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FACT VS. FICTION:
CHILDREN'S LEARNING OF INFORMATION FROM
EXPOSITORY AND NARRATIVE BOOKS

A Master's Thesis

by
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FACT VS. FICTION

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THE DEPARTMENT OF
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İHSAN DOĞRAMACI BİLKENT UNIVERSITY
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December 2017

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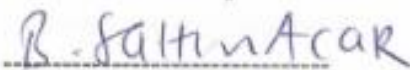
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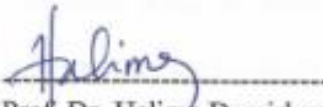
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ABSTRACT

FACT VS. FICTION: PRESCHOOLERS' LEARNING OF INFORMATION FROM NARRATIVE AND EXPOSITORY BOOKS

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Expository and narrative books differ in terms of their structure, content, and language. This study investigated 3- and 5-year-old children's learning of information from different genres, and whether children differ in their preference for the expository genre. Seventy six Turkish-speaking 3- and 5-year olds were presented with expository and narrative books that cover the same topic (i.e., caterpillars). These books contained 4 types of facts (i.e., *Narrative-only*, *Expository-only*, *Conflicting and Supporting*) that aim to investigate: (1) Amount of information children learned from the expository and the narrative book, (2) Children's preference for the expository book when information between genres conflicted, (3) The effect of convergent information in both the expository and the narrative book on children's learning. After hearing both the expository and the narrative book each child was asked questions related to information presented in the books. Analysis of children's answers revealed that 5-year-olds learned more information from both the narrative and the expository book. When information

conflicted between narrative and expository books, 3- and 5-year-olds differed in their preference for the expository book. Five-year-olds showed a preference for the expository book whereas 3-year-olds were at chance level indicating susceptibility to learn false information. Lastly, when information converged across the two genres all children regardless of age retained more information. Findings and their implications are discussed in light of the literature.

Keywords: Expository books, False information, Narrative books, Preschool children, Selective-learning

ÖZET

ANAOKULU ÇAĞINDAKİ ÇOCUKLARIN HİKÂYE VE BİLGİLENDİRİCİ KİTAPLARDAN BİLGİ EDİNİMLERİ

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Bilgilendirici kitaplar ve hikâye kitapları yapı, dil ve içerik bakımından farklılık göstermektedir. Bu araştırma 3- ve 5-yaşlarındaki çocukların bilgilendirici ve hikâye kitaplarından bilgi öğrenimleri ile çocukların bilgilendirici kitaplara olan seçici tercihlerini incelemektedir. Üç ve beş yaşlarındaki yetmiş altı Türk çocuğa aynı konu (Tırtıllar) hakkında yazılan hikâye ve bilgilendirici türünden birer kitap sunulmuştur. Bu kitaplar dört farklı türde bilgi içermektedir (Sadece-Hikâye, Sadece- Bilgilendirici, Çelişen ve Destekleyici). Bu farklı bilgiler doğrultusunda çocukların hikâye ve bilgilendirici tür kitaptan edindikleri bilgi miktarı, kitaplarda sunulan bilgilerin birbiriyle uyuşmaması halinde çocukların bilgilendirici türü tercih etmesi ve aynı bilginin iki kitapta da bahsedilmesinin çocukların bilgi öğrenimleri üzerine etkileri araştırılmıştır. İki kitabı da dinlendikten sonra her çocuğa kitaplarda sunulan bilgileri kullanmaları gereken sorular sorulmuş ve çocukların bu sorulara verdikleri cevaplar analiz edilmiştir. Sonuçlar,

5 yařındaki çocukların bilgilendirici ve hikâye kitaplarından daha çok bilgi öğrendiklerini göstermiştir. Kitapta verilen bilgilerin çeliřmesi durumunda ise 3 ve 5 yařındaki çocuklar bilgilendirici kitap türüne olan tercihleri açısından farklılık göstermişleridir. Beř yařındaki çocuklar cevaplarında bilgilendirici kitabı tercih ederken, 3 yařındaki çocuklar cevaplarını farklı kaynaklara dayandırmış ve yanlış bilgi öğrenmeye açık olduklarını göstermişlerdir. Son olarak, kitapların aynı bilgiyi çocuklara sunmasının çocukların bilgi öğrenimini olumlu yönde etkilediđi gözlemlenmiştir. Bu bulguların önemi literatüre bađlı olarak tartışılmıştır.

Anahtar Kelimeler: Bilgilendirici Kitaplar, Hikâye Kitapları, Seçici Öğrenme, Yanlış Bilgi Öğrenme

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CHAPTER 1

INTRODUCTION

The benefits of early book reading are well documented by extant research. Parents are advised to start reading to their children early (Durkin, 1972). A myriad of positive outcomes are documented for children whose parents regularly read to them including better language comprehension (Beals, De Temple, & Dickinson, 1994), better vocabulary (Marulis & Neuman, 2010) and literacy skills (Justice, & Kaderavek 2003). Based on the effectiveness of book reading for children's language and conceptual development, it has been adopted as a daily activity in most preschool curricula (Duke, Bennett-Armistead, & Roberts 2003), and is a necessary part of children's future school life.

A less studied outcome of book reading is the acquisition of information. Although observation and imitation constitute early social learning processes for children, not all information can be learned through direct observation (Nadel, 2002). Children are required to learn information that cannot be learned through first-hand experience (Shtulman & Carey, 2007). For example, books may provide information about exotic animals or places that children do not have a chance to experience themselves. Thus, books enter children's lives as an essential source of knowledge, which can provide information about various topics before they are able to read by themselves.

There are two distinct structures for children's books, which are known as genres (i.e., narrative, expository). Genres have different social purposes and ways of creating reality through using distinct features (Lemke, 1990). The current study investigates whether there are differences in children's learning of information from books belonging to two different genres (i.e., narrative and expository) by age.

1.1 Two Genres: Narrative and Expository

While books might often be used as reliable sources of knowledge, not all books aim to represent reality as it is, or teach children about how the world works. In this sense, the purpose of narrative books can generally be defined as teaching children about social concepts such as morals. In the process of teaching children about social concepts, narrative books involve specific characters and a plot that is anchored by the character's goals, and actions (Bruce, 1980). Having characters adds a unique dimension to narrative books in that they involve conversations among characters and vocabulary related to the characters' mental states, such as thinking or wanting (Pappas, 1993). Furthermore, events that protagonists undergo follow a certain structure that is comprised of orientation, complication/crisis, and attempts to resolve the complication (Stein & Glenn, 1975). This structure makes narrative a medium that is easier to process for the reader (Bruner, 1991). Lastly, narrative books might involve characters or events that are unrealistic or fantastical which is of particular interest to the current study. It is important to point out that having fictional elements is not a requirement for a narrative book. Narrative books may change with respect to the degree of reality that they present to the audience (Kotoman & Balci, 2017).

In contrast, expository books aim to provide generalizable information about a specific topic to its reader such as plants or animals (Duke, 2003). Expository books contain accurate information about the subject matter and might include sophisticated vocabulary (Maduram, 2000). Contrary to narrative books, expository books are not structured by a plot. Information is presented to readers in the form of individually structured units. In line with the aim of providing generalizable information expository books do not involve specific characters, instead they refer to kinds (Martin, 1985). Further, the information given in an expository text should be valid for all of the members of that kind, which makes the content of expository books more abstract. For example, the statement that “Grizzly Bears hibernate during winter” can be generalized to all existing Grizzly Bears. Finally, to refer to kinds, generic language is used in expository books together with timeless tense as an indicator of generalizability (Gelman, Ware & Manczak, 2013).

1.2 Children’s Learning from Narrative and Expository Books

Young children may come to differentiate these two genres based on several features, such as: purpose, content, structure, and the difference in language (i.e., tense, vocabulary). The current study aims to investigate whether there are differences in children’s learning from these two genres. In this regard, our first research question was whether book genre affects the amount of information that children acquire. Research that investigates children’s learning by genre is scarce, perhaps owing to the wide-held belief that narratives provide a foundational discourse structure to express and comprehend information. For instance, Bruner (1991) argues for ‘the uniqueness’ of narratives for human experience. In his view, human beings are predisposed to structure their experiences in a narrative format, which consequently allows them to make meaning

of narratives more readily. Stein and Glenn (1975) present a narrative schema, which consists of sequences that are connected to each other in a logical manner. Lending support to the existence of this schema, they found that when children were asked to recall a narrative book which had previously been read to them, their recall was organized by narrative structure, as they reproduced the information in line with the narrative sequencing of events. Similarly, Stein and Trabasso (1982) suggest that humans construct their memories in the form of narrative schemata. These schemata help readers to organize and retrieve information. Others advise that considering children's limited capacities, narrative might provide an efficient mean to learn and remember information (Egan, 1988) and educators and parents are encouraged to utilize narratives to promote children's literacy development (Wells 1986; Adams, 1990). Despite the plausibility of these arguments about narrative as having a privileged status for young children's learning, research has not determined whether this applies to generalizable facts about the world. Narrative research has predominantly investigated other aspects of the narratives such as children's learning of new words through single or multiple exposures (Eller, Pappas & Brown, 1988; Stahl, Richek & Vandiver, 1991), possible explanations and instruction to improve word learning from narratives (Reese & Cox, 1999), or children's comprehension of narrative structure (Lynch, Broek, Kremer, Kendeou, White & Lorch, 2008; Paris & Paris, 2003).

A more recent line of research suggests that children are capable of processing expository books and that expository books should also be a part of children's early literacy and learning environments along with narrative books. Pappas (1993) has criticized the narrative bias found in earlier literature through investigating preschool children's

interaction with expository and narrative books. In her study, 3-to 5-year-old children were read both expository and narrative books three times on three consecutive days. Later these children were asked to recall what was read to them. An analysis of children's recall showed that children were able to effectively learn new words from both types of books. Furthermore, in their recall of these books children were able to use appropriate language. For instance, to refer to a specific character in the narrative children used "the" and similarly they used plural nouns to refer to kinds in expository books during their recall. Following Pappas, others have argued that expository books are suitable for young children (Debbie & Harris, 1997; Duke, 2002). Research has shown that parent-child talk during expository book reading can be quite rich. In fact, the length of conversational turns during book reading is reported to be higher for expository books than for narrative books (Pellegrini, Perlmutter, Galda & Brody, 1990). Likewise, in a study done by Torr & Clugston (1999), parents shared expository and narrative books with their children. In their analysis of book reading sessions, they found that parents used more technical terminology when reading the expository book even if the book did not contain such terminology. Furthermore, during expository book sharing, children asked questions to their parents that were cognitively more demanding.

