions consisted of several phases. Children's productions were recorded using a digital voice recorder, because it's easy to use and can capture sound very clearly. The recorder was set up in a way that it wouldn't distract the children, letting them focus on the story they were telling, not the recording process. This setup helps make sure that the stories the children tell are as natural as possible. Recordings were later played back and transcribed for analysis.

2.3.1 Introduction (5 minutes)

The researcher began each session with a welcoming and engaging introduction. This stage was essential in establishing a pleasant atmosphere and creating an engaging communicative setting. The researcher developed a connection with each child by using friendly and pleasant language. The storytelling session was described as an enjoyable and imaginative exercise,

with a focus on the child's function as the narrator. The children were informed that they would be examining a book rich with pictures and were encouraged to narrate any story that emerged in their minds based on those images. The purpose of this initial chat was to stimulate children's curiosity and make sure they valued and were excited about taking part.

2.3.2 Storytelling with "Chalk" (10-15 minutes per child)

The core of each session was the storytelling activity, an elicited language production task on the basis of the book "Chalk."

2.3.2.1 Book Introduction

The researcher presented "Chalk" to the child, briefly describing the book as a collection of pictures that tell a story without words. The child was encouraged to explore the images at their own pace, turning the pages when ready, fostering a sense of autonomy and engagement with the material.

2.3.2.2 Storytelling

As the child viewed each illustration, they were invited to narrate their story. This process was deeply individual, with each child bringing their imagination, linguistic skills, and personal experiences into their storytelling. The researcher ensured that the environment was supportive and judgment-free, allowing the child to express themselves fully and creatively. When a child hesitated or looked for cues, the researcher offered open-ended prompts such as, "What do you think happens next?" or "How do you think the character feels?". This

approach helped sustain the narrative flow, encouraging the child to explore their thoughts and feelings related to the images, while ensuring the storytelling remained child-led.

2.3.3 Wrap-up (2-3 minutes)

At the conclusion of each storytelling session, the researcher took a moment to personally thank the child for their participation. This acknowledgment was an essential part of the procedure, serving to reinforce the child's sense of accomplishment and contribution. Positive feedback was provided, focusing on the creativity, imagination, and effort displayed during the storytelling. The researcher discussed the story briefly with the child, highlighting interesting parts and expressing genuine interest and appreciation for the child's unique perspective. This closing interaction was designed to leave the child feeling valued and encouraged, fostering a positive disposition towards storytelling and creative expression.

The conclusion also served as a transition back to the child's regular activities, ensuring they felt comfortable and content with the experience. Through these carefully structured sessions, the study aimed not only to gather data on language development and acquisition errors but also to provide a supportive and enriching environment for young children to express themselves and engage with literature in a unique and meaningful way.

2.4 Analysis

Children's productions were transcribed and analyzed for the presence of errors. Errors were categorized into (i) omissions, (ii) substitution, (iii) insertion, (iv) phonological mistakes, (v) neologism. The number of each error type was quantified, and analyzed as a function of children's age and gender.

3. Results

Children produced stories that ranged considerably in length. The word count ranged from 95 to 572 words, emphasizing the increasing linguistic complexity as children grow in age (*Figure1*). There is a general trend indicating that as children grow older, their word count tends to increase. This is expected as older children have had more exposure to language and more opportunities to practice speaking and vocabulary development.

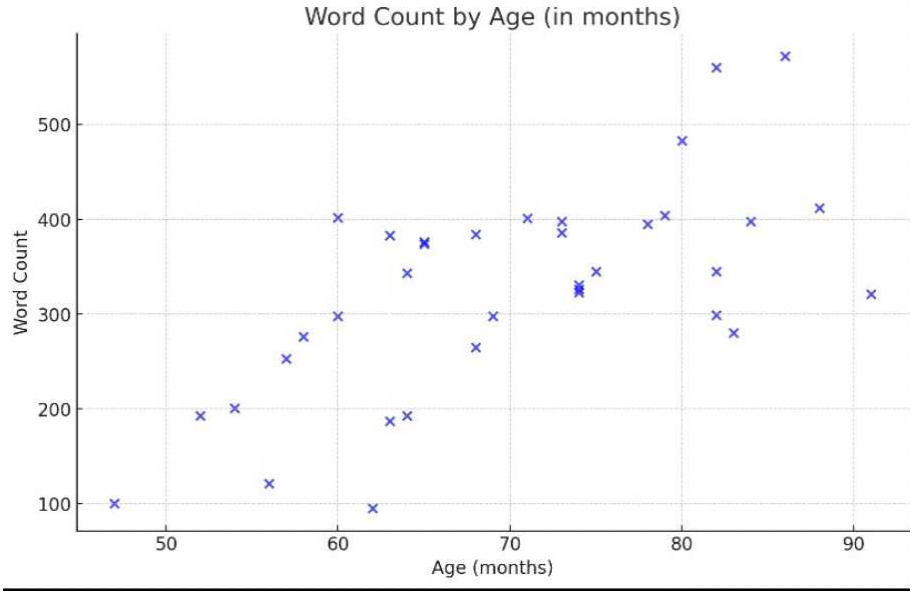


Figure 1: Word Count According to Age

The predominant errors detected are omissions (*Figure 2*) and substitutions (*Figure 3*), which are particularly noticeable throughout the age range of 60-80 months. This tendency may indicate an important phase of growth in which children progress from basic to more complex grammatical structures, requiring the use of advanced language skills.

