

CHILDREN'S COMPREHENSION OF PRESUPPOSITIONS INTRODUCED BY
FOCUS PARTICLES: EVIDENCE FROM TURKISH



SİMGE TOPALOĞLU

BOĞAZİÇİ UNIVERSITY

2018

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FOCUS PARTICLES: EVIDENCE FROM TURKISH

Thesis submitted to the
Institute for Graduate Studies in Social Sciences
in partial fulfillment of the requirements for the degree of

Master of Arts
in
Linguistics

by
Simge Topaloğlu

Boğaziçi University

2018

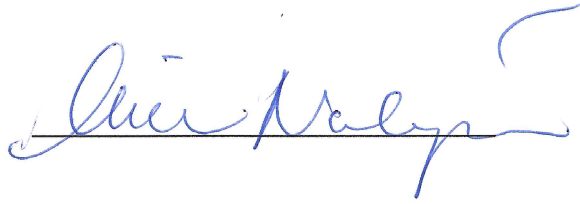
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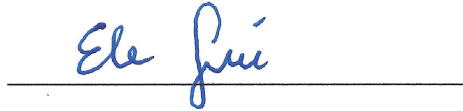
The thesis of Simge Topaloğlu

has been approved by:

Assoc. Prof. Mine Nakipoğlu
(Thesis Advisor)



Assoc. Prof. Elena Guerzoni



Prof. Aylin C. Küntay
(External Member)



June 2018

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ABSTRACT

Children's Comprehension of Presuppositions Introduced by Focus Particles: Evidence From Turkish

This thesis investigates whether and how Turkish-speaking children interpret the presuppositions of the additive focus particle *dA* ('also') and the scalar additive focus particle *bile* ('even'). Experiment 1 examines whether children can utilize prosody to differentiate between two different *dA*'s (i.e., expressing (i) additive focus or (ii) contrastive topic) and whether they can access their different presuppositions and implicatures. The results demonstrate that children over 6 years are competent at doing this, while younger children exhibit a bias towards contrastive readings.

Experiment 2 tests the comprehension of *dA* using OSV sentences, where *dA* is associated with the object NP. In contrast to Experiment 1, Experiment 2 detects a bias towards additive-focus readings. What children's interpretations seem to have in common in both experiments is a preference for object-focus readings. These results lend further support to the hypothesis that young children may deploy a default strategy to treat object NPs as foci.

Experiment 3 investigates the comprehension of *bile* ('even'). The results show that Turkish children from age 5 onwards are generally good at interpreting *bile*, though they reach adult-like competence by age 7. Polarity was also found to have a major effect on comprehension. Children were much better at comprehending *bile* in negative sentences than in affirmative sentences. This disparity between affirmative and negative sentences could potentially be accounted for if the implicatures of *bile* are pragmatically more robust (i.e., less susceptible to

defeasibility) in negative contexts, and an acceptability survey done with adults provides some evidence for this hypothesis.



ÖZET

Çocukların Odak Parçacıkları Tarafından Oluşturulan Önvarsayımları Kavrayışı:

Türkçe Örneği

Bu tez Türkçe konuşan çocukların ekleyici odak parçacığı *dA* ve ölçekli ekleyici odak parçacığı *bile*'nin önvarsayımlarını nasıl yorumladıklarını araştırmaktadır.

Deney 1 çocukların iki farklı *dA*'yı ((i) ekleyici odakları veya (ii) karşıtsal konuları ifade eden) ve bunların farklı önvarsayımlarını ve sezdirimlerini ayırt etmek için bürünsel ipuçlarını kullanıp kullanamadıklarını incelemektedir. Sonuçlar 6 yaşın üstündeki çocukların bu yetkinliğe sahip olduğunu, ancak daha küçük çocukların karşıtsal okumaları yeğlediğini göstermektedir.

Deney 2 *dA*'nın kavranışını *dA*'nın nesneyle ilişkili olduğu NÖE tümceleri kullanarak test etmektedir. Deney 1'in aksine, Deney 2 bir ekleyici odak yanlılığı bulgulamaktadır. Çocukların yorumlarının her iki deneydeki ortak noktasının özne-odaklı okuma tercihi olduğu görülmektedir. Bu sonuçlar küçük çocukların nesneleri odak olarak yorumlama yönünde bir öntanımlı strateji kullandığı hipotezini desteklemektedir.

Deney 3 *bile*'nin kavranışını incelemektedir. Sonuçlar Türkçe konuşan çocukların 5 yaşından itibaren *bile*'yi yorumlamak konusunda genelde iyi olduğunu, ancak yetişkin düzeyine 7 yaşında eriştiklerini göstermektedir. Kutuplanmanın da *bile*'nin yorumlanması üzerinde önemli bir etkisi olduğu bulgulanmıştır. Çocuklar *bile*'yi olumsuz tümcelerde olumlu tümcelere göre daha iyi kavramıştır. Olumlu ve olumsuz tümceler arasındaki bu fark ise *bile*'nin sezdirimlerinin olumsuz tümcelerde olumlu tümcelere göre daha dirençli olmasıyla açıklanması mümkün olabilir.

Yetiřkinlerle yapılan bir kabul edilebilirlik anketi bu hipotezi destekler ynde kanıtlar sunmuřtur.



ACKNOWLEDGMENTS

As I am typing the final words of my thesis, I would like to express my gratitude to some special people without whose contributions this work would not have been possible.

First and foremost, I would like to thank Mine Nakipoğlu, my thesis advisor, who has been an endless source of guidance, insight, enthusiasm, and encouragement for me – not just during my MA journey, but ever since I took my first linguistics class from her in my freshman year. She has always inspired me as an excellent researcher and mentor whom I could look up to, and also as a genuinely kind-hearted human being who was ready to listen to me with compassion and understanding in moments of (academic or non-academic) crisis. I consider myself very lucky to have met her at a very early stage in my career as a psycholinguist.

I am also grateful to my other committee members Elena Guerzoni and Aylin Küntay, for providing me with insightful comments that have helped me improve my thesis. I would especially like to thank Elena Guerzoni for generously taking the time to discuss my thesis with me at length and giving me a meticulous review that helped me see many issues in a new light.

Throughout my master's education at Boğaziçi University, I have also been a TÜBİTAK scholar, supported by the scholarship program 2228-A. I am glad and honored to have been in this program, and would like to sincerely thank TÜBİTAK for their support.

I have also had some great friends and classmates in the Linguistics Department of Boğaziçi University, some of whom deserve special mention not just for their companionship, but for their concrete contributions to this thesis. I am indebted to my friend Noyan Dokudan for agreeing to become the voice of Cookie

Monster for Experiment 1 and 2, putting up with my fastidiousness and repeatedly recording some sentences over and over until we perfected them. He later also kindly became the voice of Elmo's father and then his grandfather in Experiment 3 – baffling me with the versatility of his voice. I am also grateful to Münevver Erdem for being the voice of Elmo's mom for the same experiment. Last but not least, I would like to thank Orhan Bilgin, who responded to my last-minute call for help, and deploying his tech skills upon my request, quickly dashed off a code to execute some specific commands in the TS corpus, which helped me a lot.

This thesis would not have been possible without the help of the amazing children who participated in the studies, and their teachers and parents who were open-minded and cooperative. I am particularly grateful to Bilgi Kozası Preschool, Free Steps Preschool, and Yaratıcı Çocuk Preschool; and their principals Merve Sertoğlu, Nurten Aba, and Sadriye Açıkalp, respectively; for their support and assistance throughout this process. I would also like to sincerely thank MEÇ (Merak Eden Çocuk) Schools where the elementary school students have been tested, and the principals Nurcan İnan and Nilay Hanlıoğlu who have always been incredibly kind and helpful.

Finally, I would like to thank my family, especially my mother, for their never-ending support and encouragement throughout the years. This thesis is dedicated to my mother.

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ABBREVIATIONS

1SG	first person singular
2SG	second person singular
3SG	third person singular
1PL	first person plural
2PL	second person plural
3PL	third person plural
ABL	ablative
ABIL	ability
ACC	accusative
AOR	aorist
ASP	aspect
COP	copula
COM	comitative
COMP	compound marker
COND	conditional
CT	contrastive topic
DEF	definite article
F	focus
FUT	future
DAT	dative
GEN	genitive
INF	infinitive
LOC	locative
NEG	negation
PAST	past
PERF	perfect
PL	plural
POLT	polite form
POSS	possessive
PROG	progressive
PRTC	participle
Q	question particle

CHAPTER 1

INTRODUCTION

1.1 Aim

Successful communication hinges as much upon understanding what is left *unsaid*, as on decoding what is said. Indeed, any arbitrary stretch of talk occurring in a naturalistic setting is probably filled with a multitude of utterances the interpretation of which depends not solely on computing the semantic content of the utterance, but also on accessing the presuppositions entailed by it; for the simple reason that language is not spoken in a vacuum, and every conversation is embedded in an interactive context where it draws upon the background assumptions made by the speakers, i.e., their common ground. As would be expected of their ubiquity, presuppositions are invoked in a diverse set of linguistic environments. Just to name some examples, i. definite descriptions, ii. factive verbs, iii. change of state verbs, iv. iteratives, v. temporal connectives, and vi. cleft sentences are among the most widely encountered presupposition triggers (Levinson, 1983, pp. 181-4). Some illustrative examples for each of these classes of presupposition triggers is given below, where >> shows the presupposition evoked by the relevant utterance.

- i. The tourists have sighted *the* monster in the lake. >> There is a unique and familiar monster in the lake.
- ii. John *regrets* selling his car. >> John sold his car.
- iii. It *stopped* raining. >> It was raining.
- iv. Mary went to Paris *again*. >> Mary had gone to Paris before.
- v. *Before* I left home, I called a cab. >> I left home.
- vi. *It was Sue* who broke the window. >> Someone broke the window.