Profound emphasis on narrative by early theorists might potentially promote the idea that narrative is a more appropriate format for children to learn from. However, the dearth of research about children's learning of facts from narratives as well as the recent emphasis on the significance of expository book in children's life suggests that there are open questions about children's learning from different genres.

1.3 Developmental Differences in Learning from Fantasy

In addition to exploring the amount of information children learn from different genres, our second research question asked whether children prefer to rely on expository books, when information conflicts across genres. The issue of reliability is inherent in the nature of the two genres. As it was previously stated, expository books aim to give factual information about a specific topic. Thus, expository books do not include information that is inconsistent with the real state of affairs. In contrast, narrative books might include incorrect information that features unrealistic or fantastical elements which conflict with reality. Unlike expository books, the existence of fantastical and unrealistic elements constitutes a dual nature for the narrative genre. The idea of a dual nature is that while a narrative book involves fictional characters or events, it does not sever all of its ties with reality. Thus, in narrative books fictional and realistic information co-exist (Weisberg & Hopkins, 2016). Taking the dual nature of narrative genre into consideration, children should be cautious about the information presented in narrative books and they should trust in information from expository books in the case of a conflict between the two sources. The preference for a genre in terms of its reliability constitutes our second research question which asks, do children show a preference for expository books when learning new information which conflicts across genres.

To have a preference in the case of conflicting information children need to be able to differentiate whether the information is fiction or non-fiction. This process of determining whether the presented information is a product of fiction is known as “the reader’s dilemma” (Gerrig & Prentice, 1991). Solving the reader’s dilemma can be

difficult for children. To clarify the dilemma, an Aesop's fable can be given from Jacobs (1984):

In a field one summer's day a Grasshopper was hopping about, chirping and singing to its heart's content. An Ant passed by, bearing along with great toil and head of wheat he was taking to the nest. "Why not come and chat with me," said the Grasshopper, "instead of toiling and moiling in that way?" "I am helping to lay up food for the winter," said the Ant, "and recommend you to do the same". "Why bother about winter?" said the Grasshopper; we have got plenty of food at present." But the Ant went on its way and continued its toil. When the winter came, the Grasshopper had no food and found itself cold and very hungry, while it saw the ants distributing every day corn and grain from the stores they had collected in the summer. Then the Grasshopper knew: It is best to prepare for the days of necessity.

On the one hand, it is expected that children should learn something from this story, such as ants are hard-working animals or one should be prepared for difficult times. On the other hand, children are expected not to believe everything they hear in the story such as singing and talking animals. However, more ambiguous information such as the fact that grasshoppers do not continue to live during winters can go unnoticed even by adults.

In fact, literature that examines adults' learning of information from fictional media consistently suggests that even adults are likely to rely on fictional information. For example, university students who watched a fictional movie and read an expository history text about the same topic were asked to complete a recall test. While the

information in the history text was always correct, the movie contained both correct and incorrect information. Although watching a movie increased the number of correct answers students gave in the recall test, it also increased the number of incorrect answers that students gave by referring to the movie instead of the historical text. Furthermore, students reported similar levels of confidence for their correct and incorrect answers indicating that they trusted the information presented in the fictional movie (Butler, Zaromb, Lyle, & Roediger, 2009).

Similarly, other research has shown that reading a story that contains true and false information can increase the number of answers adults gave in a general knowledge test. However, these answers referred to both correct and incorrect information despite the fact that, prior to the experiment adults were informed that stories might contain false information. Furthermore, reading the same story twice made this effect more salient and increased the number of false answers that adults gave (Marsh, Meade, & Roediger, 2003). The problem of reliance on fictional stories was observed even if adults were warned prior to reading and were asked to detect false information (Marsh & Fazio, 2008). Adults' reliance on fictional sources cannot be explained by their lack of knowledge about the reliability of fictional sources. Therefore, adults' susceptibility to learn false information can be seen as a consequence of adults' not monitoring the factuality of the stories on-line (during the process of reading) which leads them to refer to fictional stories and give incorrect answers to general knowledge questions (Fazio & Marsh, 2008).

If adults, who are expected to be competent in source monitoring, make the mistake of relying on fictional sources, children who might not be very competent in discriminating

fictional sources from realistic sources would be expected to be more likely to learn false information. The ability to distinguish between reality and fantasy may prove even more challenging for children in cultures where adults give mixed messages about the reality or fantasy status of characters or events. Adults may actively promote the existence of some fictional characters (e.g., the Boogeyman, Santa Clause), while deterring children from believing in other equally fantastical characters (e.g., superheroes, ghosts). Similarly, adults may expect children to understand that knights are real, but dragons are not. Children should understand that historical figures who appear in storybooks actually existed at one time, unlike Cinderella or Aladdin. Thus, the line that separates reality from fantasy may not be clear for young children. Young children seem to show competence in differentiating reality and fantasy when the questions tap the extreme ends of this continuum such as whether one could eat a cookie that one imagines (Flavell, Flavell, & Green, 1989). However, children may experience confusion when characters and events to be judged fall between these extreme polar ends of the fantasy-reality spectrum.

One of the grey areas that children have difficulty is making meaning of improbable vs. impossible events. While impossible events fall into the category of the unreal or fantasy, improbable events should be considered within the scope of reality. In their study, Shtulman and Carey (2007) presented adults and 4- to 8-year-old children with three different events; impossible (e.g., eating lightning for breakfast), improbable (i.e., finding an alligator under the bed) and ordinary (i.e., cleaning a closet). These events were presented to the children through simple illustrations for each event. When children and adults were asked whether these events could happen in real life, both were good at

identifying the impossible events and confirming that ordinary events could actually happen in real life. However, adults and children differed in their judgments for improbable events. Compared to adults, children were more likely to think that improbable events could not happen in real life and their justifications for the likelihood of improbable events were similar to those for impossible events indicating a more general skepticism.

Woolley and Cox (2007) have argued that younger children are skeptical towards new information if it does not conform to their experience and understanding of the world. In their study, children between the ages of 3 and 5 were read three types of stories (i.e., realistic, fantastical and religious). Children were asked about the reality status of the characters and the events in the storybooks. Overall, results showed that children reported high levels of skepticism towards the reality status of the characters and events in the stories. Regarding the reality status of the characters, 70 percent of the children denied the existence of all types of characters and also denied the possibility that these characters might represent real people. Similarly, findings indicate that children showed higher levels of skepticism towards reality status of events. In terms of story type, 3- and 4-year-old children showed higher skepticism towards storybooks and religious books compared to realistic ones. In contrast, 5-year-old children showed less skepticism towards storybooks including fantastical ones. Moreover, there was a shift between 3- and 5-year-old children in their perception of religious storybooks. Five-year-olds were more likely to believe that events and characters in religious books were real, compared to 3- and 4-year-olds.

Based on these findings, it can be argued that children's skepticism might have important implications for their learning of information. Although children's skepticism might not be sophisticated, it's important to understand the underlying factors that cause this resistance. In a later work, Woolley and Ghossainy (2013) argued that children develop an understanding that there are things beyond their experience and they gradually become more open to such new information. They argued that children's skepticism and overreliance on personal experience might be caused by their lack of metacognitive abilities. Children might not be aware that their knowledge is limited and moreover, they might lack the necessary skills, such as consulting a knowledgeable adult or a book, to learn from indirect sources. Children, as they begin to understand the limits of their knowledge, might seek additional information from other sources. In addition to this, children might compare their own knowledge with the knowledge of other people around them through cultural and social interaction. They might believe what other more experienced people take to be true, as it is observed in the case of perception of religion (Woolley & Cox, 2007). Older children are more likely to believe in the reality of religion while younger children seem to think of it as a part of non-reality.

Evidence for younger children's over-reliance on their personal experience comes from a study done by Weisberg, Sobel, Goodstein and Bloom (2013). In their study, 4-year-olds were presented with an expository and a narrative book that lacked an ending. Later, children were asked to complete these stories with an ending. They found that children chose to complete both types of books with ordinary events regardless of whether the book contained fantasy content or not. In contrast, adults make their decisions about how

to complete an incomplete story based on the fantasy content, which evidences young children's "reality bias".

A similar "reality-bias" was observed from another line of research, which investigated children's ability to transfer relevant information that is described in a realistic vs. fantastical manner. In a study done by Richert, Shawber, Hoffman and Taylor (2009), 3- to 6-year-old children were presented with two source stories, one with a realistic character and another with a fantastical character. Each source story provided children with information about how to solve a problem, it was either carrying items by wrapping a towel around them or stacking dominos to make blocks equal in height. Following the source stories, children listened to two target stories in which they were expected to use the information in the source stories to solve a similar problem. The protagonist of the target story mismatched with the target of the source story. For example, if a child learned about the wrapping in a towel solution from a fantasy character, the character of the target story, who needed this idea was a real character. Results suggest that 3- to 5-year-old children are more likely to transfer the information on how to solve a problem from a source story that uses a realistic character than a fantastical character. In contrast, 6-year-old children were able to transfer the necessary information to solve a problem regardless of source story being realistic or fantastical.

In a following study by Richert and Smith (2011) 3.5 to 5.5-year-old children were presented with either a fantastical story about astronauts and giant robots or a realistic story about a hide-seek game with a babysitter. Both stories provided children with information about two solutions to similar problems. Then children were asked to transfer these solutions from the stories to solve a similar problem that was created by the

experimenter using dolls. Similar to previous findings, results suggest that children who listened to fantastical story were less likely to transfer the solution to solve the problem described by experimenter as compared to children who listened to the realistic story. Furthermore, they found that children with a high fantasy orientation were even less likely to transfer the solution from the fantastical story. The authors discuss that these finding might reflect children's experience with fantastical sources which reminds children that the information presented in these sources are less likely to apply to real life situations.