Insertion errors (*Figure 4*), while infrequent, occur in all age groups, suggesting that these mistakes may be more impacted by individual linguistic habits or cognitive processing differences rather than developmental stages.

Phonological errors (*Figure 5)*, which are most commonly observed in children between the ages of 50 and 80 months, occur at a crucial phase of child development when their phonetic skills are being developed.

The frequency of neologism errors (*Figure 6*), although rare, increases in older female children, possibly suggesting their creative language usage or their misunderstanding of complex linguistic principles. These errors may also indicate a phase of developmental exploration in which children experiment with new word forms or incorrectly apply current rules of grammar.

Overall, the total number of mistakes (*Figure 7*) does not significantly diminish as children get older, indicating that storytelling mistakes are common across a broad age range. Both genders show similar patterns, though females have a slightly more varied distribution of mistakes. This implies that while age and experience might contribute to storytelling abilities, other factors such as linguistic complexity and individual differences play significant roles in the occurrence of mistakes.

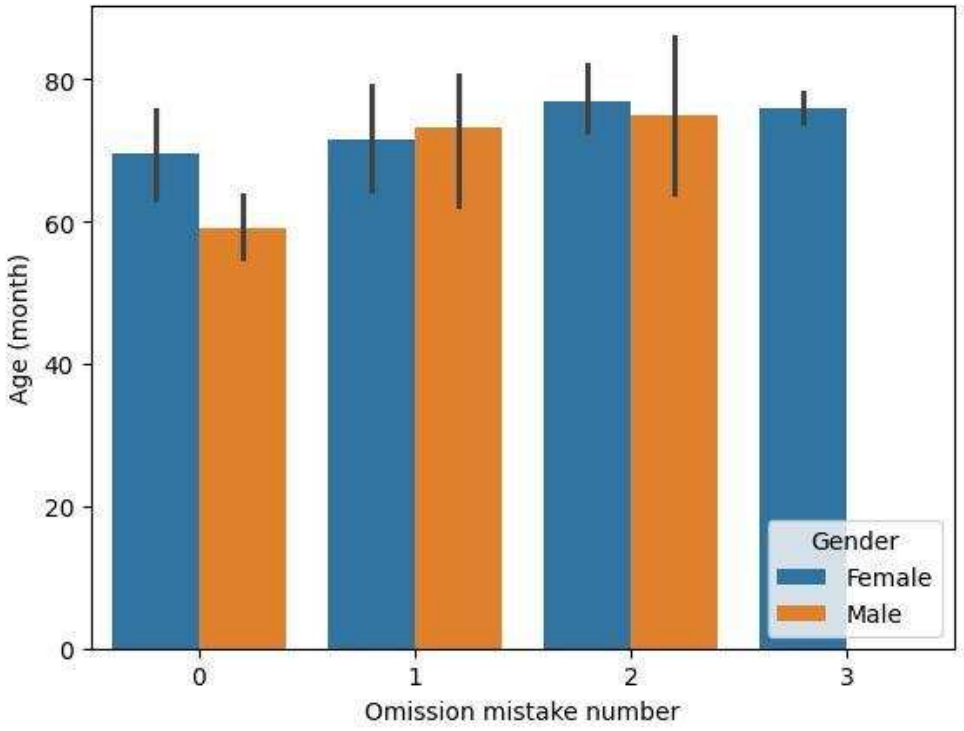


Figure 2: Average Omission Mistakes by Age and Gender

The chart reveals that as the number of omission mistakes increases from 0 to 3, the average age of both boys and girls also increases slightly. Notably, females (represented by blue bars) tend to be older than males (orange bars) at each level of omission mistakes. The error bars indicate greater variability in the ages of females compared to males. This trend suggests that older children, particularly girls, may attempt more complex storytelling, leading to a higher frequency of omission mistakes. The data highlights that omission mistakes in storytelling are correlated with age and show distinct patterns between genders, with older children and girls exhibiting more variability in their ages at higher mistake levels.