Although this list demonstrates the diversity of the presupposition triggers out there, it is by no means exhaustive. As a matter of fact, focus particles (or focus-sensitive operators) are also among the logical elements that induce presuppositions. For example, the simple additive focus particle *dA* ('also') and the scalar additive focus particle *bile* ('even') also trigger some presuppositions. Though we will elucidate these presuppositions in detail in what follows, we can briefly point out that *dA* – when it is associated to an entity-denoting expression – evokes an existential presupposition, such that it is to be inferred that there is at least one more entity (in addition to the said entity) for which the open proposition expressed by the sentence is true. In the case of *bile*, it is also implied that the open proposition is true for other entities, and in addition, the element that *bile* is associated with should be the least likely one to verify that open proposition among a set of contextually relevant alternatives.

The aim of the present thesis is to investigate whether and how Turkish-speaking children comprehend the presuppositions invoked by these two focus particles – namely *dA* and *bile* – and to uncover the developmental trajectory by which children converge toward an adult-like interpretation of the structures that contain these focus particles. Given the pervasiveness of presupposed content in language, and its centrality in communication; it is important for children to attain the ability to access presuppositions, and therefore it is also worthwhile from an acquisition perspective to explore when and how children come to attain this ability.

In the following section, I will provide a brief overview of some focus facts as appurtenant to the subject of inquiry at hand, and then present the semantic and prosodic properties of the constructions containing the focus particles *dA* ('also') and

bile ('even') in Turkish, respectively, so as to take stock before we proceed to the experimental investigation of the processing of these constructions.

1.2 Focus, alternatives, and prosody

We have pointed out above that tacit background assumptions constitute a significant building block of our conversations, by providing interlocutors with a common ground on which new information can be shared and added to the common ground. This new information that is conveyed is the notion at the core of the concept of focus. Indeed, pragmatically-motivated definitions of focus dwell upon the "given info/ new info" distinction in communication, and equate focus with new information.¹ For example, focus is defined in Jackendoff (1972, p. 230) as "[the element that denotes] the information in the sentence that is assumed by the speaker *not* to be shared by him and the hearer." This speaker-oriented working definition of focus invites the inference that speakers will choose to focalize the information that they consider to be newsworthy, important, or informative; and hence find worth highlighting.

One could conjecture that a natural offshoot of associating semantic focus with a pragmatic notion of highlighting would be the implicit acceptance that there are some alternatives to what is being highlighted, as what we call highlighting is nothing more than a device by which we differentiate between an item of discourse to which we want to draw the attention of our interlocutor and all the other items that are relevant in the context and could potentially contrast with this item, but are not meant to be a part of the assertion of our utterance.

¹ At this point, this is only a functional definition of focus, but it is probably convenient and intuitively more felicitous to start out with the pragmatic properties of focus, and then to move on to its structural, semantic, and prosodic properties.

This intuition about focus and alternatives in discourse is captured in the Alternative Semantics approach (Rooth, 1985, 1992, 1996; von Stechow, 1991). The central tenet of this approach is that the principal function of focus is evoking alternatives. Consider the following sentence (Focused constituents are indicated by square-brackets):

(1) a. Ede wants coffee.²

b. Ede wants [COFFEE]_F.

c. [EDE]_F wants coffee.

² One could of course argue that this sentence is not devoid of focus either, since it has presentational focus, i.e., it can be assumed that (1a) is uttered in a situation where there is no prior discourse context for this sentence (i.e., "out of the blue") and thus the information status of all constituents in this sentence is "new." Due to the Nuclear Stress Rule (Halle & Vergnaud, 1987; Cinque, 1993), however, the object NP "coffee" would also be assigned stress in such a sentence, culminating in a structure that superficially resembles that of a sentence where "coffee" is the contrastive focus. It is argued that the fundamental difference between these two structures is accounted for by the process of "focus projection," whereby the object NP can be the narrow focus and bear stress (i.e., "be a contrastive focus") or it can bear stress simply by virtue of being the most deeply embedded constituent of a larger segment (i.e., "broad focus"), and this segment happens to be the entire sentence in (1a), which has presentational focus the prosodic corollary of which is realized on the object. That being said, we need not concern ourselves with this overlap between presentational focus and contrastive focus any further, for at least two reasons. First, and most importantly, the present thesis aims to uncover whether and how the presuppositions engendered by some focus particles are interpreted by children. As a matter of fact, a very crucial difference between presentational focus and contrastive focus lies in their disparate ability to induce presuppositions. Since constituents that are contrastively focused are by definition juxtaposed with the element they are contrasted with, they bring about presuppositions relating to that element. Thus, saying that *Ede wants [COFFEE]_F* by meaning the object NP to be contrastive will imply that Ede wants coffee, but not tea; for instance (and we may also call this 'corrective focus' for this reason, see Gussenhoven, 2007). In stark contrast to that, presentational focus does not give rise to presuppositions, simply because the very definition of presentational focus postulates that it is to be found in a context where no preceding discourse is relevant to the content of the sentence being uttered – and when a statement conveys exclusively "all-new" information (as is the case in out-of-the-blue sentences) there can be no "presupposition" involved in the matter – since presuppositions are the pieces of information that are assumed to be taken for granted in the common ground of the speaker and hearer, and thus it would be a contradiction to expect an all-new sentence to have presuppositions, as having presuppositions would automatically render the sentence *not-all-new*. Secondly, although it has been a point of debate for many linguists whether presentational focus and contrastive focus should be structurally distinct (Zubizarreta, 1998; Kiss, 1995, 1998; among others), Göksel & Özsoy (2003) argue that there is no compelling reason to posit such a formal structural distinction between the two in Turkish, as Turkish does not exhibit some tell-tale properties that warrant such a distinctness claim (e.g., the (non-)availability of exhaustive identification seems to serve the purpose of distinguishing between the two in Hungarian, but not in Turkish). Hence for these two reasons, but primarily for the first reason mentioned above, the phenomenon of presentational focus will not play a role in our discussion of focus, focus particles, and focus-related presuppositions.

In the absence of a focus-marked constituent, sentence (1a) only has an ordinary semantic value, which is equivalent to the denotation of the sentence. In sentence (1b), however, we see that the object NP "coffee" bears focus marking. Consequently, sentence (1b) also has a focus semantic value in addition to its ordinary semantic value, where "focus semantic value" is to be construed as the set of propositions of the form *that Ede wants x* (Rooth, 1996)³. Or to put it in less formal terms, the focus semantic value of a proposition is the set of all alternative propositions that can be obtained by substituting the focused item with contextually relevant alternatives of the same semantic type. Conversely, this means that the focus semantic value of the (1c) is the set of all propositions of the form *that x wants coffee*. Since the subject is the focused constituent in this sentence, the alternatives invoked by focus will stand in contrast to the entity denoted by the subject. In each case, the ordinary semantic value is also an element of the focus semantic value, since the highlighted alternative is contained in the set of alternatives under consideration. A concise summary of the ordinary semantic value ($[[[.]]^o$) and focus semantic value ($[[[.]]^f$) of these two sentences can be found below, reproduced by using the formal notation introduced in Rooth (1992).

- (2) a. $[[[Ede\ wants\ [COFFEE]_F]]^o = \text{"that Ede wants coffee"}$
- b. $[[[Ede\ wants\ [COFFEE]_F]]^f = \{\text{that Ede wants coffee, that Ede wants tea, that Ede wants milk, ...}\}$
- c. $[[[[EDE]_F\ wants\ coffee]]^o = \text{"that Ede wants coffee"}$
- d. $[[[[EDE]_F\ wants\ coffee]]^f = \{\text{that Ede wants coffee, that Sam wants coffee, that Jane wants coffee, ...}\}$

³ I choose to notate the propositions by using a *that*-clause, since this is a commonly adopted abbreviation for propositions as conceived of as "semantic objects." This notation will continue to be used throughout the thesis for propositions.

Given the representations above, it should also be noted that focus has a prosodic correlate, and often one form of prosodic prominence serves as the acoustic marker of focus. In English, in particular, the prosodic hallmark of a focused element is "pitch accent" (Gussenhoven, 1983; Jackendoff, 1972; Truckenbrodt, 1995; Schwarzschild, 1999; Selkirk, 1984, 1995).⁴ In a sense, it is possible to suggest that accenting a focused constituent is a way of perceptually highlighting that constituent for the addressee, and along with some syntactic strategies like scrambling or clefting, it is intended to facilitate the detection of the focus, which the speaker wants to be the target of the addressee's attention.

While prosodic tools such as pitch accent are sufficient by themselves to mark a constituent as focus, these focus-marked items can further be associated with and interact with other semantic elements called focus-sensitive operators or focus particles, which add new layers of meaning to the utterance.⁵ While some of these focus-sensitive operators (e.g., *only*) affect the truth-conditions of the sentence in which they occur, some others (e.g., *also*, *even*) are solely presuppositional, and do not change the truth-conditions of the sentence. In the two subsections below, we will examine the semantics of these two focus particles through the lens of Alternative Semantics, and where necessary, also introduce the properties and

⁴ Prosodic prominence is a relatively underspecified term, as it does not make explicit what suprasegmental dimension of speech (e.g., pitch accent, length/duration, amplitude, etc.) is at issue. This is an important point, because though some form of prosodic marking might correlate with the focus feature in all languages; the exact identity of that prosodic marking is unlikely to be uniform across all languages. As far as English is concerned, there appears to be a consensus among researchers regarding the status of "pitch accent" as the prosodic marker of focus. But this statement should not be generalized to Turkish, where I explore children's comprehension of focus particles and the presuppositions they evoke. As a matter of fact, Ipek (2011) maintains that Turkish does not use on-focus pitch range expansion for focus marking, unlike many other languages. Instead, Turkish appears to rely upon a greater magnitude of duration and intensity to express a distinction between focused words and their neutral counterparts.

⁵ Rooth (1985, 1992, 1996) prefers referring to these elements as *focusing adverbs*. I will mostly be using the term *focus particles*, however, since it appears to be more commonly used in the relevant acquisition literature.

specific idiosyncrasies that the Turkish counterparts of these two focus particles have.