These findings can be interpreted in a way that young children are resistant against any information outside of their direct experience of the world which reduces the possibility of learning false information from fictional sources. In contrast, older children with more cognitive maturity start to understand that things can occur independent from their individual history of experiences. Thus, older children will be more open to new information including false ones despite their developing ability to differentiate fantasy and reality. A study done by Fazio and Marsh (2008) supports the idea that older children might be more susceptible to learn false information compared to younger children as a result of their openness to new information. In their study, Fazio and Marsh investigated 5- to 7-year-old children's fact learning from fictional stories. Results of the study indicated that overall reading of stories helped children to give more correct answers in a knowledge test. However there was also a significant increase in the number of answers that were given by referring to false information in the stories for older children. This problem was not observed for younger children. Furthermore, the issue of learning false

information was not caused by children's ability to source monitor since older children were much better in source monitoring than younger children.

Returning to our second research question, which asks whether children show a preference towards one of the genres when information in the genres conflict, there are two competing arguments for children's reliance or acceptance of information according to the nature of the written source. Based on research that shows children's over-reliance on personal experience for making reality judgments (Woolley & Ghossainy, 2013; Weisberg et. al., 2013) it is possible to expect that younger children might ignore information in a narrative and may be more prone to prefer information presented in the expository genre. In contrast, older children might show less preference towards one genre as a result of their openness to information that may conflict with their experience of the world. Alternatively, another line of research suggests that children's understanding of expository and narrative genres will increase in parallel with their general literacy and language development. According to this idea, as they grow up children will develop a more nuanced understanding about genres. Both expository and narrative books have certain characteristics such as use of tense or generic language that can signal to a reader about its content and reliability (Lemke, 1990). Therefore, children would have a better understanding of these characteristics in parallel with their increasing literacy development.

1.4 Empirical Work on Children's Understanding of Generic Language

Generic language that is used in expository books might signal children about the reliability of a source since generic language is used to reference kinds and indicate generalizable knowledge (Gelman et al., 2010). In contrast, the non-generic language of

narrative is used to reference a specific target, which is perceptible and existing in the present story. In a pedagogical context where children are prepared to learn something new, the language of the information usually includes generic statements rather than non-generic ones (Gelman, Ware, Manczak, & Graham, 2013). Gelman and her colleagues have shown that, the use of generic language in pedagogical contexts is observed not only for adults but also for 5- and 6-year-old children who are given the role of being a teacher in a conversation or speaking to an ignorant puppy alien. In contrast, in a non-pedagogical context children who act as a friend or as a peer in a conversation do not use much generics in their talk. There is prevalence of generics in teaching orientated situations and expository books contain considerably more generic language than narrative books (Gelman et al., 2013). Thus, being able to produce and understand generic language might be an important step for children's understanding of an expository book and developing a preference for it when thinking about true information.

Research on children's understanding of generics shows that 3-year-old children seem to be able to differentiate generic and non-generic utterances. When 3-year-olds were shown a picture of two penguins and asked a generic or a non-generic question (i.e., "Do birds fly?" or "Do the birds fly?"), their responses indicate that 3-year-olds are able to interpret generic statements and respond accordingly (Gelman & Raman, 2003). Another study indicated that 3- and 4-year-old children were able to use linguistic cues to decide the scope of an ambiguous sentence by looking at the generic or non-generic phrases used in the preceding sentences (Cimpian & Markman, 2006).

Above mentioned studies that are conducted with older children have argued that children demonstrate their abilities to understand generic language in variety of ways. However,

their level of generic understanding and usage is still incomplete compared to that of adults. Five-year-old children seem to have a basic understanding of the fact that generic language does not only indicate generalizability to all members of a kind (i.e., quantity) but also implies shared properties of kinds (i.e., characteristic, Brandone, Chipman, Leslie, & Gelman, 2012). Gelman and colleagues (2010) showed that 5-year olds were sensitive to generic language while learning facts. Hearing a fact about novel animals in 3 different ways; generic (e.g., “Zarpies hate ice cream”), specific–label (e.g. “This zarpie hates ice cream”), or no-label (e.g., “This hates ice cream”) can change children’s perceptions about the novel animals. For both adults and children, generic statements strengthened the link between category and property and the kind. For example “Zarpies hate ice cream” was perceived as a general property of Zarpies. Moreover, when they heard this property for a single Zarpie, they generalized it to the others (familiar induction). Furthermore, generic statements created an expectation that the target of a generic has stable properties and those properties will exist over time and even in the face of conflicting information. For example, hearing “Zarpies hate ice cream” leads to a general expectation that Zarpies will maintain this property.

These results suggest that starting from 3 years of age children are able to differentiate generic statements and they are able to use linguistic cues within a context to decide the generalizability of the information presented. Considering that expository books are full of generic statements, it can be expected that children will be able to differentiate the generalizability of content in an expository book compared to a narrative one.

Furthermore, being exposed to generic language in a pedagogical context can create expectations for children towards expository books as a generalizable source of

information. However, based on studies conducted with older children it is possible to expect that older children would be more sensitive to generics statements compared to younger children.

1.5 Children's Learning of Information from Narrative and Expository Books

Similar to the way in which generic language signals to a child about the content and aim of a book, the existence of fictional elements in a narrative book may also give clues to children about the content and reliability of the book. In a study done by Corriveau, Kim, Schwalen, and Harris (2009) children were asked to categorize novel characters as historical or fictional. Each character type (e.g., soldier, farmer) was presented to children in both a fictional and a historical context. While 5- to 7-year-old children were able to categorize characters correctly based on the story context, 3- to 4-year-old children were at chance level at categorizing novel characters. These results indicate that children show developmental gains in their literacy knowledge which may contribute to older children's selective learning from different genres.

Furthermore, other features of the narrative genre can also cue children about its reliability. In a relevant study, Ganea, Canfield, Ghafari, and Chou (2014) investigated whether the use of anthropomorphic language and pictures affects 3- to 5-year-old children's learning of facts about animals. In their study, children were presented with novel animals and heard a story about them that used either anthropomorphic language or realistic language accompanying realistic illustrations. After hearing the stories, children were shown a real picture of the novel animal and asked questions about it. While children's answers indicated that they were able to learn facts about novel animals in both conditions, children in the anthropomorphic language condition attributed human-like

features to animals such as talking. Furthermore, combining anthropomorphic language with anthropomorphic illustrations decreased children's learning of facts significantly.

Children's learning from different genres is an emerging area of research with both academic and applied significance. Such research could potentially extend our understanding of children's perception of reliable sources of information. In addition, a better understanding of children's preference for and learning of information presented in these genres would assist in efforts to enrich young children's educational environments. However, existing research is far from providing us with a consensus. The disproportionate emphasis given to the narrative genre is slowly giving way to a more balanced approach to children's literary experience. While it is acknowledged that narratives are powerful contexts to teach children emergent literacy skills (e.g., vocabulary, narrative comprehension), expository books provide valuable opportunities to teach children sophisticated vocabulary and causal relations (Pappas, 1993; Toor & Clugston, 1999). The one study that investigated young children's learning from different sources with varying degrees of defining features (i.e., the quality of pictorial stimuli, the anthropomorphic nature of language) has utilized a between-subjects design (Ganea et al., 2014). Thus, it says little about what children learn when they hear two genres which give conflicting and convergent information about the same topic. This is a gap that the current study tries to fill by using a within-subject design.

1.6 The Current Study

The current study had two major aims: The first aim was to investigate 3- and 5-year-old children's learning of facts from expository and narrative books. Three-year-olds were used as the lower age limit for this study since literature suggests that is when children

develop a basic understanding of narrative structure (McCabe & Peterson, 1991).

Similarly, the upper age limit for the current study was 5-year-olds since children older than 5 begin their formal schooling and start to read by themselves. The second aim was to investigate whether children prefer learning from the expository book to the narrative book when confronted with conflicting information.

To investigate these issues we presented children with two books that each belonged to a different genre (i.e., expository and narrative) but covered the same topic (i.e., caterpillars). These books contained 4 types of facts (i.e., *Narrative-only*, *Expository-only*, *Conflicting* and *Supporting*). In the *Narrative-only* and *Expository-only* categories children were presented with facts that were specific to the text presented in one of the books. *Conflicting* facts were based on genre-specific qualities in that the expository book presented correct information whereas the narrative book contained both correct and incorrect information. Thus, our manipulation reflected a real life difference between these two genres. Lastly, *supporting* facts were units of information that were presented in both books. By presenting children with the three types of facts, the current study aimed to answer four questions about children's learning from books: (1) Is there a difference between 3- and 5-year-old children's preference for expository books and the number of facts they learn with respect to their developing language, executive functioning and narrative comprehension abilities (2) Is there a differential impact of book genre on children's learning of text-specific facts? (3) Do 3- and 5-year-olds differ in their preference for expository book when the information given in the expository book conflicts with the false facts presented in the narrative genre? (4) Do children learn

more efficiently when both books talk about the same facts instead of presenting conflicting facts?



CHAPTER 2

METHOD

2.1 Participants

Seventy Six Turkish-speaking 3- and 5-year-old children participated in this study: 32 (18: Male, 14: Female; mean age 41.5 months; age range 35-49) 3-year-olds and 40 (21: Male, 19: Female; mean age 66.5 months; age range 58-71) 5-year-olds. Demographic information collected from parents of the children revealed that participating children were representative of middle to high-socio economic status. Furthermore, parents' completed The Home Literacy Environment Questionnaire. Their responses revealed that all children were exposed to various kinds of books at home. The frequency of book reading was high as sixty percent of parents reported that they read a book to their children almost every day. In addition, parents in our study reported having started to read to their children at a young age. Fifty-two percent of the parents reported that they read books to their children starting from 6 to 12 months.

2.2 Materials

2.2.1 Picture Books

Instead of using commercially available books, two pictures books; one narrative and one expository were created by the research team. The aim was to have control over the content and the structure of the books. The books were matched on topic (i.e.

caterpillars), length, complexity, number of pictures, and illustrations. Each book was comprised of 5 pages of text and 5 colored pictures accompanying each page of text. In terms of their complexity, both books included non-technical child friendly words, short sentences and simple grammar. The books differed in terms of the distinct characteristics of the two genres (i.e., expository and narrative).