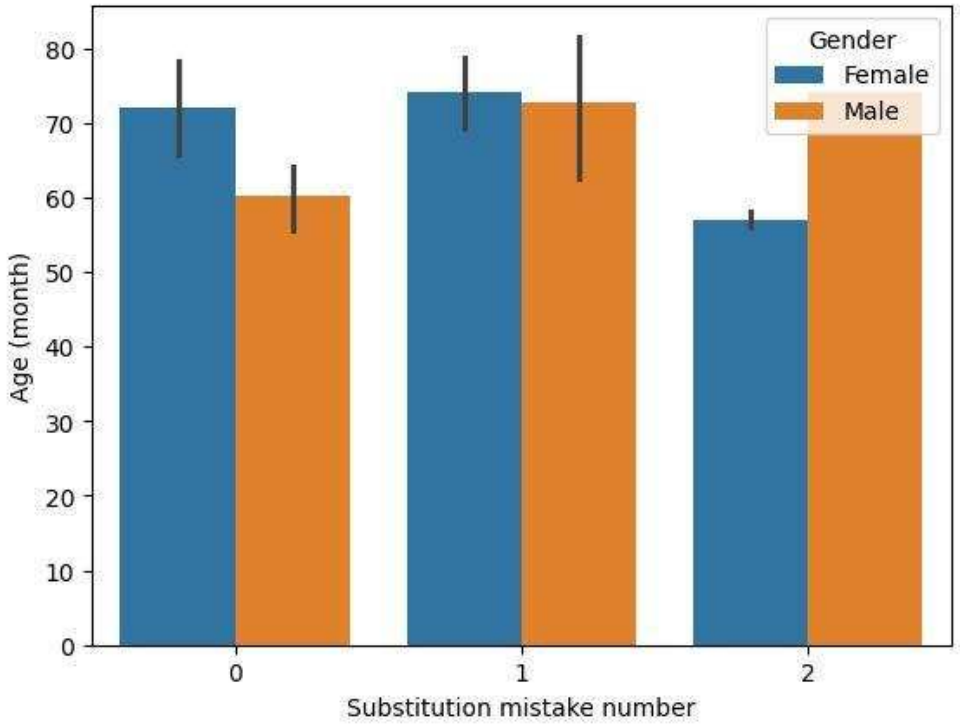


Figure 3: Substitution Mistakes by Age and Gender

When we look at the chart which illustrates that substitution mistakes by age and gender reveals that children with 0 substitution mistakes are generally older. As substitution mistakes increase to 1, both genders maintain relatively high ages, with females being older. However, at 2 substitution mistakes, males are older than females, indicating a shift. The error bars indicate greater age variability among females at 0 and 1 mistakes. This suggests that younger girls struggle more with substitution errors as they increase, while older boys are more prone to these errors. Overall, the chart demonstrates distinct age and gender patterns in substitution mistakes during storytelling, with females showing a decrease in age as mistakes increase, and males showing a slight age increase at higher mistake levels.