1.2.1 Simple additive focus particles

We have previously established that one of the functions that focus serves is to evoke alternatives, engendering a set of alternative propositions to the current proposition being made. What focus particles do concerning this bifurcation of the focused expression and its alternatives is to establish a link between the two (König, 1991). In other words, one could say that a focus particle functions as a kind of glue that binds the ordinary semantic value of a proposition and its focus semantic value together, and also defines the specific relationship that holds between them. Simple additive focus particles (i.e., additive focus particles without a scalar component), exemplified by *also*, *too* in English and *da* in Turkish, for instance, do this by triggering the presupposition that at least one of the alternative propositions contained in the focus semantic value of the sentence is true in addition to the ordinary semantic value of the sentence (hence earning the title "additive").

To supply an illustrative example, we can look at Rooth's sentences given in (1) again, but this time adding the additive focus particle *also* to them, and creating subject-focused (3a) and object-focused (3b) sentences.

(3) a. [EDE]_F also wants coffee.

b. Ede also wants [COFFEE]_F.

Crucially, as was the case for the sentences in (1), which lacked focus particles, the sentences in (3) also assert the same proposition, namely "that Ede wants coffee." As

before, the set of alternative propositions pitted against the subject-focused sentence comprises propositions with different subjects where the rest of the proposition remains unchanged (e.g., {that Sam wants coffee, that Jane wants coffee,...}). Similarly, the set of alternative propositions that contrast with the object-focused sentence only differ from it in their objects (e.g., {that Ede wants tea, that Ede wants milk,...}). The additive focus particle *also* connects the original proposition to this contextually salient and relevant subset of focus-induced alternatives by introducing the presupposition that at least one of those alternatives under consideration is true for each sentence.⁶ For example, for sentence (3a) to be felicitous, it must be true that

⁶ Rooth's Alternative Semantics technically assumes that the focus semantic value contains ALL propositions where the focused element is substituted by an alternative of the same semantic type, including semantically anomalous or pragmatically irrelevant alternatives. For example, for the sentence "Ede eats [an APPLE]_F," a proposition contained in the focus semantic value could be "that Ede eats an airplane," even though an airplane is not an edible object. Even when there is no such semantic anomaly, real-life discourse situations often have a very narrow window of relevance that is limited to the objects and persons that are immediately relevant to the goals of the ongoing conversation, thus some semantically plausible alternatives can be irrelevant. For example a proposition like "that Ede eats a hamburger" may be a plausible proposition contained in the focus semantic value, yet in a context where people discuss what kinds of *fruits* are being consumed, it is – again – an implausible alternative, that will probably not be an alternative that the hearers will be considering when they hear the sentence "Ede eats [an APPLE]_F" in this context. Rooth's theory postulates that all these alternative propositions be contained in the focus semantic value irrespective of their anomaly and/or infelicity *vis-a-vis* the context of interaction, and only allows for constraining the focus semantic value to the contextually relevant alternatives via a special mechanism where an operator ($\sim$) is stipulated to require that the focus-induced alternatives be restricted only to the contextually relevant alternatives (C), which is a subset of the focus value. So this is a two-step solution to re-introduce context into the process of generating focus-induced alternatives, where context was initially not taken into account. In the present thesis, however, we will mostly only take into account the alternative propositions that are both semantically plausible and contextually salient and relevant, whenever we refer to a set of alternatives to a focused expression. In other words, when I talk about the "set of alternatives" or "focus semantic value," I will basically be talking about what Rooth would have called C, cutting out the intermediary step mediated by the $\sim$ operator, which Rooth had to postulate for theory-internal reasons. The primary reason for this decision is that this brief theoretical discussion is only meant to be a preface to the actual experimental study that has been conducted and will be presented against the backdrop of this theoretical framework, and alternatives that are either implausible or irrelevant – while they may be postulated by the theory – are not helpful for testing the comprehension of sentences with focus particles in an experiment where my priority is to establish verisimilitude, i.e., to create discourse contexts where sentences with focused elements would be plausible and their alternatives would also be plausible, felicitous, and relevant. Therefore, in the following sections of the thesis, whenever the term "alternative propositions" or a variant thereof is used, it is safe to assume for the purposes of expediency that what is meant is not the entire focus semantic value, but only a contextually salient, pragmatically felicitous, conversationally relevant and semantically plausible subset (C) of the set of propositions that is the focus semantic value. Indeed, in every experimental context, the alternative propositions that the participants can potentially consider are determined by the "background stories" that are presented in relation to each test sentence – as will be seen shortly – and given such a restricted context, it is not expected that the participants will venture out of this limited space of alternatives and entertain other alternatives not

at least one individual other than Ede wants coffee. We can perhaps most clearly recognize this presupposition when it fails to be satisfied in the context, where it ends up being "conspicuous by its absence." For example, consider the following sentence (test adapted from König, 1991).

(4) !Maybe nobody else wants coffee, but EDE also wants coffee.

One immediately notices that this sentence is infelicitous, as the antecedent clause expresses the possibility that there may be no one besides Ede who wants coffee, but then the subsequent clause introduces the existential presupposition that there is at least one person other than Ede who wants coffee – thus, the conjunction of these clauses culminates in a contradiction, and leads us to judge the resulting utterance as infelicitous.

These basic generalizations about the semantics of the simple additive focus particle *also* are true for its Turkish counterpart *da* as well. For instance, we could easily come up with a Turkish version of the sample sentences (3a) and (3b) given above, as follows.

(5) a. [EDÁ]_F da kahve iste-di.⁷

Eda *also* coffee want-PAST.3sg.

"Eda, too, wanted coffee."

warranted by the context. Thus the term "alternative proposition" can be used as a convenient shorthand to refer to the contextually relevant alternatives that we will be dealing with in this thesis, particularly in relation to the "alternative propositions" the comprehension of which will serve as a yardstick to measure whether and how the participants interpret sentences with focus particles.

⁷ I chose to render the sentences into Turkish in the past tense simply because I wanted to avoid any confusion that might stem from the vowel deletion that we see when the progressive aspect marker – (*I*)*yor* is attached to a vowel-ending verb root such as *iste-*.

b. Eda [kahVÉ]_F de iste-di.

"Eda wanted *coffee*, too."

Despite the parallelism in their semantics to the English examples, some distinct properties of the Turkish focus particle *dA* that set it apart from the corresponding English focus particle are immediately noticeable. First of all, unlike the English *also*, *dA* is an enclitic (Lewis, 1967, p. 205). As such, the additive focus particle *dA* remains unstressed itself, but shifts and restricts the stress to the stressable syllable of the word preceding it (Göksel & Özsoy, 2003; Göksel & Kerslake, 2005).⁸ This is also seen in the examples above, for instance in (5a), the final syllable of the subject noun bears stress, while in (5b) it is the final syllable of the object noun that is stressed. A further consequence of the semi-dependent status of *dA* as an enclitic is that it is subject to vowel harmony. Therefore it appears with a back vowel (i.e., *da*) after the subject noun *Eda*, which also ends in a back vowel; while it appears with a front vowel (i.e., *de*) after the object noun *kahve*, which ends in a front vowel. Furthermore, *dA* can associate with words of any syntactic category; but unlike *also* in English, it always has to be immediately adjacent to the right boundary of the constituent that it is associated with. Thus, while a pre-VP *also* in English can be ambiguous between a subject-focus and an object-focus construction (see 3a and 3b), an ambiguity of this kind is non-existent in Turkish. That being said, *dA* is the source of a unique case of ambiguity due to its polysemy.

Above, I have labeled *dA* as an additive focus particle, in order to provide a smooth segue from the literature on additive focus particles in general to the additive focus particles in Turkish in particular. But in Turkish, *dA* comes with an interesting

⁸ This is not the case when *dA* is used as a topic change marker (Göksel & Kerslake, 2005, p. 110). This point will be dealt with shortly.

and unique case of lexical ambiguity, as there are different *dA*'s that can serve continuative/topic-shifting, adversative, and enumerating functions as well (Göksel & Kerslake, 2005; Kerslake, 1996).⁹ For the purposes of this study we direct our attention to the topic-changing (or topic-shifting) function of *dA*.

Specifically, it is the strong topics in Turkish that are contrastive, and are marked with *dA*¹⁰ (Erguvanlı, 1984, p. 38). Strong (or contrastive) topics that are marked with *dA* tend to occur in sentence-initial position, and to a lesser extent in the postverbal domain that is normally reserved for backgrounded information or afterthoughts; but they are extremely averse to the immediately preverbal position in Turkish, which has been identified as the focus position (Erguvanlı, 1984; Göksel & Özsoy, 2003). In light of this, let us look at a sentence where the subject is a contrastive topic and is marked with *dA*.

(6) Eda da [kahVÉ]_F iste-di.

Eda *dA* coffee want-PAST.3sg.

"As for Eda, she wanted *coffee*."

As seen above, *dA* again co-occurs with the element that is on its left, but this time there are two crucial differences. First, the non-focused constituent *Eda* does not bear focal stress, and second (as an extension of the previous point), the focus of the sentence is the object NP *kahve*, which does bear focal stress.

⁹ When it is used to express adversativity, however, *dA* functions as a sentence-level conjunction similar to *but*, and when it is used to express enumeration (as it is defined in Göksel & Kerslake, 2005), we have not a single occurrence of *dA*, but we find it as part of the correlative conjunction *dA...dA*. As these two additional uses of *dA* are sufficiently different from the additive *dA* both in their semantics and in their syntactic properties, we will not dwell on them any more. In addition to that, it is worth pointing out that it is open to debate whether all these different *dA*'s have these different meanings due to a semantic type ambiguity, or whether a unified account is possible. I will remain agnostic about this question, as a discussion of this is beyond the scope of this thesis.

¹⁰ *Ise/-y(sA)* is another clitic that attaches to strong topics in Turkish, but we will not discuss it here.