2.2.1.1 Narrative Book (*Mugi's Dream*)

The narrative book was created in accordance with the general features of the narrative genre. It told the story of a caterpillar named Mugi, who dreams of exploring distant lands and tries to build wings to fulfill this dream. The story does not identify Mugi's gender, and the fact that Turkish language does not include gendered pronouns made this natural. Since in Turkish language evidential past tense is used in narratives, our narrative book included evidential past tense to make it familiar for children. The story included the following narrative structure: orientation, complication, crisis, and resolution. As a characteristic of the narrative genre, unrealistic and anthropomorphic elements such as talking or shopping animals were used in the story (see Appendix A).

2.2.1.2 Expository Book (*Caterpillars*)

The expository book aimed to give generalizable information about caterpillars as a species and told children about the metamorphosis process of caterpillars. In line with the defining characteristics of this genre, the expository book did not include a storyline, dialogues or a protagonist. Instead the book presented different features of caterpillars on each page. Generic language and timeless tense was used throughout the book as a general feature of the genre (see Appendix B)

2.2.2 Units of information

Creating materials specifically for this study allowed for equalizing the quantity of information given in the books. In total, 20 units of information were included in the two books (see Table 1). The narrative book included 4 units of true information that were only presented in this genre (narrative-only), 4 units of true information that were also presented in the other genre (supporting), and 4 units of information that conflicted with information presented in the other genre (conflicting). Similarly, the expository book contained 4 units of true information that were only presented in that genre (expository-only), 4 units of true information that were also presented in the other genre (supporting), and 4 units of information that conflicted with information presented in the other genre (conflicting). The conflicting information was always correct in the expository genre and false in the narrative genre.

2.2.2.1 Conflicting facts

Information given in this category conflicted between the two genres of books. There were 4 true information units in the expository book and these information units contradicted the 4 false information units in the narrative book. For example, the expository book suggested that birds were the predators of caterpillars, in contrast, in the narrative book it was stated that caterpillars and birds were close friends. Therefore for the conflicting information, the expository book was always true and the narrative book was always false.

2.2.2.2 Supporting facts

Four information units about caterpillars were mentioned in both the expository and the narrative books to look at the combination of the two types of genres on children's

learning of information. For supporting units of information, similar but not verbatim expressions were used in the expository and narrative books.

2.2.2.3 Narrative-Only facts.

Four different true facts about caterpillars were included in the narrative book that was not mentioned in expository book.

2.2.2.4 Expository-Only facts.

Similarly, the expository book also contained 4 specific facts about caterpillars, which were not included in narrative book.

2.2.3 Questions

For each information unit presented in each category (i.e., conflicting, supporting, narrative-only, and expository-only) a question was created to investigate children's learning of that information (see Appendix C). Thus, there were four questions in each category making a total of 16 questions. Moreover, within each category there was one close-ended (e.g., Do caterpillars move slow or fast?), one open-ended (e.g., What feature of caterpillars protect them from cold?), and two multiple-choice questions. In the multiple-choice questions children were presented with one correct and three filler options. Filler options were not from the books but considered to be plausible answers for children. For the conflicting questions, one of the filler options was based on the false information given in the narrative book. For example, in one of the conflicting questions children were asked what they would give a caterpillar to eat. The correct option was a leaf, the false answer was a candy, and the two filler answers were bread and nuts.

Table 1. Units of information according fact and question types.

Question type	Expository-Only	Narrative-Only	Supporting	Conflicting (False From Expository)	Conflicting (False information From Narrative)
Close-ended	Sleeping Under Leafs	Moving Slow	Number of eyes	Birds being a predator	Being friend with birds
Multiple Choice	Camouflage	Relationship with Ants	Living in trees	Eating leafs	Eating candies
Multiple Choice	Poisonous	Smelling through antennas	Number of feet	Cocoon as a nest	Tent as a nest
Open-ended	Being fuzzy	Sticky feet	Growing rapidly	Wings from metamorphosis	Handmade wings

Thus, there were three possible types of answer that children could give. First, they could refer to the expository book and could choose leaf. Second, they could refer to the narrative book and could pick candy. Lastly, children might have picked one of the filler options without referring to any of the books.

2.2.4 Reading protocol

To be able control reading session, a protocol was established. This protocol had two purposes. First, the protocol enabled book reading to be interactive making it more natural for children. Second, it allowed the reader to keep a similar level of interaction across all children. The reading protocol included sentences prompts that encouraged children's participation in reading. These were predetermined sentences that were appended to each unit of information in the books and were added as footnotes to pages. Thus, after presenting the child with a unit of information about caterpillars, the reader read the sentence in the footnote which emphasized the specific unit of information one more time for the child and encouraged him/her to participate. There were two ways to participate: pointing and inference. In the pointing prompts either the child or the reader pointed to the relevant element in the picture. Similarly, inference or extension prompts emphasized the information unit by asking the child to link the information in the book with his/her real life experiences. An example of such a footnote is as follows, "See, caterpillars eat leaves, what about you? What do you like to eat?"

2.2.5 Assessment of Cognitive Abilities

2.2.5.1 Language Task

Expressive and receptive language abilities were expected to play a role in children's overall performance since the study required children to understand the books read to

them and answer comprehension question about the book. For this purpose TIFALDI (Turkish Expressive and Receptive Vocabulary Test) was used to assess children's language abilities. This is a standardized vocabulary task for Turkish children between 2 to 12 years of age (Berument & Güven, 2010). The task consists of two parts; expressive and receptive vocabulary. In expressive vocabulary section children are asked to name the target pictures, which increases in difficulty as children progress. In the receptive language section children are provided with the name of a target and are asked to choose the correct picture of the target among 4 related pictures. There were 104 pictures in the receptive and 80 in expressive language sections.

2.2.5.2 Narrative comprehension

Seven questions were created to look at children's narrative comprehension. These questions aimed to assess children's understanding of the narrative elements such as the setting, motivation of the protagonist, protagonist's attempt to reach a goal, the consequence of this attempt, and the moral of the story. These questions were specific to the narrative book since expository books do not conform to a story schema. Thus, it was not possible to create an identical (or even similar) set of comprehension questions for the expository book. Narrative comprehension was included to have an additional language assessment from the children.

2.2.5.3 Executive Functioning Task

An executive function measure was included considering that it could be related to children's ability to regulate their attention as well as switching between information between different sources while answering questions. It was expected that children with higher executive functioning would be better listeners and also be better at evaluating

information from different sources. To measure children's executive functioning abilities, the Dimensional Change Card Sort (DCCS; Zelazo, 2006) was used. The task consisted of 3 phases and 28 cards (14 red cars, 14 blue elephants). After a demonstration of how to sort cards, in the first phase children were asked to sort 6 cards according to their color. During the transition to the second phase, the experimenter changed the rule of the game and children were asked to sort 6 cards according to their shape. If children successfully sorted 5 cards after the rule changed in the second phase, the experimenter proceeded to the third phase. In the third phase, children were presented with the border version of the game in which children were asked to switch between color and shape games based on whether there was a black border around the card or not. There were twelve cards in the third phase and children were supposed to sort 9 cards correctly to successfully complete this phase.

2.2.5.4 Theory of Mind Task

To assess children's theory of mind abilities, the scale created by Wellman and Liu (2004) was used. The scale was adapted into Turkish (Özoran, 2009) and included 5 tasks. These tasks were: diverse desires, diverse beliefs, knowledge-ignorance, explicit false belief, contents false belief, and hidden emotions. theory of mind task was utilized as a filler to equalize cognitive load of the first and second day of testing task and it was excluded from the analyses since it was not a relevant variable with regard to the aims of the current study

2.2.6 Parent Questionnaire

The Home Literacy Environment scale, created by Ilgaz & Aksu (2005), was sent to parents' home via school administration. The scale consisted of two parts. In the first

part, parents were asked about the household's demographics information. The second part of the scale was created to learn about parents' book reading behaviors such as frequency of book reading and the number of children's books that they have in their home. Furthermore, parents were asked whether they have a tendency towards one of the genres while buying or reading books to their children.

2.3 Procedure

The whole testing procedure took place in children's preschools where each child was tested individually in a quiet room. Children were tested individually for two reasons; the first consideration was to keep the level of interaction during book reading same between children. It would be difficult to control the level of interaction in a group reading environment as well as possible distraction to children's attention. The other consideration was the need to test children individually for their cognitive abilities. The testing process was divided into three days for each child. This division was done by considering the cognitive load and time breaks needed for children of this age. First, it would be confusing and tiring for children to listen to both the expository and the narrative book on the same day. Second, assessing language, theory of mind, and executive functioning one after another before the reading part would be cognitively demanding for children. Therefore, the second book was read to children two days later and assessment of control variables was divided into these two days to reduce time requirements and cognitive load. Finally, a third testing day was formed one week after the second book was read, to ask children the conflicting and supporting questions.

2.3.1 Day 1

Two trained researchers, an experimenter and a coder, carried out the first day of testing. Children were introduced to the coder and experimenter prior to testing. All children gave verbal consent to the study. Upon entering the testing space, children were told that the coder was doing his/her homework. The coder recorded children's answers to all questions during testing. Having the coder made the experimenter's communication with children more fluent since the experimenter did not need to record responses. It also reduced the possibility of children's doubts about being tested and facilitated a naturally playful context. Children were seated at a 60-degree angle to the experimenter which provided experimenter with a sight for coder's warnings without children's notice. The limited size of our sample necessitated that we make choices regarding counterbalancing. Given its direct relation to our dependent variables we chose to counterbalance the order of the books. The cognitive tasks (i.e., Theory of Mind, Executive Functions, and Language) were administered in fixed order. This was done so that the possible order effects (e.g., Kloo & Perner, 2003) could be kept constant.

2.3.1.1 Step 1

Theory of Mind Task: All children started their testing with the theory of mind scale. In these tasks, all children received questions in the same order, which was based on difficulty starting from the diverse desire and ending with hidden emotions. Before children were asked questions, they were shown pictures of characters and items and they listened scenarios that gave relevant information.

2.3.1.2 Step 2

Language-Task-Receptive language: To reduce the time that children spent with the cognitive tasks and also to keep the length of first and second day of testing equal, only the receptive language part of the task was assessed on the first day. The picture book was placed in front of a child within a short distance that enables them to point to the target picture.