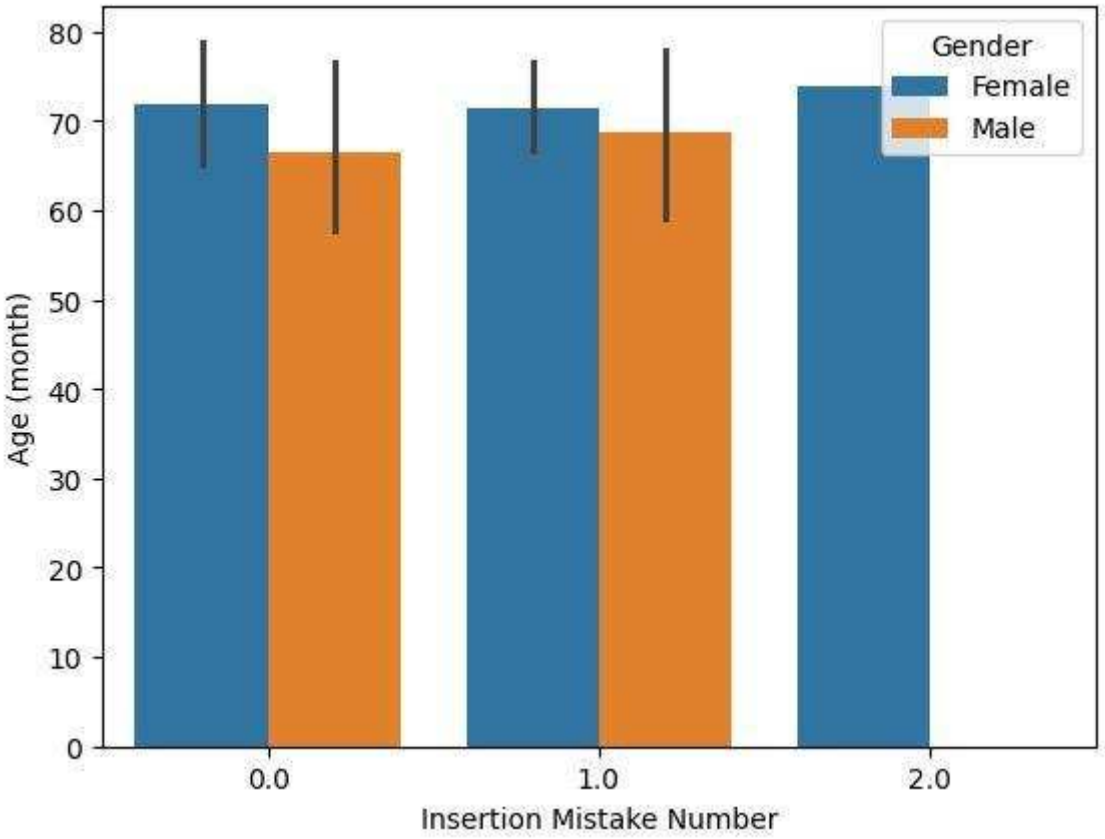


Figure 4: Insertion Mistakes by Age and Gender

The chart indicates that children with no insertion mistakes tend to be older, with females around 75 months and males slightly younger. As insertion mistakes increase, the average age remains relatively stable, with females slightly older. The error bars indicate greater age variability among females, particularly at 0 and 1 insertion mistakes. This suggests that insertion mistakes occur consistently across ages, with females generally older and showing more age diversity than males.

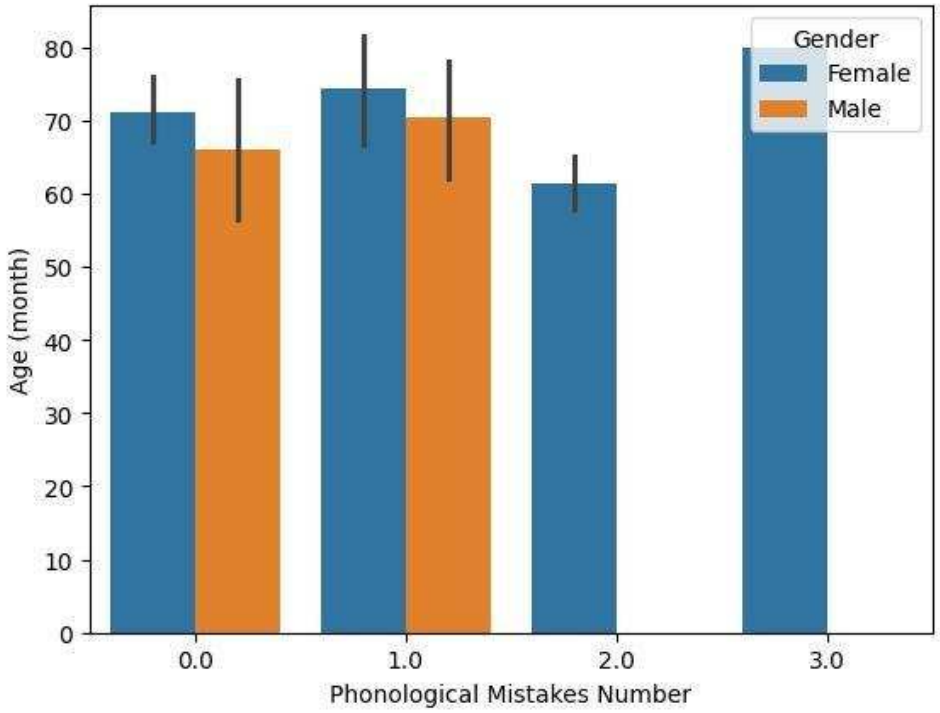


Figure 5: Phonological Mistakes by Age and Gender

The chart illustrates that children with 0 phonological mistakes are generally older, with females around 75 months and males younger. When the number of phonological mistakes increases to 1, both genders maintain relatively high ages, with females slightly older. However, at 2 phonological mistakes, the average age decreases for both genders, with males showing a more pronounced drop. Interestingly, females making 3 phonological mistakes are significantly older than those with fewer mistakes, while no males are represented at this level. The error bars indicate greater age variability among females at 0 and 1 phonological mistakes. This pattern suggests that younger boys may struggle more with phonological errors, while older girls exhibit a wider age range at lower mistake levels and a significant age increase at the highest level of mistakes.