The most important change to be aware of, however, is that the element that *dA* comes after (i.e., "the subject") and the focus (i.e., "the object") are now distinct, whereas in all former examples with the additive *dA* they overlapped (i.e., either both were subjects or both were objects). Contrary to the previous examples where *dA* associated with the focus, this sentence contains not only a focused constituent, but also a contrastive topic; and this is where the "link" established between the ordinary semantic value of a proposition and its focus-induced alternatives gets interesting. Recall from our earlier discussion that the additive focus particle *dA* introduces the presupposition that at least one of the alternative propositions in the focus semantic value of a proposition that contains *dA* (but is distinct from it) must be true.¹¹ Another way of putting this would be to say that the additive *dA* in a subject-focused sentence introduces the presupposition that there is at least one other individual (or entity) that "satisfies the open sentence in the scope of the particle" (König, 1991, p. 53). The vital point to keep in mind here is that there is only one set of alternatives under consideration here, and all the alternatives in that set are generated by the substitution of the focus-marked element in the relevant proposition.

When *dA* is used as a topic-change marker in Turkish, however, we are dealing with two different layers of alternatives, one of which emerges due to the presence of focus as before, and the other one emerges due to the presence of the contrastive topic, which is marked by the topic-changing *dA*. Büring (2003, 2016) argues that focus initiates alternative propositions to a declarative sentence, whereas a combination of contrastive topic and focus initiates alternative questions (i.e., alternative sets of alternative propositions); and it is possible to suggest that this insight aptly captures what lies at the heart of the matter for Turkish sentences with

¹¹ As pointed out above, the focus semantic value is a shorthand for C here, and it is to be interpreted as such throughout the thesis, as I ALWAYS assume the presence of a context that filters out irrelevant alternatives.

the topic-changing *dA*. To demonstrate this with a concrete example, let us take a look at the sentences (5b) and (6), reproduced below as (7a) and (7b).

(7) a. Eda [kahVÉ]_F de iste-di.

Eda coffee also want-PAST.3sg.

"Eda wanted *coffee*, too."

b. [Eda]_{CT} da [kahVÉ]_F iste-di.

Eda *dA* coffee want-PAST.3sg.

"As for Eda, she wanted *coffee*."

As we have pointed out above, the object-focused sentence (7a) has a focus semantic value that consists of a set of propositions of the form *that Eda wanted x*. Given this particular set of alternatives, we can assert that in a discourse situation where (7a) is uttered, the Question Under Discussion (QUD) must be something along the lines of "What did Eda want?" As discussed in Hamblin (1973), since the ordinary semantic value of a question is argued to be a set comprising the propositions that constitute potential answers to that question, assuming that the QUD in this discourse situation is a wh-question like *What did Eda want?* automatically renders the set of contextually salient propositions of the form *that Eda wanted x* relevant for the discourse; and marks them as potential, felicitous answers.¹²

In the case of a sentence with both a focus and a contrastive topic such as (7b), however, the QUD is argued to be not a simple wh-question, but a multiple wh-question roughly in the form of *Who wanted what?*, which can be further split up into

¹² *That Eda wanted x* is a *schematic* representation that contains a variable. I am not suggesting that this open proposition is a felicitous answer to the QUD, but that propositions of this schematic form (i.e., propositions where the variable is replaced by a semantic object of the right type) constitute felicitous answers to the aforementioned QUD.

sub-questions such as *What did Eda want?*, *What did Defne want?*, *What did Zeynep want?*, by substituting alternative values in the position of the contrastive topic, depending on the individuals pertinent to the communicative context (Büring, 1997, 2003, 2016; Rooth, 2016). Once we have this set of alternative questions generated by the contrastive topic, a set of alternative propositions (or "potential answers") can be produced for each of these sub-questions, on a separate layer, such as *Eda wanted coffee*, *Defne wanted tea*, *Zeynep wanted milk*, etc.¹³ In this way, we clearly see how a dual layer of alternatives comes about in the presence of a contrastive topic and a focus.

Turkish sentences with the topic-changing *dA* also come with the package of these alternatives (i.e., one set of alternatives generated for the contrastive topic, and another set of alternatives generated for the focus) and trigger the implicature that it is true that there is at least one other individual (i.e., one alternative to the contrastive topic) that satisfies an alternative of the open sentence in the scope of the particle.¹⁴

¹⁵ In short, for sentence (7b) to be uttered, it must be true that there is another

¹³ Unless you allow for the possibility of an answer such as *Nobody wanted anything*. I believe this is where the semantics of questions intersects with (and can be at odds with) speaker perspective. While a question like *Who wanted what?* can be answered with *Nobody wanted anything*, in real-life situations where such a question is explicitly asked, it is almost always the case that the asker does *not* assume that *Nobody wanted anything* is a potential answer, since if it were, it would have been more felicitous on their part to formulate the question as *Did anybody want anything?*, and only continue with the more specific question *Who wanted what?* if the answer to the former question was yes. I think from the perspective of a speaker whom we assume to be a cooperative speaker who observes the maxims of conversation, it is possible to say that these alternative propositions will be the propositions they will have in their mind. Their interlocutor, however, reserves the right to give the answer *Nobody wanted anything*, both providing both a felicitous answer to the question, and challenging/ nullifying the speaker's assumptions.

¹⁴ This statement applies to sentences where the contrastive topic is the subject, and the focus is the object. For the reverse case, we would have to say that the implicature is that there is at least one other alternative to the open sentence for which there is another alternative individual that satisfies it. But the logic of the interplay of these alternatives is the same throughout, as can be seen here.

¹⁵ It is, I believe, uncontroversial that every sentence with a contrastive topic and a focus that conforms to the templates given above (e.g., [Eda]_{CT} wanted [COFFEE]_F, [Defne]_{CT} wanted [TEA]_F, etc.) presupposes a QUD of the form *Who wanted what?*, while the reverse of this proposal, i.e., that a QUD of the form *Who wanted what?* should necessarily presuppose an answer like *X wanted Y* is obviously not true, since a plausible answer to the question *Who wanted what?* may well be "Nobody wanted anything." But it should be noted that I am not trying to "deduce" from the QUD the potential answers to this QUD, quite the contrary, I am trying to show that, given a sentence that has a

individual in contrast to *Eda* who drank another beverage that contrasts with *coffee* in the conversational context.¹⁶

As we see, both sentences with a single focus such as *Ede wants [COFFEE]_F*, and sentences with a contrastive topic and a focus such as *[EDE]_{CT} wants [COFFEE]_F* are found in English as well. But what makes Turkish interesting in this respect is that Turkish has a particle (i.e., *dA*) that can either function as a focus particle and appear in structures of the former type in association with the focused item, or is used as a discourse connective/ topic-change marker and appears in structures of the latter type in relation to the contrastive topic.¹⁷ Moreover, these two *dA*'s are solely distinguished based on prosodic cues, as explained above. For instance, when *dA* occurs to the right of the subject NP, the structure is potentially ambiguous between a subject-focus sentence (as in 5a) or an object-focus sentence

contrastive topic and a focus and that conforms to the schema *[X]_{CT} wanted [Y]_F*, it is clear that the Question Under Discussion presupposed by this sentence must be *Who wanted what?* Hence the presuppositional relationship between this type of sentences and the QUDs that are related to them is unidirectional. The implicature (of the Turkish counterpart of the sentence *[Eda]_{CT} wanted [COFFEE]_F*) that there is at least one other individual who wants an alternative to the focused element (i.e., here, "coffee") does NOT follow from the QUD *Who wanted what?*, rather it follows from the fact that (1) this sentence contains a contrastive topic and a focus, that (2) both contrastive topics and foci evoke alternatives, and that (3) assuming cooperative speakers, a sentence like *[Eda]_{CT} wanted [COFFEE]_F* would only be felicitously uttered in a context where there was indeed someone who contrasted with *Eda* (thus warranting the presentation of *Eda* as a contrastive topic) who wanted something other than *coffee* (thus warranting the presentation of *coffee* as a contrastive focus). Indeed, the potential answers to the QUD *Who wanted what?* can include both true positive answers like *[Eda]_{CT} wanted [COFFEE]_F* and an answer like *Nobody wanted anything*. But the set of potential answers to this QUD is not equivalent to the set of alternatives to a sentence of the form *[X]_{CT} wanted [Y]_F* – where X and Y are assumed to be entity-denoting expressions –, since the focus-induced (and contrastive-topic-induced) alternative propositions should replace the focus or contrastive topic with an alternative expression of the same semantic type. Since expressions like "nobody" and "anything" are not of type *e*, a sentence like *Nobody wanted anything* would not be an element of the set of alternatives to a sentence like *[X]_{CT} wanted [Y]_F* (e.g., *[Eda]_{CT} wanted [COFFEE]_F*). Therefore I believe it is important to emphasize that the implicature "someone else" wanted "something other than coffee" is not derived from the QUD. *Nobody wanted anything* is a potential answer to the QUD *Who wanted what?*, but it is not an alternative proposition for the sentence *[Eda]_{CT} wanted [COFFEE]_F*, which happens to be another potential answer to the same QUD.

¹⁶ Büring (2003) argues that this be treated as an example of a generalized quantity implicature. He points out that, when confronted with the sentence *FRED_{CT} ate BEANS_F*, speakers can infer that (i) the alternative proposition must be about a different individual (to maximize informativity) and (ii) the food item that this other individual ate must be different from beans, since a cooperative speaker would have opted to say something like *Both Fred and X ate beans*, or something to that effect, if this had not been the case.

¹⁷ It should be noted that this statement does not exclude the possibility of these two *dA*s having different semantic types.

where the subject is marked as a contrastive topic (as in 6). Speakers can only disambiguate these two *dA*'s by attending to the prosodic structure. For example in (5a), the subject NP bears focal stress; whereas in (6) the subject is unstressed, there is a small prosodic break after the subject NP that further helps mark it as a contrastive topic, and then the following object NP is produced with stress, signifying its focal status.