2.3.1.3 Step 3

Book-reading: The book that was read to children first was counterbalanced between children (i.e., either the information or narrative book were first). Books were read to children in an interactive manner following the reading protocol. During the reading, the experimenter placed the book in front of the child to make sure that children were able to see the pictures in detail and could point to a target in the picture when asked.

2.3.1.4 Step 3

For the last step, children were asked questions that were specific to the book. Since children and the experimenter read to book together, children could consider that experimenter knows answers to questions. Therefore, before the question session began, the experimenter told the child that he/she will bring some stickers to them before leaving and moved toward the coding table. At the same time, the coder came to the child's table and told them that he/she really wondered about the content of the book. Replacing the experimenter with the coder at this step was done to promote children's participation. Then the coder asked children book-specific questions. At the end of the questions, the experimenter came with the stickers as a gift for children's participation.

2.3.2 Day 2

The same experimenter and coder who executed the first day of testing continued on the second day of the study. The same setup that was used on the first day was used for the second day of the experiment as well, only with one significant difference which was the presentation of the executive functioning task.

2.3.2.1 Step 1

Executive Functioning Task: The second day of testing started with the executive functioning task. Children were asked to play a card game with the experimenter and shown two boxes that were used to play the game. The boxes were placed in front of the children and children were asked to sort cards.

2.3.2.2 Step 2

Language Task: On the second day, the expressive language was assessed.

2.3.2.3 Step 3

Book reading: The remaining book from the first day was read to children using the same procedure.

2.3.2.4 Step 4

Questions: Identical to the first day, on the second day, the experimenter left after reading the book with a promise to bring stickers. Again the coder approached children in a similar manner and asked questions specific to the second day's book. After the question session ended, children again received stickers for their participation.

2.3.3 Day 3

Unlike the first and second days of testing, the third day was completed by a different experimenter that children had not seen before. The reason for using another experimenter for asking the test questions was related to children's participation. Having the same experimenter from the first two days might have created an expectation for children that experimenter already knows the answers since they read the books together. Instead the new experimenter met with children and told them he/she heard that they know a lot about caterpillars and he/she has homework about caterpillars and he/she is having a difficult time answering them. Thus, it was encouraging for children to answer questions since they believed the ignorance of the new person. Children who accepted to help the experimenter were asked questions that belonged to the conflicting and supporting categories.

CHAPTER 3

RESULTS

Analyses for each research question were completed separately and results are reported in 4 subsections. In the first subsection, analyses that investigated the correlations between variables including children's cognitive abilities, age, number of facts they learned, their preference for expository books) is presented. In the second subsection, analyses that explored the difference between the numbers of facts learned from narrative and expository books by children's age are reported. In the third subsection, an analyses that investigated the age difference in children's preference for a reliable genre is displayed. The fourth subsection presents the analyses that explored the effectiveness of mentioning facts in both books by children's age.

There was no specific hypothesis about the effects of gender on children's learning from narrative and expository books. Nevertheless, preliminary analyses were run to see if it was a significant factor. In line with our expectations, gender did not emerge as a significant variable in any of the analysis. Hence, it was excluded from all further analysis in order to preserve statistical power. Lastly preliminary analyses showed that overall children's performance on receptive and expressive language were high. Using standardized scores converted these high scores into age appropriate scores (i.e. in month). However, this caused a ceiling effect in which most of the children had the same

maximum standardized score, although their raw score were different. Therefore, to eliminate this ceiling effect and to account for the variation in children's language abilities, raw language scores were used in all analyses.

3.1 Correlation between Children's Cognitive Abilities, Age and Their Learning from Expository and Narrative Books

Bivariate correlations were carried out between children's cognitive abilities (executive functioning, narrative comprehension, receptive and expressive language), children's age, and all 4 categories of facts (i.e. Expository-only, Narrative-only, Conflicting and Supporting) children learned from both genres. As Table 2 shows, the analysis revealed that children's learning of all types of facts were significantly correlated both with children's age and their cognitive abilities. Furthermore, there were significant relationships between children's age and all of the cognitive abilities. Lastly, all cognitive abilities were significantly correlated with each other. Based on these results, in the following analyses of subsections executive functioning, narrative comprehension, receptive and expressive language abilities were used as control variables in each of the analyses.

In addition, two bivariate correlations were conducted for 3- and 5-year-olds separately to investigate differences in the significant findings observed between the cognitive variables and children's learning outcomes. For 3-year-olds there was a significant correlation between children's executive functioning abilities and amount of expository-only facts ($r = 0.54, p = .001$). Furthermore 3-year-olds' receptive language abilities were significantly correlated with the amount of narrative-only ($r = 0.37, p = .005$) and supporting ($r = 0.38, p = .005$) facts. Lastly, there was a significant relationship between

3-year olds' narrative comprehension abilities and their preference for expository book, when the information in two books contrasted ($r = 0.43$, $p = .005$). Interestingly the same significant relationship between children's narrative comprehension abilities and their preference for expository book was observed for 5-year olds ($r = 0.35$, $p = .005$). No other significant differences between cognitive abilities and outcome variables was found for 5-year olds

3.2 Does the Quantity of Information Children Learn from Expository and Narrative Books Change by Age?

In order to analyze the difference between children's learning from expository and narrative books by age, a mixed analysis of variance (ANOVA) was conducted with genre as the within-subjects factor (expository, narrative) and children's age (3 years, 5 years) as the between-subjects factor. Results revealed that there was a main effect of age $F(69, 1) = 91.55$, $p = .001$; $\eta_p^2 = .57$. Overall 5-year-olds learned more information compared to 3-year-olds (See Table 3). However, no main effect of genre was found which suggested that quantity of information that children learned from expository and narrative books did not differ $F(66, 1) = 2.88$, $p = .094$; $\eta_p^2 = .04$. Furthermore, there was no genre by age interaction showing that children's age did not affect their learning from narrative and expository books differently, $F(66, 1) = 0.47$, $p = .620$; $\eta_p^2 = .004$.

An additional analysis was conducted to look whether the age difference was still significant when children's cognitive abilities were controlled for. Similarly, genre was the within-subjects factor (expository, narrative) and children's age (3 years, 5 years) was the between-subjects factor. Additionally, children's executive functioning, narrative

Table 2. Correlations Between Children's Age, Cognitive Abilities and Type of Facts They Learned

	Age	Receptive	Expressive	Executive Functioning	Narrative Comprehension	Narrative Only	Expository Only	Contrasting	Supporting
Age	—								
Receptive	0.762***	—							
Expressive	0.713***	0.853***	—						
Executive Functioning	0.465***	0.565***	0.521***	—					
Narrative Comprehension	0.671***	0.660***	0.606***	0.525***	—				
NarrativeOnly	0.618***	0.624***	0.582***	0.306**	0.451***	—			
ExpositoryOnly	0.645***	0.571***	0.516***	0.585***	0.664***	0.402**	—		
Contrasting	0.657***	0.692***	0.599***	0.349**	0.557***	0.574***	0.425***	—	
Supporting	0.509***	0.550***	0.403***	0.414***	0.434***	0.452***	0.459***	0.552***	—

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

comprehension, receptive and expressive language abilities were entered as covariates. Results showed that the main effect of age persisted after controlling for children's executive functioning, receptive language, expressive language and narrative comprehension abilities $F(66, 1) = 11.541, p = .001; \eta_p^2 = .15$. In parallel to the results from the previous analysis, neither genre nor the genre by age interaction was significant.

Table 3. Descriptive Statistics of Facts Learned by Children

	NarrativeOnly <i>Range (0-4)</i>	ExpositoryOnly <i>Range (0-4)</i>	Supporting <i>Range (0-4)</i>	Contrasting <i>Range (0-4)</i>
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
3 (n=32)	2.50(0.95)	2.21(0.90)	3.03(0.86)	2.15(0.98)
5 (n=39)	3.67(0.52)	3.51(0.64)	3.79(0.40)	3.59(0.67)

3.3 Do 3- And 5-Year Olds Differ in Their Preference for the Expository Genre, When Information Presented in the Books Conflict with Each Other?

In order to analyse whether children preferentially learn from the expository book as a function of age, a Pref-Expo score was calculated based on children's answers to the conflicting questions. To calculate Pref-Expo score, children were given 1 point for each answer they gave by referring to the expository book. In contrast, children were given 0 points for each answer they gave by referring to the narrative book. Unidentifiable answers, including answers that refer to an external source or to one of the filler options in multiple-choice questions, were also given a score of 0.

A one-way analysis of variance (ANOVA) was conducted with Pref-Expo score as the

dependent variable and children's age (3 years, 5 years) as the independent variable.

Results indicated that there was a main effect of age $F(69, 1) = 52.229, p = .001 ; \eta_p^2 = .43$ (See Figure 1). Five-year-olds ($M=3.5; SD=0.13$) referred to expository book significantly more than 3-year-olds ($M=2.1; SD=0.14$).