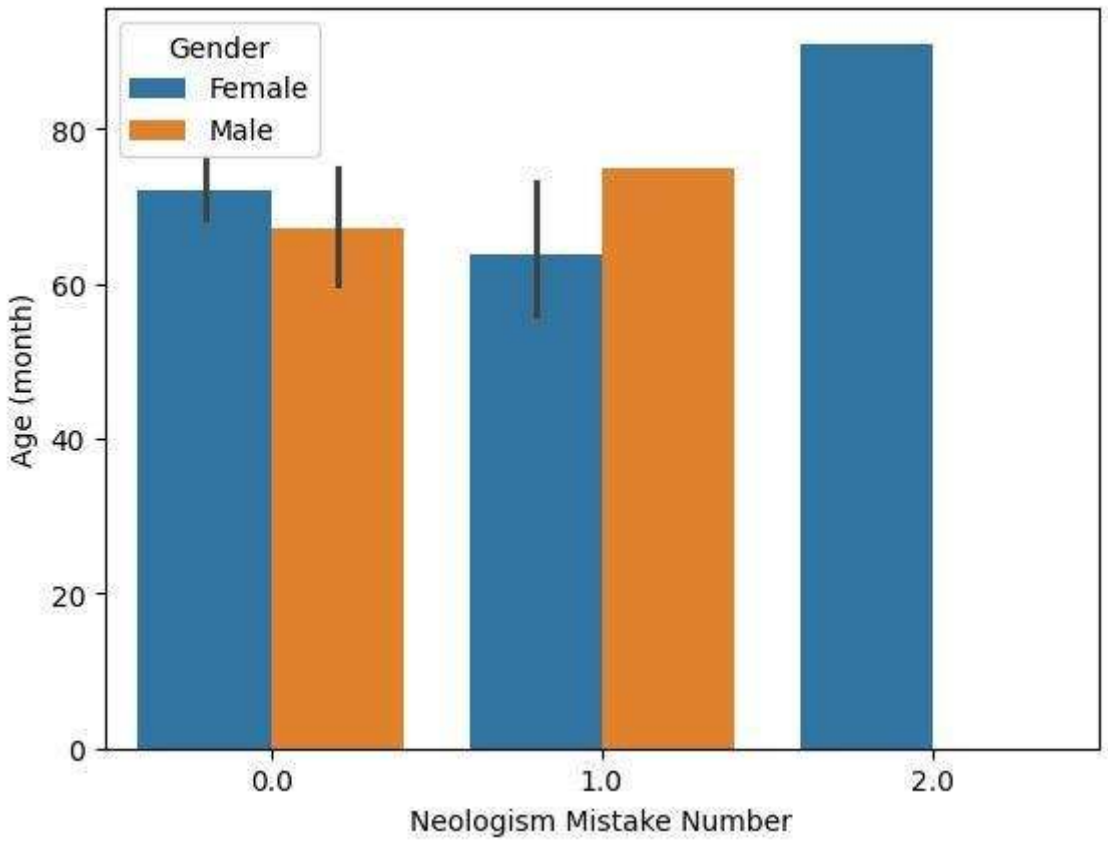


Figure 6: Neologism Mistakes by Age and Gender

The chart shows that children with 0 neologism mistakes are generally older, with females around 70 months and males slightly younger. At 1 neologism mistake, the average age for both genders drops, with females and males showing similar ages but males slightly older. Notably, at 2 neologism mistakes, females are significantly older, around 85 months, whereas no males are represented at this level. The error bars indicate greater age variability among females at 0 and 1 neologism mistakes. This pattern suggests that while younger children of both genders make some neologism mistakes, older girls may attempt more complex language, leading to a higher frequency of these mistakes. The absence of males at 2 neologism mistakes suggests a potential difference in linguistic development or error patterns between genders at higher ages.