Given the complexity of the semantic computation that needs to be undertaken to correctly interpret a sentence with *dA*, and the dependence of this process on a successful analysis of the prosodic structure; we can see that the question of how young Turkish children learn to interpret these sentences in an adult-like fashion is interesting and needs exploring. In addition, we should keep in mind that the ability to interpret these sentences also depends on our pragmatic aptitude, as we need to be able to reason about unmentioned (but contextually salient) individuals and their possible actions that are nevertheless relevant to the immediate goals of the speakers in an ongoing conversation.¹⁸ Accessing these alternatives – which may not

¹⁸ Reasoning about multiple sets of contextually relevant and salient entities is not peculiar to contexts with focus, of course. The same is also true for *wh*-questions. While acquisition research on *wh*-questions has so far tended to primarily focus on their syntax, there are some more recent studies looking at the semantics of *wh*-questions in child language. It appears that this line of research has been mainly concerned with the issue of exhaustivity, i.e., if children give an exhaustive answer to a question like *Who came to the party?* (e.g., Mary, John, and Sue came to the party) or whether they go for an inappropriate/ underinformative singleton answer (e.g., Mary came to the party). (At this point, it is worth pointing out that there are also contexts where a singleton answer to a *wh*-question is appropriate and where a plural answer would in fact be overinformative. For example, if a random passer-by stops us to ask where s/he can find a pharmacy, we would direct them to the nearest pharmacy, and would not give them the locations of all pharmacies around us.) Schulz & Roeper (2011) argue that exhaustive answers to *wh*-questions involve universal quantification, while singleton answers involve existential quantification, and research by Roeper et al. (2007) shows that English-speaking children initially prefer giving singleton answers (by age 4-5) and then abruptly attain the ability to access exhaustive readings by age 6-7, with no intermediate stage where plural but non-exhaustive readings are found (e.g., for the example above, something like "Mary and John came to the party"). Roeper and his colleagues argue that this intermediate stage is missing, because a non-exhaustive set consisting of "some relevant members" cannot be computed based solely on quantificational information. According to them, children acquire exhaustivity later, and hence their earliest interpretations of *wh*-questions prompt them to give singleton responses, which are compatible with an existential reading. After they acquire exhaustivity, they can provide exhaustive answers. In short, if research on *wh*-questions is relevant to our interests; I would suggest that it is probably the exhaustivity dimension of this research that is relevant, since this is where people have investigated

always be overtly mentioned in the preceding verbal context, but may only be present or implied in the overall communicative context – draws upon an addressee's pragmatic abilities. The maturation of this pragmatic ability throughout child development is an interesting aspect of how a child becomes attuned to his/her language and the accepted conventions of conversation. Hence this is yet another reason to investigate whether and how Turkish-speaking children comprehend sentences with *dA*, which will be the topic of Chapter 3.

1.2.2 Scalar additive focus particles

Scalar additive focus particles such as *even* are known to introduce not only an existential (or universal) implicature about the alternative propositions in the discourse context, but also a scalar presupposition (Anderson, 1972; Horn, 1969, 1971, 1972; Karttunen & Karttunen, 1977; Karttunen & Peters, 1979; among others). Consider the following sentence.

the computation of sets in child language with the purpose of constructing answers to wh-questions. But still, these studies do not say anything that has a direct bearing upon the construction of sets in the child's mind, so I am unable to relate the *at least one* vs. *all* sets to the task at hand. Even the inability of 4-to-5-year-old children to give exhaustive responses does not conclusively prove that the lack of exhaustivity stems from an inability to consider all alternatives in the context – rather it might indicate a pragmatic inability, as young children might not realize that a singleton answer is underinformative, and might choose economy over informativity (i.e., they may think that if a singleton answer answers the question, there is no need to supply more information). That being said, it might be worth investigating whether the possibility of pluralizing wh-words in Turkish questions may be helping children give exhaustive responses. For example, *Mary came to the party* is a felicitous answer to the question *Who came to the party?*, though it will be underinformative if more people came. But in Turkish, a speaker who expects a plural answer to such a question could formulate his/her question as *Who's (plural) came to the party?* as well, in which case a discourse-structural preference for replying with a plural answer would be present. (All wh-words in Turkish can be pluralized in this way.) And whereas a singleton answer like *Mary came to the party* would be a felicitous answer to a question with a singularity-preference, my intuition is that such a singleton answer would only be felicitous as a response to a question with a plurality-preference only if contained an exclusive focus particle, e.g., *Only Mary came to the party*. So some regularities that have been detected in other languages with respect to children's interpretations of and responses to wh-questions may not be present in Turkish, due to some language-specific idiosyncrasies, and it could be interesting to investigate whether the possibility of asking wh-questions with a plural frame in Turkish makes children more likely to consider a multitude of persons, entities, etc. as opposed to a single entity/person that will pass for an answer when they reply to a wh-question, in comparison to children learning English. This could certainly be another context where Turkish-speaking children's ability to consider contextually salient and relevant sets could be investigated and compared to their ability to compute these sets in relation to declarative sentences with focus particles.

(8) Even [JOHN]_F left.

In (8), the subject NP is the focus, it is prosodically prominent, and is associated with the focus particle *even*. Horn (1969, 1971, 1972) claims that this sentence presupposes that (i) there is at least one other person besides John who left and (ii) the speaker would not have expected John to leave in accordance with his lower likelihood of leaving as prompted by his position on a pertinent pragmatic scale; and hence the speaker's expectations have been violated. Horn maintains that one can adduce evidence for the presence of these two presuppositions by continuing the sentence above with two different clauses that repeat its presuppositions, and are therefore redundant.

(9) a. ??Even John left, and someone else did.

b. ??Even John left, and one wouldn't have expected it.

Horn (1972, p. 81) states that these two continuations sound slightly odd, because they only reiterate the propositions that must already be taken for granted by the speaker and the addressee for the first conjunct to be felicitous at all. In addition, as seen above, *even* does not contribute to the truth conditions of the sentence, but merely has presuppositional content, i.e., the sentences "Even John left" and "John left" assert the same thing: *John left* (Stalnaker, 1973). In this respect, *even* is similar to the simple additive focus particles such as *also*, which we have discussed above. Furthermore, since the scalar presupposition and the existential implicature appear to arise merely due to the presence of *even*, it has been suggested that they be treated as conventional implicatures in the Gricean sense (Karttunen & Peters, 1979).

That being said, we should remark that the existential implicatures of *even* sentences – be they classified as conventional implicatures or not – have not been uncontroversial. For example, it appears that the existential implicatures invoked by the scalar presupposition of *even* (i.e., that at least one of the more likely alternative propositions under discussion should be true as well) are not indefeasible, or in some cases, these alternative propositions cannot even be true without contradicting the *even* sentence itself.

- (10) a. Is Claire an [ASSISTANT]_F professor?
b. No, she's even an [ASSOCIATE]_F professor.

As these examples from Rullmann (1997) show, *even* can designate an element as focus even when the presumable alternatives to that element are incompatible with it, e.g., it cannot be true that Claire is both an associate professor and also has another academic title ranked lower on a relevant scale compared to *associate professor*; and yet this does not prevent *even* from being associated with this element (Rullmann, 1997; Lahiri, 2008).

Similarly, the precise nature of the scale along which the alternatives brought forth by *even* are ordered has been subject to debate. For example, while Horn (1969) points out that the constituent that *even* is associated with is in some way less expected than the alternatives, Anderson (1972) states that the identifying feature of this constituent is its remarkableness. Fauconnier (1975), on the other hand, introduces the concept of pragmatic probability scales based on the observation that the contexts in which *even* is used are astonishingly similar to the contexts in which superlatives are often used for emphatic purposes.

- (11) a. My uncle cannot hear the faintest sound.
b. My uncle cannot even hear [the FAINTEST sound]_F.¹⁹

As we see, the presence of the superlative *faintest* in sentence (11a) is related to a "loudness scale," along which different sounds are ordered according to their amplitude. One logical consequence of asserting that someone is unable to perceive the faintest sound is that this person will be living in complete silence as he is actually unable to hear *any* sound, because *all* sounds are louder than the *faintest* sound, which is located at the bottom end of our hypothetical loudness scale.²⁰ Fauconnier (1975) further draws attention to the fact that the meaning of such sentences with superlatives does not change when one adds the focus particle *even* to them, as is the case in (11b); because *even* also co-occurs with scales, and is therefore felicitously used in structures with a pre-existing scale.

Since a loudness scale (or any other scale that is related to a physical magnitude) is objective, the precise ordering of the items on the scale is more or less indisputable. For example, everyone would agree that a scream is louder than normal speech, and normal speech is louder than a whisper, and so on. But in any given conversation, people also produce utterances that refer to scales of a more context-dependent and variable nature.

- (12) Susan must be sick, she did not even come to the beach with us today.

¹⁹ These superlative structures, called minimizers, have later been analyzed as containing a covert *even* (see Heim, 1984). It should be noted that, under this analysis, the argument that superlatives should help us define the nature of the scale becomes circular.

²⁰ One could also say that scales that can have an objective quantitative measure are entailment scales, and therefore asserting the truth of a strong proposition (e.g., my uncle cannot hear the faintest sound) necessarily implies the truth of all propositions weaker than it, in the same way the proposition *I ate three apples* implies that *I ate two apples*, etc. (Hirschberg, 1985; Toosarvandani, 2008).

As we see above, the reasoning of the speaker who utters sentence (12) implies that Susan is a person who normally enjoys going to the beach, and the speakers infers that Susan must be sick based on her unwillingness to do an activity that she ordinarily takes delight in. But unlike the case of physical scales, such as the one about the ordering of sounds based on their relative amplitude, the pragmatic scale that is relevant for (12) is of a subjective and variable nature, i.e., going to the beach may be at the top of a preference scale for Susan, but other people may not enjoy it as much. Thus the felicity of (12) is dependent not only on the compositional semantics of the sentence, but also on our world knowledge. In a context where our world knowledge clashes with the scale assumed in (12), we will find (12) to be ill-formed – or alternatively, accommodate its presupposition by updating our world knowledge (e.g., "I thought Susan did not like going to the beach, but maybe I was wrong").

These generalizations about the conditions in which *even* is used also hold for the Turkish focus particle *bile*, which corresponds to *even*. Similar to the simple additive focus particle *dA*, *bile* is a clitic that follows the focus associate; but differently from *dA*, it does not follow vowel harmony (Göksel & Kerslake, 2005, p. 109).

(13) [AYŞE]_F bile o kitab-ı oku-du.

Ayşe even that book-ACC read-PAST.3sg.

"Even Ayşe read that book."