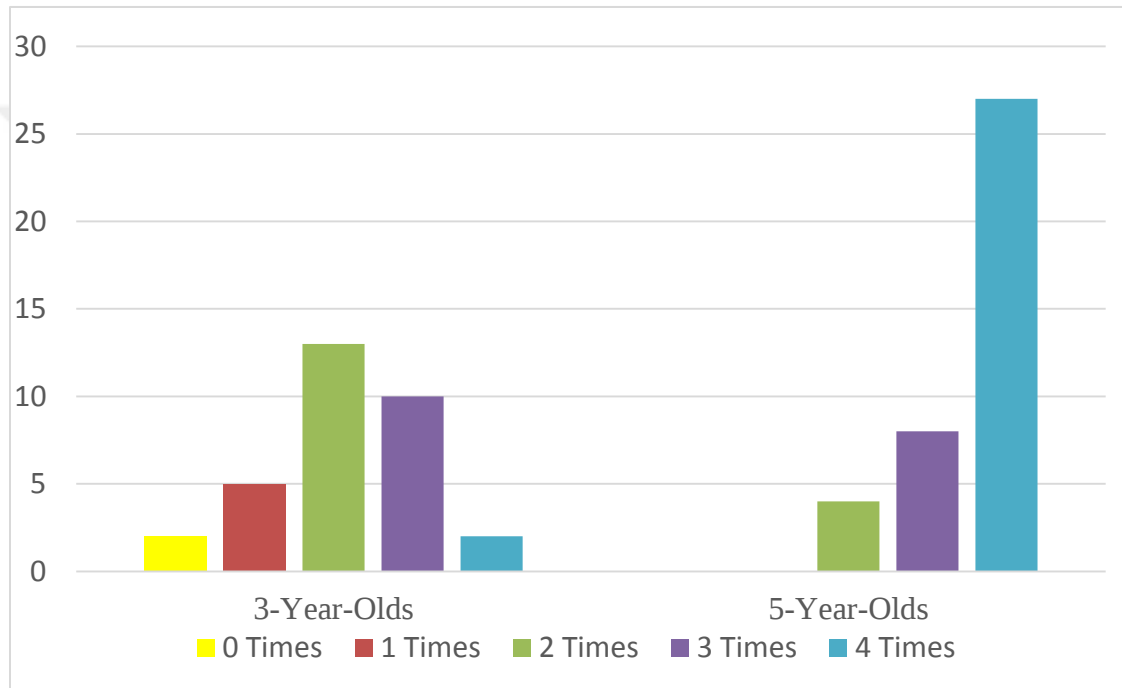


Figure 1. Three and 5-year olds' Preference for the Expository Book

Considering the possibility that this difference might have been caused by scoring unidentifiable answers with the same frequency as the answers that referred to the narrative book (i.e. score of 0), an additional score (Pref-Narr) was calculated. To calculate the Pref-Narr children were given the score of 1 point for referring to the narrative book and they were given 0 point for each of their answer that referred to the expository book or that were unidentifiable. Frequencies of sources referred to by

children in their answers are presented in Table 4.

Table 4. Frequencies of Sources Children Referred in Their Answers

	3-year olds		5-year olds		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Narrative	45	35,1	13	8.3	58	20,4
Expository	71	55.4	141	90.4	212	74,6
Unidentifiable	12	9.5	2	1.3	14	4,9
Total	128	100	156	100	284	100

Data were entered into a one-way analysis of variance (ANOVA) with Pref-Narr score as the dependent variable and children's age (3 years, 5 years) as the independent variable.

The analysis revealed that there was a main effect of age $F(69,1) = 20.234, p < .001; \eta_p^2 = .385$ (See Figure 2). Overall 3-year-olds were significantly more likely to refer to the narrative book in their answers ($M=1.4; SD= 0.21$) compared to 5-year-olds ($M=0.3; SD=0.1$).

Collectively these two analyses showed that 5-year-olds were more likely than 3-year-olds to rely on the information acquired from the expository book for questions that tapped conflicting information. The fact that 90% of 5-year-olds' answers were based on the expository book highlights the fact that this age group may have become selective learners that perceive expository books as more trustworthy sources of information. In addition, the latter analysis showed that 3-year-olds were more likely to choose the answer from the narrative book as compared to 5-year-olds. While ANOVA revealed a significant difference between 3- and 5-year-olds preferences based on the mean correct answers, it did not reveal whether children were distributed differently according to their

preference for the narrative or the expository book by age.

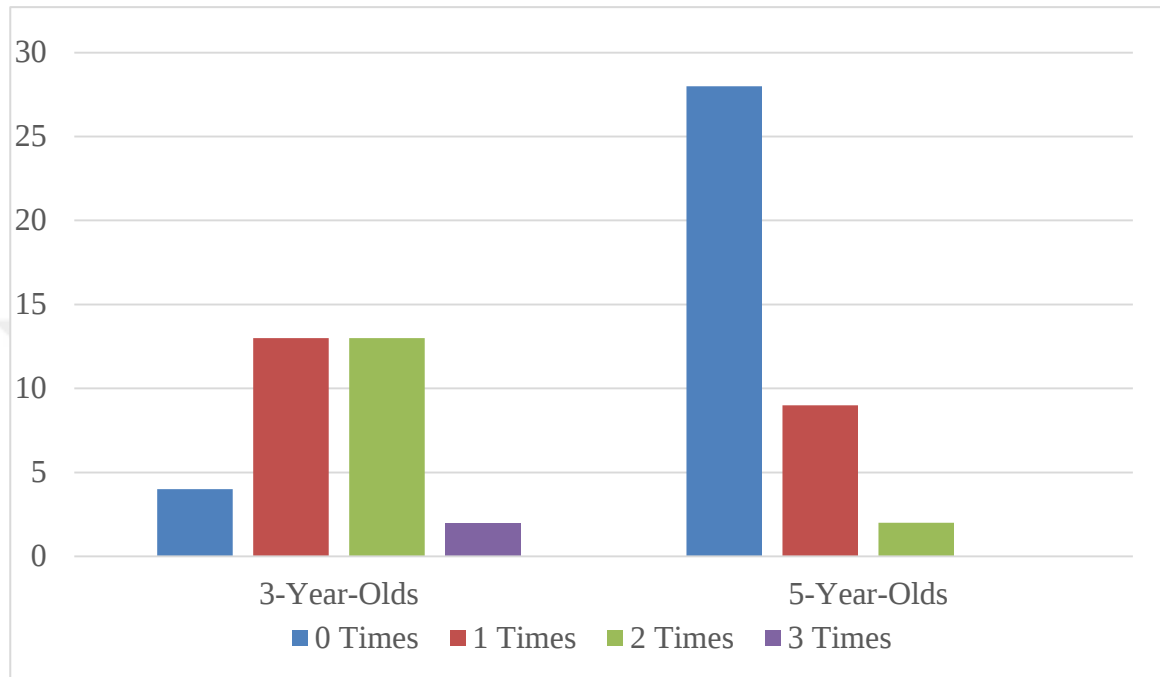


Figure 2. Three and 5-year-olds' Preference for the Narrative Book

In order to answer this question Chi-Square analyses were carried out. Children who answered three or four of the conflicting questions by referring to expository book were placed in ExpositoryPreference category. In contrast, children who referred to the narrative books three or four times in their answer to conflicting question were placed in NarrativePreference category. Remaining children who did not show a clear pattern of preference including children, those who demonstrated equal preference for narrative and expository book or children who referred to unidentifiable sources along with narrative and expository books in their answers, were categorized as Ambiguous.

Two Chi-Square goodness-of-fit tests were conducted for each age group with three

categories of preference type. Results of the 3-year-olds revealed that there was a significant difference in the proportion of children's preference types ($\chi^2(2) = 12.25, p < .002$). The analysis that was conducted for 5-year-olds also revealed a significant difference in the proportion of children's preference types ($\chi^2(1) = 24.65, p < .001$). None of the 5-year-olds showed a preference for the narrative book (See Table 5).

Table 5. Proportion of Children's Preference Types

Age		Unidentifiable	Narr-Pref	Expo-Pref	Total
3	Count	18.00	2.00	12.00	32.00
	Expected count	9.92	0.90	21.18	32.00
5	Count	4.00	0.00	35.00	39.00
	Expected count	12.08	1.10	25.82	39.00
Total	Count	22.00	2.00	47.00	71.00

Furthermore, standard residual scores were calculated for each age group to investigate whether the observed value in each preference category was significantly different than chance level. For 3-year olds standard residuals were significant for ExpositoryPreference ($z = -2.6$) and Ambiguous ($z = 2.2$) categories. This showed that 3-year olds were below the chance level in their preference for narrative book and above the chance level for an ambiguous answer. Moreover, standard residual of ExpositoryPreference category was not significant for 3-year olds ($z = 0.3$), indicating that 3-year olds were at chance level in their preference for expository book. In contrast for 5-year olds standard residual of ExpositoryPreference category was significant ($z = 3.5$), suggesting that 5-year olds were above the chance level in their preference for expository book. Lastly standard residual of Ambiguous category shows significant for 5-

year olds, ($z = -3.5$). Indicating that 5 year olds were below the chance level for preferring an unidentifiable source.

3.4 Does Children's Learning of Information Vary by Age, When the Information is Supported by Both Genres Versus When the Information Conflicts Across the Genres?

Descriptive statistics related to children's age and the number of supporting facts that they learned are presented in Table 3. To analyze whether covering the same information in both books improved learning, the number of correct answers children gave to supporting facts were compared to the number of correct answers they gave to conflicted facts. A mixed analysis of variance (ANOVA) was conducted where the dependent variable was type of fact (supporting, conflicting) and the independent variable was children's age (3 years, 5 years). The analysis revealed a main effect of age $F(69, 1) = 57.340, p = .001; \eta_p^2 = .45$. Five-year-olds ($M=3.69; SD=0.9$) learned more facts as compared to 3-year-olds ($M=2.59; SD=1.0$). There was also a main effect of fact type $F(69, 1) = 27.28, p = .001; \eta_p^2 = .28$. Children learned more supporting facts ($M=3.41; SD=0.7$) as compared to conflicting facts ($M=2.87; SD=0.9$). Lastly, there was a significant interaction between fact type and children's age $F(69,1) = 10.49, p = .002; \eta_p^2 = .13$. An analysis of simple effects showed that while 5-year-olds displayed comparable performance on supporting versus conflicting facts, 3-year-olds displayed poorer performance in conflicting facts as compared to supporting facts $F(69,1) = 32.59, p = .001; \eta_p^2 = .32$.

CHAPTER 4

DISCUSSION

The current study explored three significant aspects of children's learning of information from expository and narrative books: (1) the amount of information children learn from narrative and expository books, (2) children's preference for one genre over the other in cases of conflicting information, and (3) whether children show age related difference in their learning of information when the information is supported by both genres versus when the information conflicts across the genres. First, the results in relation to the previous literature are summarized. Second, the relevance of these results within our understanding of children's learning from books is discussed. Finally, the limitations of the current study are discussed.

One of the important questions in young children's learning from books is whether children learn information best from narrative versus expository genres. Some scholars argue for the primacy of narrative over other types of text for young children (Egan, 1988; Wells 1986; Adams, 1990). According to this view, narrative schemas facilitate children's comprehension and memorization of information (Bruner, 1991; Stein & Trabasso, 1982). Interestingly, the research that investigated whether children learn differentially based on genre in ecologically valid contexts is scarce. The current study aimed to fill this gap through comparing children's learning of information from two

commercially available genres (i.e., narrative and expository). We provided children with equal numbers of information units in each of these genres that did not overlap across the books (i.e., Narrative Only, Expository Only).