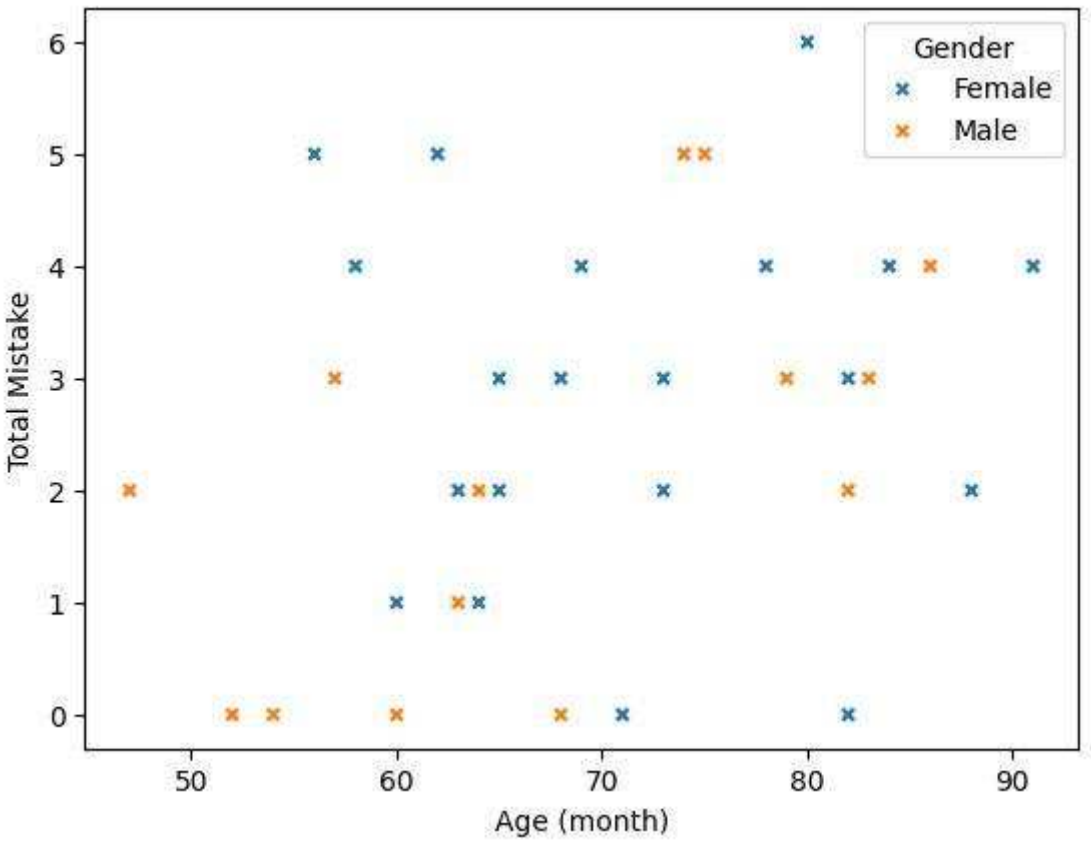


Figure 7: Total Mistakes vs. Age by Gender

The scatter plot illustrates the relationship between age (in months) and the total number of mistakes made by Turkish children during storytelling, with differentiation between genders.

Firstly, the distribution of mistakes is spread across a wide age range, from 50 to 90 months, indicating that children of various ages make storytelling mistakes. Mistakes are observed across all age groups, but are noticeable around certain ages, particularly between 60 and 80 months. This suggests that children within this age range are more likely to make mistakes during storytelling.

In terms of gender differences, both females and males exhibit a wide range of total mistakes, from 0 to 6. Females show a more scattered distribution of mistakes across the age range,

indicating that mistakes occur consistently regardless of age. Males also show a spread of mistakes but with slightly fewer high-mistake instances compared to females. This suggests that while both genders are prone to making mistakes, females might experience a higher variability in their mistake patterns.

Analyzing the patterns between age and mistakes, it is observed that younger children (around 50-60 months) tend to have a lower number of total mistakes, with a gradual increase in mistakes as age increases. However, there is no clear trend indicating that older children make fewer mistakes. Instead, the mistakes are distributed relatively evenly across ages, suggesting that the complexity of storytelling might introduce consistent challenges at all ages. Clusters of data points around 3 and 4 mistakes, particularly for ages 60-80 months, indicate that many children in this age range commonly make 3 to 4 mistakes. Additionally, a few outliers are visible, such as children around 50 and 90 months with high mistakes, indicating that while rare, high mistakes can occur at both ends of the age spectrum.

Both genders show similar patterns, though females have a slightly more varied distribution of mistakes. This shows that while age and experience might contribute to storytelling abilities, other factors such as linguistic complexity and individual differences play significant roles in the occurrence of mistakes.

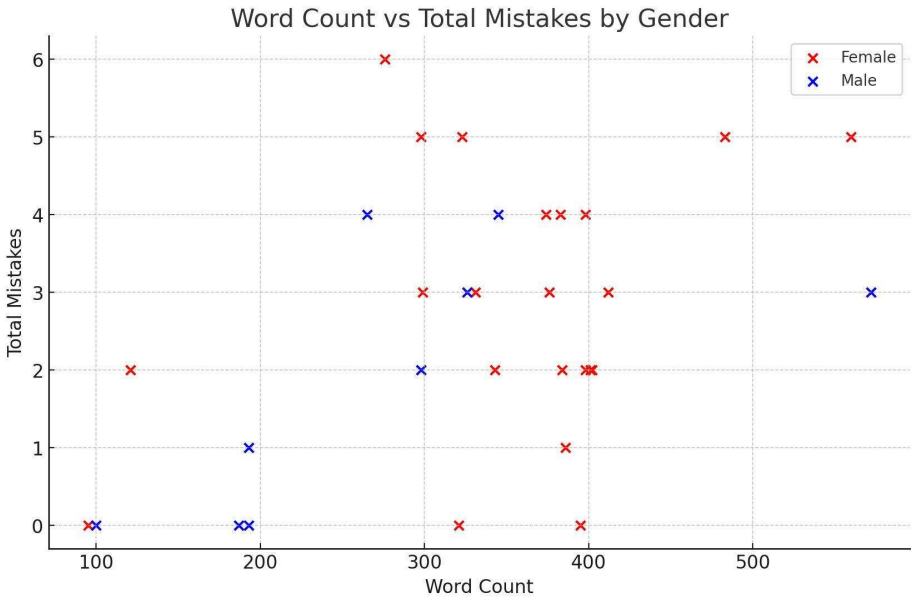


Figure 8: Total Mistakes vs Word Count According to Gender

According to the plot,females generally have higher word counts and a wider range of mistakes, indicating they speak more and make more mistakes.On the other hand,males tend to have lower word counts and fewer mistakes, suggesting they talk less and make fewer mistakes.