Like the English examples, sentence (13) also introduces the presupposition that the focus associate linked with *bile* (i.e., Ayşe) is not an avid book reader, and is

therefore the least likely person in a given context to read the book in question (Erguvanlı, 2001). Hence *Ayşe* also constitutes the endpoint of a pragmatic probability scale that is generated in the conversational context. One important difference between the English scalar additive focus particle *even* and its Turkish counterpart *bile*, however, is that the latter has to be immediately adjacent to the focus associate, while *even* is typically associated with a constituent that is not immediately adjacent to it, as seen below.

- (14) a. John even climbed [Mount Everest]_F.
b. John [Everest Dağı'na]_F bile tırmandı.
c. *John [Everest Dağı'na]_F tırmandı bile.

As the examples above show, *even* can be associated with the object NP in English, even when it is pre-VP and the verb is interposed between *even* and the object. In Turkish, however, *bile* is strictly restricted to the right of its associate; consequently (14c), which we could view as the corresponding Turkish structure to the English structure in (14a), is not grammatical.²¹

At this point we can clearly see the similarities and differences between *dA* and *bile*, and the different challenges they may pose for the children acquiring Turkish. In a similar fashion to *dA*, *bile* also requires an addressee to reason about the contextually available alternatives and (at least in most cases) to infer that there is at least one alternative proposition that is true. But differently from *dA*, *bile* also necessitates the initiation of a scalar model for successful interpretation, where the

²¹ Sentence (14c) actually *does* have an interpretation when *bile* functions as an adverbial meaning *already* (Erguvanlı, 2001; Göksel & Kerslake, 2005). Under this reading, (14c) translates as "John already climbed Mount Everest." But this is not the reading that we are interested in. Under the assumption that *bile* serves as a scalar additive focus particle, sentence (14c) is ungrammatical.

alternatives are ranked along a relevant dimension, and the focused item associated with *bile* is at one endpoint of the scale in that model. One could argue that this second aspect of *bile* could make its comprehension difficult for children, especially when the activation of the relevant scale in the child's mind depends on accessing a context-dependent contingencies. Conversely, *even* lacks the special ambiguity that *dA* has in Turkish, and at least in that respect, it may be easier for children to acquire, as they will not be dealing with two competing structures that differ in the grammatical function of the focused element (e.g., an S-*dA*-O-V sentence has subject-focus when *dA* is an additive focus particle, but object-focus when *dA* is a topic-change marker) but depend on prosodic cues for disambiguation.

In what follows, Chapter 2 will provide a brief overview of some previous acquisition studies that have been conducted in languages other than Turkish and explored the acquisition of the additive and scalar additive focus particles in those languages; which will be followed by Chapter 3, where two experiments that investigate the acquisition of *dA* in Turkish will be introduced. In Chapter 4, I will present an experiment that investigates how Turkish-acquiring preschoolers and elementary school students interpret sentences with *bile*.

CHAPTER 2

PREVIOUS RESEARCH ON THE ACQUISITION OF ADDITIVE AND SCALAR ADDITIVE FOCUS PARTICLES

2.1 Acquisition of simple additive focus particles

2.1.1 Overview

The acquisition of simple additive focus particles has previously been investigated in only a handful of languages. The results that have been obtained in these studies will be laid out and discussed below. It is notable that a sizeable portion of these studies relied on offline methods for testing comprehension, and some of the offline methods had some apparent flaws that may have affected the outcomes, and rendered them unreliable; as we will extensively discuss below. Just as the offline methods used in these studies vary wildly, so do the results that have been found. In fact, the findings have been so disparate that one study could show an adult-like comprehension of the presuppositions of additive focus particles, while another showed that children in the same age group were unable to process the semantics of additive focus. Let us now take a look at the studies conducted before, in order to see how other researchers approached the problem of investigating the comprehension of additive focus.

2.1.2 German

In German, one of the earliest studies that investigated preschoolers' comprehension of the simple additive focus particle *auch* ("also") was conducted by Hüttner et al. (2004). These researchers were particularly interested in finding out whether children could utilize prosodic cues to differentiate between object-focus and subject-focus

sentences, and whether there was a difference between how well they interpreted these two kinds of sentences, exemplified by (1a) and (1b) below.

- (1) a. Max will auch BOOT fahren.

Max wants also boat drive

"Max also wants to drive [a BOAT]_F."

- b. Max will AUCH Boot fahren.

"[MAX]_F also wants to drive a boat.

As was the case in sentences (3a) and (3b) in the previous chapter for English, German can also have an ambiguous focus reading in sentences that contain the focus particle *auch*, and this ambiguity needs to be resolved on prosodic grounds (Krifka, 1999; Féry, 2012). One crucial difference, however, is found in the subject-focus sentences where it is the subject NP that bears focal accent in English; while in German the accent is on the focus particle *auch* itself.²² When *auch* is accented, it becomes associated with the subject, resulting in a subject-focus sentence. In cases where *auch* is unaccented and the object NP is accented, however, we are confronted with an object-focus sentence. Consequently it appears that German-speaking

²² Krifka (1999) argues that the subject NPs associated with *auch* in this type of sentences should actually be treated as contrastive topics, over which the rest of the sentence is predicated; while the stressed *auch* itself should be considered the focus of the sentence. I will not discuss the subtleties of his argument, however, firstly because it is beyond the scope of this thesis, and secondly because it is a convenient shorthand to state that the subject associates of the stressed *auch* are foci, as there appears to be no difference in the semantics of these sentences and the subject-focus sentences in other languages, e.g., just as the English sentence [MAX]_F also drives a boat asserts that Max drives a boat and presupposes that at least one of the propositions in the set of alternatives that can be derived by substituting a contextually relevant individual in the place of the focused individual *Max* (e.g., "Daniel drives a boat") is also true; the German sentence *Max fährt AUCH Boot* also asserts that Max drives a boat and presupposes that there is another individual who is engaged in the same action. So I believe there is no harm in setting some minute theoretical details aside and assuming that we are dealing with focused subjects in these examples, and not with contrastive topics.

children (as well as adults, obviously) have to rely on prosodic cues to arrive at a correct focus interpretation when they hear a sentence with a pre-VP *auch*.

While one could expect the prosodic differences that subject-focus and object-focus sentences correlate with to be challenging for young children, it has been shown in literature that German-speaking children start producing the focus particle *auch* in their early multi-word utterances from 18 months onwards, successfully using the correct intonation for subject-focus and object-focus sentences in their spontaneous speech (Nederstigt, 2001, 2003; Penner et al., 2000). So at least the production of this focus particle appears to pose no difficulties even to very young children. That being said, there is also an extensive array of findings obtained from comprehension studies that show that young children are unable to capitalize on prosodic cues to compute reference sets, and that put forward the hypothesis that children will be inattentive to the semantic corollaries of prosodic differences, even though they may impose the correct prosodic structure on their own utterances (Gualmini et al., 2003; Reinhart, 2004). Based on these findings, Hüttner et al. (2004) predicted that young German-speaking children could commit errors in the comprehension of sentences with *auch* as well. To test this, Hüttner et al. (2004) created subject-focus and object-focus sentences with *auch* like the sentences (1a) and (1b) given above, and all of these test sentences contained the modal verb *wollen* ("to want"). In addition, they had an equal number of control sentences without *auch*, and in contrast to the test sentences, these sentences did not have a modal, but instead had a lexical main verb inflected for present tense. A sentence-picture matching paradigm was employed in this experiment, where the participants were asked to select the picture that showed the action described in the test sentence. For example,

the following three pictures shown in Figure 1 were presented to the participants in relation to the test sentences (1a) and (1b).



Figure 1. A sample set of pictures used in the Hüttner et al. (2004) study

Hüttner et al. (2004) predicted that, if a child chose the first picture in the series in response to a test sentence (1a or 1b) she heard, this would indicate that she had assigned a subject-focus reading to the sentence; since the picture shows that someone drives a boat, and there is another person (presumably Max, in this context) who points to the boat and wants to drive a boat as well. Similarly, the second picture would be indicative of an object-focus reading, and the final picture would be compatible with a reading where the focus particle was completely ignored.

The results of this experiment, however, were rather mixed. Hüttner et al. (2004) found that children in all age groups (ranging from 3;03 to 5;08) did better on the subject-focus sentences than in object-focus sentences, and attributed this asymmetry to a supposed lack of co-extension between the scope and the focus in object-focus sentences.²³ One should keep in mind, however, that this correct response rate in the case of subject-focus sentences fluctuated between 55% - 65% for the 3 age groups studied, and though the presence of 3 pictures to select from

²³ The idea being that *auch* always takes scope over the entire sentence, and in sentences with accented *auch*, the focus of the sentence is supposed to be the entire sentence as well; while in sentences with unaccented *auch*, the focus is confined to the object. Thus it should be harder for children to interpret this latter type of sentences where the scope of *auch* and the focus designated by *auch* do not coincide, the researchers have argued.

suggests that the chance level should be around 33%, there are reasons to assume that the final picture was not as salient for the children as the first two pictures at all, as it featured only one potential agent and only one desired object/action. Hence if a child knows the additive meaning of *auch*, upon hearing a sentence containing this particle, she may automatically eliminate the third picture as an appropriate depiction of the content of the sentence, even though she might err at the stage where she should associate this particle with a specific constituent. With only two reasonable options left for the child (i.e., Picture 1 and Picture 2), it is evident that the correct response rates given above are compatible with a chance performance.

Besides, a very surprising point about the subject-object asymmetry detected here is that it contradicts a substantial body of research in the domain of exclusive focus particle interpretation, which had shown that children often encounter more difficulties in interpreting subject-focus sentences compared to object-focus sentences, frequently assigning an incorrect object-focus reading to subject-focus sentences as well (English: Crain et al., 1994; Mandarin: Zhou & Crain, 2010; German: Müller, 2010; English: Kim, 2011; among others).