The results confirmed the expected developmental difference where 5-year-olds learned more information as compared to 3-year-olds. This was true even when we controlled for the effect of children's language (i.e., vocabulary, narrative comprehension), and executive function abilities. These findings suggest that other factors are developing between 3- and 5-years of age, which may be responsible for the difference in children's learning. Both cognitive factors, such as working memory and experiential factors (children's experience with books and their understanding of print) might be responsible for the observed age differences. Older children would have had more exposure to book reading and importantly in the later stages of pre-literacy they may have developed an implicit understanding that books relay information.

A recent study that is relevant to this point showed that 4 to 6 year olds who were classified as early readers, trusted printed text over spoken text as compared to 3- to 4-year-olds who were classified as pre-readers (Eyden, Robinson, Einav, & Jaswal, 2013). Early readers were not yet functional readers, but were described as being at the "cusp of reading". The 5-year-olds in the current study were similar as none could read on their own, but they were very familiar with print. Most relevant to the debate about whether narrative is a privileged genre for young children's learning, is our finding that there was no difference in children's learning based on genre. It is important to note that the narrative book created for this study was true to the defining characteristics of the genre (e.g., narrative schema, language features). Hence, we don't think that the results were a

product of artificial text stimuli that provided less scaffolding for children as compared to commercially available narrative books. This finding challenges the idea that the best type of book for young children should be in the fictional narrative genre. In this vein, we provide support for others who have reported learning from expository books in the preschool period (Duke, 2003, Papas, 1993; Torr & Clugston, 1999). Expository books could provide a fun learning context for young children as well.

A contemporary issue that is increasingly getting more attention in the literature is young children's susceptibility to false information from fictional narratives (for a review see Woolley & Ghossainy, 2013). The lay characterization of younger children (represented with the 3-year-old age group in this study) is as gullible learners who readily trust fiction as a source for information. In contrast to this lay conceptualization, scholars argue that 3-year-olds are skeptical towards new information presented in fictional books (e.g., Shutlman & Carey, 2007; Wolley & Cox, 2007). For example, studies show that young children are more likely to end stories with realistic events regardless of whether the story was fictional or realistic (Weisberg et al., 2013). Weisberg and colleagues have interpreted their findings as young children having a realism bias. Other studies that investigated children's transfer of knowledge from fictional and realistic stories to real life problem-solving situations found that young children were more likely to transfer knowledge from realistic stories (Richert et al., 2009; Richert & Smith, 2011). Similarly, Richert and colleagues argued that young children quarantine information from fiction, which makes them less susceptible to learning false information from fictional sources. The literature seems to be in agreement over 3-year-olds' resistance to information from fictional sources. It may be possible that with age children are more open to accepting

information from such sources. Woolley and Cox (2006) have shown that 5-year-olds (but not 3-year-olds) whose family backgrounds were more religious were more likely to accept religious characters as real and events in religious stories as having happened in real life.

Against the backdrop of this literature, we investigated whether there were age related differences in children's learning of information from narrative versus expository books.

Four conflicting units of information were included in the two books. The information was always correct in the expository book and false in the narrative book. When we compared children's learning of these conflicting information units, we found that 5-year-olds were more likely to answer these questions based on the expository book as compared to the 3-year-olds. The opposite was true when we analyzed children's preference for narrative information. Three-year-olds were more likely to use information from the narrative book in answering the conflicting questions as compared to 5-year-olds.

In order to understand whether children showed patterns of differential trust in these two sources, we categorized children as showing *ExpositoryPreference* or *NarrativePreference* if 75% of their answers could be traced to one source. All other patterns (50% from each book, or patterns including unidentifiable answers) were classified as *Ambiguous*. Our results showed that 90% of 5-year-olds could be characterized as having a preference for the expository book. Importantly none of the 5-year-olds showed a preference for the narrative book. The 3-year-old age group showed a different profile where their preference for the expository book was at chance level, their preference for narrative book was significantly lower than chance, and the frequency of

ambiguous pattern was significantly above chance. These results indicated that the 3-year-olds were at a transition to preferring expository books for information acquisition. In line with the previous literature 3-year-olds could not be characterized as trusting narrative sources for knowledge acquisition.

One interesting question is why children show a developmental difference in their preference for a specific genre when learning. Narrative and expository genres do not only differ from one another in terms of content (i.e., fantastic vs. real events), they also differ in terms of linguistic features (e.g., generic language, tense). These features may alert children to the difference between the genres either individually or collectively. Perhaps the most significant feature is the use of generic language. Gelman, Ware, Manczak and Graham (2013; Study 1) reported the prevalence of generic language in commercially available expository books. Their analysis also showed that generic language was used seldom in narrative books. This style of language is one of the critical features of pedagogical contexts (Csibra & Gergely, 2009). In other words, we are more likely to utilize generic language when we aim to teach or instruct another. In two experiments Gelman and colleagues (2013; Studies 2 & 3) showed that like adults, 4 to 6-year-old children were more likely to use generic language when they assumed the role of a knowledgeable agent (i.e., a teacher or someone conversing with an alien) when discussing picture stimuli. The fact that children make use of generic language in their speech based on contextual demands highlights the role of generics in learning contexts. It is possible that this feature of the expository book alerted the 5-year-olds in our study to the pedagogical intent of the source.

The fact that our narrative book did not contain generics could be perceived as a confounding factor that favors the expository book. We decided against manipulating the language of the books, in order not to damage the ecological validity of the current study. The aim of the study was to investigate differences in children's learning from expository and narrative books. Generic language is a natural aspect of expository books and is a conventional difference between these two genres. Eliminating the generic language differences between the narrative and the expository book, would mean that the study would not be comparing expository and narrative books as they naturally exist in children's literature. Instead, it would compare artificial books that were not representative of books that children experience in their home and school environments. For this reason we preserved the authentic characteristics of the two genres without any alteration.

While it is possible that children's preferential learning may stem solely from their recognition of generic language, it is also possible that by 5-years of age children start recognizing different genres and their intent. Young children might not have an explicit appreciation of the difference between the expository and narrative genres. However, studies show at least an implicit understanding of these two genres as evidenced by the language children use (e.g., tense, syntactic complexity) when they recall texts of different genres (Pappas, 1993), and the type of questions they ask in response to texts of different genres (Torr & Clugston, 1999). Existing research on children's understanding of genres has exclusively focused on implications of an implicit understanding of genres such as sensitivity to differences in language (Donovan & Smolkin, 2006). Research that specifically investigates whether children have an explicit recognition (form) and

understanding (function) of different genres similar to adults is needed. In the current study children's narrative comprehension and their reliance on expository books when answering conflicting questions seems to indicate that these children are competent in both genres, hinting at rich experience with both. Children who experience book sharing with both genres of books may come to realize the discrepancies between their real life experiences and events described in narratives.

The last question that we investigated in this study compared children's learning when the information was supported by both genres versus when the information conflicted across the genres. Importantly, we were interested in developmental differences in the learning of supported versus conflicting information. As expected, we found that older children learned more information as compared to younger children. In addition, information that was presented in both genres was learned better than information that contrasted across the genres. However, there was also an interaction of age by information type (i.e., conflicting, supporting) indicating that children's performance on these two types of questions differed by age. While 5-year-olds showed comparable performance in response to these two question types, 3-year-olds showed better learning when information was supported by both genres as compared to when information conflicted across genres. This implies that it may be critical for parents of young children to be informed about the value of expository books. The difference between parents' reports of when they started reading expository and narrative books to their children is telling. Forty-four percent of parents in our study reported reading expository books to their children before their children were 2 years of age. In contrast, 80% of parents in the

study reported having started reading narrative books to their children before 2 years of age.

Just like the expository genre shows variation in content and form (e.g., vocabulary books, books on scientific processes, health), the narrative genre is also rich in variations (e.g., degree of fiction, anthropomorphism). Fictional narratives may involve anthropomorphic characters who are engaged in otherwise ordinary events, human characters engaged in ordinary events or anthropomorphic or human characters who are engaged in truly fantastical events that defy natural laws of causality. It is possible to construe fiction as a continuum rather than a binary category. In the current study we used anthropomorphic characters that were engaged in human-like interactions and activities and found that 3-year-olds did not readily discount the information learned from this type of book. However, it is possible that as the degree of fantasy (fiction) increases children at younger ages may also prefer information from expository texts. This is a research question that should be investigated in future studies. Young children may in fact have a realism bias (Weisberg et al., 2013) or they may have a tendency to quarantine fantasy (Richert et al., 2009; Richert & Smith, 2011), if the cues for fantastical content are strong or salient enough.

The current study contributed to the growing body of research in children's learning from different genres, through a within subjects design and carefully matched stimuli.

Importantly, the design allowed for testing children's selective preference when the information they learned conflicted across the two genres. The results show that by 5-years of age children gain an understanding of expository texts as relaying correct information. Again in line with previous research 3-year-olds could not be characterized

as being overly trusting of fictional information. It is however notable that they had not yet developed trust in expository books perhaps owing to their more limited experience with this genre.

The implications of the current study are that by 5 years of age children from MSES backgrounds whose parents read to them preferentially learn new information from expository books. Three-year-olds' performance indicated a transitional stage where children are learning to learn from genres differentially. This should not be taken as a recommendation for parents to only read expository books to their children for several reasons. First of all, children might need to experience with both genres to develop a preference for a reliable source, thus, an equal exposure to narrative and expository books would be more effective for children to understand the differences between genres. Second of all, and more importantly, the current study focused on the acquisition of a specific type of information. There is a rich and diverse literature that provide evidence for vocabulary development through reading narrative books. Learning new vocabulary does not only entail learning new labels. Children also learn conceptual information about the referents of the new words. In other words, a child that learns about a new animal (e.g., a kangaroo) through fiction may also learn that this animal has a pouch to carry their young in (Hadley, Dickinson, Hirsh-Pasek, Golinkoff, & Nesbitt, 2016). Finally, children seem to enjoy narratives and narratives may thus provide a playful and fun context in which children may practice and improve their narrative comprehension in particular, and language comprehension in general (e.g., Beals, De Temple, & Dickinson & Smith 1994; Marulis & Neuman, 2010). However, the current study highlights the

importance of expository books for younger as well as older children, and argues that children should sample both types of genres.