However, word quantity appears to have a more significant effect, as greater word counts result in more mistakes. Indeed, there was a significant positive correlation (r=0.370, p=0.028) between the total number of errors and the word count. This correlation supports the hypothesis that an increase in the complexity of speech, which is associated with a higher number of words, leads to a higher probability of errors. This finding highlights that as children aim for more complex speech, their probability of making errors increases accordingly. In other words, as children's language abilities progress, they try to construct more complex sentences and employ a wider range of words and grammatical constructions, which can potentially lead to an increase in errors. The correlation between word count and mistakes may suggest that children who engage in more verbal communication or generate

longer stories are actively improving and evaluating their language abilities, which is a fundamental component of language acquisition.

3.1 ANOVA Results

An Analysis of Variance (ANOVA) was conducted to examine the effect of age on the total number of mistakes made by children during storytelling. The results indicated a significant effect of age on total mistakes, $F(2, 33) = 3.37$, $p = .046$ (Table 1). This suggests that age plays a significant role in the number of mistakes made by children.

Source	Sum of Squares	df	F	p
Age	18.54	2	3.37	.046
Residual	90.68	33		

Table 1 : ANOVA Results for Effect of Age on Total Mistakes

Additionally, an ANOVA was conducted to examine the effect of gender on the total number of mistakes. The results did not show a significant effect of gender on total mistakes, $F(1, 34) = 2.58$, $p = .118$ (Table 2). This suggests that gender does not significantly influence the number of mistakes made by children

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Source	Sum of Squares	df	F	p
Gender	7.69	1	2.58	.118
Residual	101.53	34		

Table 2 : ANOVA Results for Effect of Gender on Total Mistakes

A multiple linear regression analysis was performed to examine the combined effect of age and gender on the total number of mistakes. The overall model was not statistically significant, \(F(3, 32) = 2.70 \), \(p = .062 \), \(R^2 = .20 \) (Table 3). The regression coefficients indicated that neither age nor gender were significant predictors of total mistakes when considered together.

Predictor	B	SE	t	p	95% CI
Intercept	-1.87	2.21	-0.84	.405	[-6.37, 2.64]
Gender (Male)	-0.66	0.58	-1.13	.266	[-1.84, 0.53]
Age (Group 0)	0.04	0.03	1.62	.116	[-0.01, 0.10]
Age (Group 1)	0.05	0.03	1.49	.146	[-0.02, 0.12]

Table 3 : Multiple Linear Regression Results for Age and Gender on Total Mistakes

4. Discussion

4.1 Interpretation of Results

The results of the research highlight a remarkable tendency for Turkish children's growing linguistic errors, growing language production during storytelling, offering important insights into crucial linguistic transitions in their language development. The frequency of omissions and substitutions that have been discovered highlights the increasing complexity of their language requirements as they develop. This pattern is particularly significant for understanding how children learn Turkish, a language that presents special difficulties for young learners due to its complex morphological structure and agglutinative morphology.

The most frequent phonological errors in younger age groups indicate a crucial stage in the phonetic development of language skills in children. Learning phonological skills, such as identifying and generating different Turkish phonemic contrasts, is an essential starting point for children who speak Turkish. Since more complicated linguistic activities require a strong phonetic basis, these early phonological problems can have an impact on later stages of language learning. In this age group, phonological errors are common and correlate with typical developmental stages where children improve their ability to articulate and identify sounds.

4.2 Theoretical Implications

The findings go against the assumptions underlying current interactionist and cognitive theories, suggesting a strong emphasis on the roles that social interaction and cognitive growth play in language learning. In contrast to these hypotheses, the research shows that as language use becomes more complex, older children make more mistakes. It means that language development is greatly influenced by the complexity of language usage and the interactions that surround it, regardless of any natural language ability.

Furthermore, by emphasizing the role that cognitive processes like memory and problem-solving play in language acquisition, the results give support to cognitive theories. The notion that cognitive development is essential for language learning is supported by children's active engagement in understanding and using complicated linguistic patterns.

4.3 Practical Implications

Knowing that Turkish as a first language poses particular challenges for educators and language therapists might help them design specialized solutions. Early educational programs might place more of an emphasis on phonological awareness and morphological training given the structural complexity of Turkish. For example, specific exercises could be created to assist children with recognizing and correctly applying all of the inflectional suffixes, which are essential in Turkish for conveying mood, tense, and case.