It is scarcely possible to believe that this reversal in the direction of the subject-object asymmetry is solely due to the unique properties of the focus particle that was used in this experiment, e.g., its additivity or the prosodic idiosyncrasies associated with it. I am rather inclined to believe that a number of shortcomings in the design of the experiment might have led to this peculiar constellation of results obtained in the Hüttner et al. (2004) study. One such shortcoming, namely the relative lack of saliency of the third picture, has been mentioned above. But there are even more important problems. For example, all the test sentences used in this experiment contained the modal verb *wollen* ("to want"). Setting aside any additional

difficulties that the semantic contribution of this modal verb might cause (e.g., difficulties that may be related to the fact that "wanting to do something" is not about an observable action performed by the agent, but is about their unobservable mental state), these sentences also have an ambiguous interpretation, owing to the indeterminacy of whether what is at issue here is the actual actions of the agents or their desires about potential future actions.

- (2) a. Max fährt ein Auto. Max will auch BOOT fahren.

Max drives a car Max wants also boat drive

"Max drives a car. Max also wants to drive [a BOAT]_F."

- b. Max will Auto fahren. Max will auch BOOT fahren.

"Max wants to drive a car. Max also wants to drive [a BOAT]_F."

As we see above, a proper antecedent sentence for an *auch*-sentence with the modal verb *wollen* may or may not contain this modal verb. In both cases, though, the discourse is felicitous. Therefore it is essentially unknown whether the proposition expressed by the test sentence, and the proposition that it presupposes to be true are both about two different desires or one desire and one action. It is manifest that the pictures have been designed with the latter scenario in mind, though there is no reason to expect the former interpretation to be inaccessible to children. If this is the case, the mismatch between this scenario and the pictures presented could negatively affect children's performance in the picture-selection task. In addition, asking children to choose the picture where "Max *also* wants to drive a boat" is not a very felicitous request to begin with, as there is no context (neither linguistic nor extralinguistic) that satisfies the presupposition of this sentence. This is a persistent

problem that keeps emerging in many off-line experiments investigating the comprehension of presuppositional content, and it needs to be tackled with much ingenuity in the experimental design.

Some later studies done on German attempted to amend these deficiencies by employing either on-line methods of measuring children's comprehension of *auch*, or by devising more insightful experiments where the pragmatic context made the presuppositional content of the test sentences relevant to the task at hand (i.e., made the alternatives relevant) and thus increased its salience for the child, making it harder to ignore the presuppositions and creating a felicitous discourse context that more closely mimicks what happens in real-life interactions.

For example, Höhle et al. (2009) used a visual-world eye-tracking paradigm to test German-speaking children's comprehension of *auch*. In this experiment, 3-5-year-old children viewed visual displays similar to Figure 2, and simultaneously heard test sentences containing the additive focus particle.



Figure 2. A sample visual display from the Höhle et al. (2009) study

There were two sets of test sentences, one with accented *auch* and one with unaccented *auch*.

(3) a. [Toby]_F hat AUCH eine Puppe.

Toby has also a doll

"[TOBY]_F also has a doll."

b. Toby hat auch eine [ENTE]_F.

Toby has also a duck

"Toby also has a [DUCK]_F."

As seen above, the sample test sentence (3a) has subject-focus, and it presupposes that someone other than Toby (i.e., the girl on the left) has a doll; while the object-focused sentence (3b) presupposes that Toby has something other than a duck (i.e., a doll). Crucially, Höhle et al.'s prediction regarding these items was that listeners should be able to dissociate between subject-focus and object-focus readings as soon as they hear *auch*, as accented *auch* signals subject-focus but an unaccented *auch* is a prelude to an upcoming object-focus. Thus, in sentence (3a), listeners are expected to shift their gaze to the left-hand side (i.e., to the girl), as it is clear that the rest of the sentence will make a statement about something that both the girl and Toby have. In contrast, participants who hear (3b) should fixate on the right-hand side of the picture, specifically on the two toys that Toby has, since the object-focus indicates that the additivity component of this sentence will deal with the objects that Toby possesses. As a matter of fact, Höhle et al. (2009) have found that children as young as 3 years old can use the prosodic cues in these sentences (i.e., the presence vs. absence of stress on the additive focus particle *auch*) and differentiate between the alternative sets to the focused subject (i.e., the girl) and the alternative sets to the focused object (i.e., Toby's doll), as can be inferred from their gaze patterns.

These data are supported by the findings obtained from some offline studies as well. For example, Berger & Höhle (2012) emphasized the importance of creating contexts that make the presuppositional content of sentences with additive focus particles "relevant" and of thus motivating children to seek out and gravitate towards the presupposed proposition. To this end, they designed a "rewarding game," in which a puppet character (e.g., a lion) would only deserve a reward if he had done two activities and he would forfeit the reward if he performed only one activity. Having established the rules of the game, the experimenter asked the lion an indirect question, such as "Lion, you've surely eaten the BANANA!" to which the lion could reply either with (4a) or (4b).

- (4) a. Weißt du was? Ich hab' auch den APFEL gegessen.

Know you what I have also DEF.ACC apple eat.PRTC

"You know what? I have also eaten [the APPLE]_F."

- b. Weißt du was? Ich hab' den APFEL gegessen.

"You know what? I have eaten the [APPLE]_F."

If the lion answered with (4a), combined with the prompt given by the experimenter (i.e., "You've surely eaten the BANANA!"), the participants who could comprehend the additive meaning of *auch* were expected to reward the lion, as his statement suggested that he had eaten not only the banana, but also the apple. If the lion answered with (4b), however, the implication would be that he ate the apple, but not the banana, and he would lose out on the reward. Berger & Höhle (2012) found that this new design indeed helped make both the additivity of *auch* and the contrast set of the focused item (e.g., the banana in this context) salient for the children, and

children could accordingly display a near-adult-like pattern of responses. Even 3-year-old children were much more likely to reward the lion in the *auch*-condition than in the control condition without *auch*, strongly suggesting that young German-speaking children are able to comprehend the additive meaning of *auch* when the experiment is administered in a pragmatically appropriate context.

2.1.3 Dutch

The first experiment on the comprehension of the additive focus particle *ook* ("also") in Dutch was conducted by Bergsma (2006). Similar to *auch* in German, *ook* is also ambiguous with respect to its focus associate when it is in the pre-object position.²⁴

- (5) a. *Ook* [de jongen]_F aait de hond.
 Also the boy pets the dog
 "[The BOY]_F also pets the dog."
- b. *De jongen* aait *ook* [de HOND]_F.
 "The boy also pets [the DOG]_F."
- c. [De jongen]_F aait *OOK* de hond.
 "[The BOY]_F also pets the dog."

As seen above, sentences (5b) and (5c) reflect the same ambiguity found in German sentences. When *ook* is in the pre-object position and the object is stressed, the sentence has object-focus; whereas if *ook* remains in the same position but is also

²⁴ For Hüttner et al.'s examples we have used the term pre-VP, as they had test sentences with a modal verb. In the examples that follow, we will have pre-object additive focus particles, though sentences with both pre-VP and pre-object focus particles happen to have the same meaning as long as there is narrow object-focus. This is also the case for the examples in question here, so the distinction is not an important one.

stressed, the sentence has subject-focus. In addition, *ook* unambiguously associates with a focussed subject when it is in the pre-subject position, as is the case in (5a).

Just as was the case for the Hüttner et al. (2004) study, a picture-selection task was employed in Bergsma (2006) as well. For example, for sentences (5a-c) given above, children had to choose between three pictures showing i. a boy and a girl both petting a dog (subject-additive), ii. a boy petting both a cat and a dog (object-additive), and iii. a boy petting a dog (no-additive).

Bergsma (2006) reported that over half of the children in the youngest age group (4-to-5-year-olds) chose the third picture in the series for *ook*-sentences (though this tendency gradually disappeared in older age groups) and concluded that Dutch-acquiring children initially ignored the additive meaning of *ook*. In addition, Bergsma (2006) found that children in all age groups could successfully access a subject-focus reading when *ook* was in the pre-subject position, but when it was in the pre-object position, children's picture selections appeared random. Based on this finding, Bergsma (2006) concluded that children may initially have trouble interpreting the stress differences in these sentences, and they may therefore choose the pictures in an arbitrary fashion.

In a more recent study, Wolterbeek et al. (2017) re-visited the question of the acquisition of *ook* in Dutch, by testing 4-6-year-old Dutch children in a sentence-completion task.

(6) Dit is een gestreepte grijze olifant, and dit is (ook) een...

This is a striped gray elephant and this is (also) a...

"This is a striped gray elephant, and this is (also) a..."

The idea was that, when given two elephant pictures with one similarity and one difference in their appearance (e.g., two gray elephants one of which is striped and the other one is dotted) the children should mention the dimension in which they are similar when the sentence contains *ook*; for example a continuation like "[this is also] a gray elephant," would be felicitous. But if the prompt for eliciting a continuation lacks *ook*, reiterating the similar feature will be infelicitous due to a conversational principle called contrastive implicature. As Wolterbeek et al. (2017) argue, when two sentences with a parallel syntactic structure and parallel semantic content are uttered in succession, the presence of an additive particle appears to be obligatory; and when there is no additive particle connecting the two sentences (and no conjunction), the utterance sounds odd, as attested by the difference between (7a) and (7b) below.

- (7) a. #Tom has a red car. Mike has a red car.
 b. Tom has a red car. Mike, too, has a red car.

Hence, when the prompt does not have an *ook*, participants should continue the sentence by underlining the difference between the elephants, for instance a continuation like "[this is] a dotted elephant" would be appropriate for the item given above.

Wolterbeek et al. (2017) found that neither group of children behaved adult-like, but interestingly, while 5-year-olds appeared to outperform 4-year-olds in sentences without *ook*, 4-year-olds did better than 5-year-olds in sentences with *ook*. The authors suggest that this particular pattern of results is presumably related to the development of contrastive implicature as a principle of conversation. They maintain that 4-year-old children have not yet acquired this principle, and combined with their

inability to interpret *ook*, they have a low correct response rate in both *ook*-sentences and non-additive sentences. 5-year-olds, however, have acquired the principle of contrastive implicature, but they are still unable to access the additive meaning of *ook*. Consequently they disregard the additive particle, and continue sentences with or without *ook* with a predicate that refers to the different quality. This, in turn, inflates their scores in the non-additive sentences compared to the 4-year-olds, but it also causes them to have much lower scores in the additive sentences, so much so that 4-year-olds appear to outdo them.