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APPENDICES

APPENDIX A: NARRATIVE BOOK TEXT

Ormanın derinliklerindeki kocaman bir ağaçta Mugi adında bir tırtıl yaşarmış. Mugi tırtıl olduğu için tam on iki tane gözü varmış. Miri gözleriyle bu ağaçtan uzakta görünen dağlara, ormanlara bakar ve oralarda neler olduğunu merak edermiş. Yeni yerler keşfetmek onun en büyük hayaliymiş. O günün hayalini gerçekleştirmek için doğru gün olduğunu düşünmüş çünkü aklına çok iyi bir fikir gelmiş. Mugi heyecanla, hayalini gerçekleştirmek için gerekli malzemeleri almak üzere yola koyulmuş.

Mugi gün boyunca birçok yere gitmiş; ipler kumaşlar ve daha birçok malzeme almış.

Mugi'nin bir sürü ayağı varmış. Âmâ malzemeleri alması çok uzun sürmüş çünkü Mugi çok yavaş hareket ediyormuş. Bu sırada Mugi Yolda arkadaşı Miri'ye rastlamış. Miri çok heyecanlı gözüküyormuş ve Mugi sormuş: Böyle aceleyle nereye gidiyorsun Miri? Kuş yeni biri şeker dükkânı açmış, şekerlerden yemek için gidiyorum ama yerini bilmiyorum. Beraber bulmak ister misin? Demiş Miri Mugi gün boyunca bir şey yemediğini hatırlayarak, ne kadar acıktığını fark etmiş ve Miri ile gitmeye karar vermiş. Mugi ve Miri şeker dükkânını bulmak için antenlerini kullanarak şeker kokusunu takip etmeye başlamışlar.

En sonunda şeker dükkânını bulmuşlar. Kuş onları görünce çok sevinmiş ve onlara bir sürü şeker hediye etmiş. Her tırtıl gibi onlar da çok yiyorlarmış. Mugi ile Miri her zaman çilekli şeker yermiş. Şekerlerini yedikten sonra Miri Mugi'nin elindeki malzemeleri fark

edip ne için olduklarını sormuş. Mugi Miri' ye hayalini anlatmış. Elindeki bu malzemelerle kanatlar yapacağını, kanatlarla uçarak uzak diyarları keşfedeceğini söylemiş. Bu fikir Miri'yi çok heyecanlandırmış ve o da Mugi'ye katılmak istemiş. Bu sırada Sincap Mugi ile Miri'nin konuştuklarını duymuş ve kahkahalarla gülererek: -Tırtıllar uçamaz boşuna uğraşmayın diyerek onlarla alay etmiş. Kuş sincaba arkadaşlarıyla dalga geçmemesi gerektiğini söylemiş.

Sincabın dediklerinden sonra, Mugi ile Miri'nin morali bozulmuş fakat Mugi hayalini gerçekleştirmekte kararlıymış ve vazgeçmemiş. Miri ise sincabın dediklerinden sonra bu fikirden vazgeçmiş ve gitmiş. Mugi şekerçi dükkânını terk etmiş fakat yapacağı kanatları denemek için yüksek bir yere çıkması gerekiyormuş. Hava kararmadan yola koyulmuş ve yavaş yavaş yüreyerek ağacın dik gövdesine gelmiş. Mugi tırmanma konusunda çok iyiymiş. Yapışkan ayaklarını kullanarak tırmanmaya başlamış. Bir süre sonra Mugi taşıdığı malzemelerin ağırlığı yüzünden yorulmuş ve tırmanamaz olmuş. Birden aklına karıncalardan yardım istemek gelmiş ve karıncaları yardıma çağırmış. Kısa bir süre sonra karıncalar gelmişler ve yüklerini taşımasında Mugi'ye yardım etmişler.

Mugi tepeye vardığında hemen işe koyulmuş ipek kumaşlardan kendine bir yuva kurmuş ve içine girmiş. Uzun bir süre dışarı çıkmamış ve hayalini gerçekleştirmek için çalışmış.

Herkes onu merak etmeye başlamış ki tam o sırada Mugi bir anda yuvasından çıkmış.

Mugi'nin artık kocaman ve renkli kanatları varmış Sincap bunu görünce gözlerine inanamamış. Mugi kanatları açıp uçmaya başlamış. Buna en çok kuş sevinmiş. Miri ise Mugiyle beraber gitmeyip hayalinden vazgeçtiği için çok pişman olmuş. Mugi onlara el sallamış ve kendi yaptığı kanatlarıyla uzak diyarları keşfetmek üzere uçmaya başlamış.

APPENDIX B: EXPOSITORY BOOK TEXT

Tırtıllar ağaçlarda ve yeşil alanlarda yaşayan küçük hayvanlardır. Tırtılların kendilerine ait birçok değişik özelliği vardır. Hadi tırtılları birlikte tanıyalım. İşte burada bir tırtıl var. Biz insanların sadece iki tane ayağı vardır tırtılların ise çok daha fazla ayağı vardır.² Hem de tam on iki tane! Tırtılların bu ayakları ve vücutlarını saran tüyleri bulunur. Bu tüyler onları soğuk havalardan korur ve bu sayede tırtıllar hiç üşümezler. Bazı tırtılların tüyleri güzel desenler oluşturur. Tıpkı resimdeki tırtıl gibi Tırtılların aynı zamanda çok sayıda gözü de vardır. Biz İnsanların iki gözü varken tırtılların tam on iki tane gözü vardır. Tırtılların ağaçta yaşamasının nedeni yemek olarak hep yaprak yemeleridir tırtıllar yaprak yemeyi çok severler. Tırtıllar çok obur hayvanlardır. Gün boyunca durmadan ağaçta gezerek yaprak yerler, bir yaprağı bitirince hemen yenisi bulurlar. Tırtıllar o kadar çok yerler ki hayatları boyunca yedikleri yapraklar kendi vücutlarından çok daha büyüktür. Bu yüzden tırtıllar çok hızlı büyürler. Tırtıllar gece olduğunda ise ağaçlardaki deliklere ya da yaprakların altlarına girerek burada saklanırlar ve uyurlar. Tırtılların geceleri saklanması sebebi ormandaki bazı hayvanların tırtılların düşmanı olmasıdır. Özellikle Kuşlar. Kuşlar tırtılların baş düşmanıdır. Eğer bir kuş bir tırtıl görürse hemen uçarak onu yakalar ve onu yer. Bu yüzden tırtıllar kuşlardan saklanmak zorundadır. Bunun için tırtıllar kuşlar onları görmesin diye yaprakların altına saklanırlar. Ayrıca çok yaprak yedikleri için Çoğu tırtılın rengi tıpkı yediği yaprakların rengi gibi olur. Bu sayede kuşlar tırtılları göremezler ve tırtıllar kuşlardan saklanmış olur. Ama bazı tırtıllar ne kadar yemek yerseler yesinler onlar yedikleri yaprağın rengine benzemez onların renkleri kırmızı mavi sarı gibi parlak renktedir. Bu renkteki tırtıllar zehirdiler. Kuşlarda bunu bildikleri için böyle parlak renkli tırtılları yemek istemezler

Tırtılların bu kadar yemesinin ve büyümek istemelerinin çok önemli bir sebebi vardır. Eğer bir tırtıl yeteri kadar büyürse, artık o tırtıl kelebeğe dönüşmek için hazır demektir. Büyümüş tırtıllar kelebeğe dönüşmek için öncelikle kendilerine uygun bir yer bulurlar ve buraya yuva yapmaya başlarlar. Tırtıllar vücutlarıyla ipek yapabilirler ve bu ipeği yuva şeklinde örерler, tıpkı örümceklerin ağlarını örmesi gibi. İşte burada bir tırtıl yuvası var. Tırtıllar yuvalarını tamamlayınca içine girerler ve yuvayı tamamen kapatırlar. Yuvanın içinde tırtıl derin bir uykuya dalar.

Yuvanın içinde uyurken tırtılların günlerce süren dönüşümü başlar. Bu yuvanın içinde tırtılların ayakları yavaş yavaş uzar uzar ve kanat şeklini alır. Kanatları tamamen büyüyünce ise tırtıllar uykusundan uyanırlar. Artık tırtıllar kelebeğe dönüşmüştür ve yuvadan çıkmaya hazırdırlar. Yuvasından çıkan kelekler istedikleri her yere uçabilirler çünkü artık kanatları vardır. Bu kanatlar tıpkı tırtılın vücudunda olduğu gibi renkli ve güzel desenlidir.

APPENDIX C: QUESTIONS

Narrative Only Questions

- Sence Tırtıllar yavaş mı, hızlı mı hareket ederler
- Tırtıllar başları sıkıştığında kimden yardım isterler
- Tırtıllar vücutlarının hangi kısmını kullanarak koku alılar
- Tırtılların hangi özelliği ağaç acıkmasına yardımcı olur

Expository Only Questions

- Tırtılların hangi özelliği onları soğuk havalardan korur?
- Bu tırtıl zehirliymiş sence bu tırtılı hangi renge boyayalım?
- Şimdi bu tırtılın bu ağaca saklanması gerekiyor saklanabilmesi için onu hangi renge boyamalıyız?
- Tırtıllar yaprakların üstünde mi altında mı uyurlar?

Conflicting Questions

- Bir tırtılın olsa ona yemesi için ne verirsin
- Tırtıllar ile kuşlar nasıl geçinirler
- Tırtılların yuvaları neye benzer
- Tırtıllar hangi özelliklerini kullanarak uçmayı başarırlar? Bak bu tırtılın kanatları yok, sence nasıl kanadı olabilir?

Supporting Questions

- Sence tırtılların bizim gibi iki gözleri mi vardır, yoksa daha çok mu gözleri vardır
- Sence bunlardan hangisi bir tırtılın ayak izleri olabilir
- Tırtıllar nasıl çabucak büyürler

- Tirtıllar nerede yaşarlar