Parental advice on fostering language development at home is also informed by these observations. Parents can help children integrate difficult linguistic forms naturally and effectively by encouraging more dialogue-rich interactions and read-aloud sessions that focus on Turkish story frameworks and morphological features. Engaging in storytelling, role-playing, and interactive reading can offer beneficial chances for children to practice and refine their language skills in a supportive environment.

Language therapists can also create specialized assessments and intervention plans that target typical mistake patterns seen in children who speak Turkish. Therapists can create activities that specifically target common error types, such omissions and substitutions, and so provide more effective support for language development.

4.4 Limitations and Future Research

This study's insights are limited by the narrow demographic and geographical focus. All children tested are from Ankara, from upper-middle class families. Future research should

expand to include Turkish-speaking children from various regions and socio-economic backgrounds to determine if these patterns hold universally across different contexts. Additionally, comparing Turkish language acquisition with other languages that have different morphological systems could provide deeper insights into how linguistic structure influences language development errors.

A longitudinal approach would also be beneficial, following children over several years to track the persistence of early errors and their impact on later language proficiency. Such studies could further elucidate the critical periods for phonological and morphological development in Turkish children.

Future research could also explore the impact of bilingualism on Turkish language development. Given the increasing prevalence of bilingualism, it would be valuable to investigate how learning an additional language influences the acquisition of Turkish, particularly in terms of error patterns and linguistic milestones. Examining the role of technology and digital media in language learning could also provide new insights into contemporary influences on language acquisition.

The study significantly enhances our understanding of language development in Turkish children, highlighting how the specific challenges of mastering Turkish influence the types and frequencies of linguistic errors. Ultimately, this research advocates for a responsive and contextually aware approach to supporting language development, ensuring that interventions are specifically adapted to meet the linguistic and cognitive needs of children learning Turkish as their first language.

In conclusion, the dynamic interplay between cognitive development, social interaction, and linguistic environment shapes the language acquisition process for Turkish children. Understanding these factors allows for more effective educational and therapeutic strategies, fostering a supportive environment where children can thrive linguistically. The insights gained from this study pave the way for further research and practical applications, ultimately contributing to the broader field of language development and education. By providing a detailed analysis of the linguistic errors observed during the storytelling sessions, this research underscores the importance of a comprehensive approach to language acquisition, integrating cognitive, social, and environmental perspectives to support the linguistic development of young learners.

5. Conclusion

This study has provided insights into the language development of Turkish-speaking children by examining the types and frequencies of linguistic errors during storytelling. The findings show a clear trend of increasing linguistic errors with increasing production, highlighting the growing complexity of children's language needs as they mature. Understanding these patterns is crucial for grasping how children learn Turkish, a language with rich and challenging structures.

The results support theories that emphasize the role of social interaction and cognitive development in language learning. The common errors, such as omissions and substitutions, reflect how children are influenced by their environment and cognitive processes as they acquire language because learning language is interactive and as they grow their social environment gets bigger. These findings challenge the idea that language abilities are purely innate, suggesting instead that children's language skills develop through a combination of natural ability and interaction with their surroundings.

Phonological errors, which are more common in younger children, indicate an important stage in their development. Mastering the sounds of Turkish is a key step before they can handle more complex language tasks. The study also found that boys and girls might experience language development differently, influenced by their social and cultural contexts.

Practically, this information can be useful for educators, language therapists and parents. Knowing common error patterns and the stages in which they occur can help detect atypical language problems and design targeted interventions for children struggling to cope.Early

educational programs can focus on phonological awareness and morphological training to address the unique challenges of Turkish. Parents can support their children's language development by engaging in rich conversations and reading sessions that emphasize the structures of Turkish.

The study acknowledges its limitations, including its narrow focus on a specific demographic and geographical area. Future research should include a broader range of Turkish-speaking children from different backgrounds to see if these patterns hold true across various contexts. Comparing Turkish language acquisition with other languages and conducting long-term studies could provide deeper insights into how language structures affect development. Research could also explore the impact of bilingualism and technology on learning Turkish.

In conclusion, this research enhances our understanding of language development in Turkish children by highlighting the types and frequencies of linguistic errors. It emphasizes the importance of a comprehensive approach to language acquisition, combining cognitive, social, and environmental factors. The study advocates for educational and therapeutic strategies that are responsive and tailored to the needs of young learners.

The findings underscore the dynamic relationship between cognitive development, social interaction, and linguistic environment in shaping how Turkish children acquire language. By creating supportive environments that foster rich interactions and targeted educational strategies, we can better support children's language development. This research paves the way for further studies and practical applications, ultimately improving how we understand and support the language development of children.

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