Following Sæbø (2004), Wolterbeek et al. (2017) argue that the real function of additive focus particles is not to signal additivity, but to "suspend contrastive implicature," which is the default case in the absence of additive focus particles, as indicated by the infelicity of structures such as (7a), and they claim that learning to interpret the additive focus particles comes down to learning to suspend the principle of contrastive implicature.

2.1.4 Japanese

The first studies that examined the comprehension of the additive focus particle *mo* ("also") in Japanese were conducted by Matsuoka (2004) and Matsuoka et al. (2006). By employing a Truth-Value-Judgment-Task involving both subject-focus and object-focus test sentences, Matsuoka (2004) investigated how Japanese-speaking children between 5;06-6;07 years of age interpreted *mo*. Children listened to stories in which different agents interacted with different objects, and then they were asked to indicate whether the given test sentence was correct according to the story. Matsuoka (2004) created *all* test sentences in such a way that they would be incorrect in the adult grammar. For example, the test sentence for a test story where different

characters pull different heavy objects (or animals) to show off their strength was as follows.

- (8) Kauboi-mo kujira-o hippari-mashi-ta
 cowboy also whale-ACC pull-POLT-PAST
 "[The COWBOY]_F also pulled the whale."

As the cowboy was the only character in this story who managed to pull a whale, Matsuoka (2004) expected children to reject this sentence (and all the other test sentences, as they followed the same template).

The results showed that a small group of children interpreted both subject-focus and object-focus sentences correctly, another small group interpreted subject-focus sentences correctly but made errors in the object-focus sentences, and finally about half of all children interpreted all test sentences incorrectly.²⁵

Based on the outcomes of this study, Matsuoka (2004) made the tentative proposal that UG may allow both subject-focus and object-focus interpretations for *mo* in Japanese (e.g., like a free focus-association parameter), and children's errors may stem from this "improper but grammatically allowed choice." The later study by Matsuoka et al. (2006) basically replicated the results of Matsuoka (2004) by using the same experimental set-up, the only difference being that they tested a larger number of children.

Yet the shortcomings of this experimental set-up are immediately noticeable. First of all, "correct" performance was measured based on the number of sentences the children judged to be false, but strictly speaking none of the test sentences was

²⁵ What this latter finding means, of course, is that they accepted all test sentences as true – which is an important point, as we will explain later.

false, since only the truth-conditional component of a proposition can be judged to be true or false, and the truth-conditional component (i.e., assertion) of every sentence in the study was already true. As we have underlined in previous sections, additive focus particles have a purely presuppositional contribution, and if the existential presupposition invoked by an additive focus particle fails to be fulfilled – which is actually the criterion against which Matsuoka (2004) and Matsuoka et al. (2006) were evaluating the responses – then what we are confronted with is a presupposition failure, not a case of falsity. Hence children's tendency to accept these test sentences as true descriptions of what happened in the story cannot be considered indicative of an inability to interpret *mo*. Rather it is more likely a proof that a truth-value-judgment-task is not an appropriate experimental paradigm to investigate the comprehension of presuppositional content. Besides, given children's propensity to answer 'yes' in response to yes-no questions in experimental settings, it is hardly surprising that Matsuoka and her colleagues have encountered so many children who exclusively gave "incorrect" yes-answers, since all test sentences were false (or rather, infelicitous) in the adult grammar (Moriguchi et al., 2008; Okanda & Itakura, 2010).

Cognizant of the flaws of a truth-value-judgment-task deployed in this context, Kurokami (2017) revisited the issue of the acquisition of *mo* by utilizing a so-called Question-After-Story-Task, where children listened to a story and were afterwards asked wh-questions in the form of *Who did X?* and *Who did also X?* He expected that children should reply to the former question by indicating all the characters who performed a certain action (X), but they should answer the latter question by indicating the character who performed not only the action X, but also another action Y. Yet he found that children had an overwhelming tendency to

mention all characters who performed the action X (irrespective of whether they performed an additional action) in response to the questions with additive focus particles. In fact, the correct response rate in this study was 0% for all children, meaning that they had always mentioned all the characters who did X. Kurokami (2017) concluded that these results showed that the errors detected in Matsuoka and her colleagues' earlier studies could not be related to the lack of a story context or the inappropriateness of the truth-value-judgment-task, yet he also refrained from positing an immature semantic representation for *mo* in child grammar, since a rudimentary corpus search he made showed that Japanese-speaking children could successfully produce the additive focus particle *mo* in their spontaneous speech even before their second birthday. So he chose to remain agnostic with respect to the potential sources of these errors. However, it is clear that the experimental paradigm in this study was also deficient in some ways, since no plans and provisions were made to make the alternative sets invoked by *mo* relevant to the task at hand. As the objects that contrasted with the focus set associated with *mo* were not salient, it is entirely possible that the children disregarded the additivity of the sentence, and made their character selections purely based on the assertional component of the sentence, thus mentioning all the characters who did X.

2.1.5 Mandarin

To my knowledge, there has only been one study that investigated the acquisition of additive particles in Mandarin, though it was a very comprehensive one. Liu (2009) examined both the production and the comprehension of different Mandarin particles with additive content, such as *hai* ("still, another"), *you* ("again"), and *ye* ("too, either, also"). In the production tests, she used a picture-prompted elicitation task;

and in the comprehension tests, she used an act-out task with younger children and a truth-value-judgment-task with older children, where the children had to feed a puppet a cake when he gave a correct answer, but they had to feed him a chili when he gave an incorrect answer.

The results showed that children had no problems producing any of these particles in elicitation tasks, and even children as young as 2 years old could use them felicitously. The comprehension of *hai* and *you* also appeared to be very easy for children of all ages, but a comprehension-production asymmetry appeared in the case of *ye* ("also"). Liu (2009) found that Mandarin-speaking children had difficulty interpreting *ye* correctly until age 7, even though they had mastered its production by age 2.

Based on these results, Liu (2009) concluded that children's errors in the case of *ye* were most probably related to the difficulty of presupposition comprehension²⁶ in linguistic contexts where the presupposition was "not anaphoric within the host sentence." In the presence of particles such as *again* and *still*, the presupposed proposition is basically a replica of the proposition contained within the sentence itself (and hence, "anaphoric" in Liu's terms). So if *John went to the cinema again*, the presupposed proposition is that *John went to the cinema (before)* or if *John still lives in Rome*, the presupposed proposition is that *John lived in Rome (up until now)*, etc. When we hear a sentence like *John also went to [ROME]_F*, however, the presupposed proposition(s) will have a distinct element in the place of *Rome*, such as *John went to Paris*, *John went to Berlin*, and so forth. Liu (2009) argues that it may well be this distinctness constraint entailed by an additive focus particle like *ye* that makes its comprehension so challenging and causes it to be acquired relatively late

²⁶ The actual term Liu (2009) uses is *presupposition accommodation*, but she appears to ascribe a different meaning to the term accommodation than that which is commonly used in the semantics literature. Therefore I replaced it with the less loaded term "comprehension" to avoid confusion.

by the children. Though one should remark at this point that another salient difference between *again* and *still* on the one hand, and *also* on the other, is that the former two are not focus-associating particles, while the latter is. So it is also worth bearing in mind that it might be the case that children do not have problems comprehending presuppositions (as they can correctly interpret structures with *again* and *still*), but they experience difficulties with particles that not only induce presuppositions but are also focus-associating (e.g., *also*).

2.1.6 English

Perhaps surprisingly, the comprehension of additive focus particles has not received much attention in English compared to German, Dutch, or Japanese. To my knowledge, there is only one study by Jasbi (2016) that investigated children's interpretation of the English additive particle *too*. In his study, Jasbi (2016) employed a novel guessing game involving 4 chips. Two of the chips featured a frog and an elephant on their up side, while the remaining two were blank; and all chips were blank on the down side. What the experimenter did during this game was to put all 4 chips on the table face-down and shuffle them, then randomly choose two and "peek" at one of those two chips. Then he asked, as if muttering to himself, one of the following three questions.

- i. Do we have a frog/elephant?
- ii. Do we have a frog/elephant, too?
- iii. Do we have a frog and an elephant?

Afterwards, he "peeked" at the other chip as well, and answered his own question by saying *yes* or *no*, and the child's task was to guess which picture was on each chip. Crucially, when the question contained the presupposition trigger *too* as is the case in (ii), regardless of whether the experimenter's subsequent answer to his own question is a *yes* or *no*, the animal on the back of the first chip can be known. For instance, if the experimenter asks "Do we have an elephant, too?" after looking at the first chip, it is implied that the first chip had a frog picture on it.

Jasbi (2016) reported that children between the ages of 4;09-5;07 could pick the correct outcome in *too*-trials, while children between the ages of 3;04-4;09 appeared to be unable to access the presupposition of *too* to guess the animal on the back of the first chip. But as the author himself acknowledged, it was possible that younger children also categorized the two blank chips as non-elephant or non-frog chips, so for them it might have been perfectly plausible to consider "the blank chip" as well as "the frog chip" as an alternative to "the elephant chip" mentioned in the question, and if this was the case, it is not surprising that young children could not reliably indicate that the first chip must be a frog chip. Hence Jasbi (2016) cautiously concluded that this study did not make an unequivocal statement about younger children's (in)ability to interpret *too*.

2.2 Acquisition of scalar additive focus particles

2.2.1 English

The acquisition of scalar additive focus particles is a rather sparsely studied topic, as there have been only a handful of studies conducted on it. This is perhaps not too surprising either. As the contribution of additive focus particles is purely presuppositional, offline studies have to come up with astute experimental designs to

tap into the tacit assumptions that children make about the presupposed content in the discourse, and in contrast to simple additive focus particles, scalar additive focus particles such as *even* give rise to not only an existential implicature, but also a scalar presupposition, making the job of researchers harder.

In English, children's comprehension of *even* has so far been investigated only by Kim (2011), by using a "guess-who" or "guess-what" game. She particularly focused on examining whether children could understand the scalar presupposition invoked by *even* (i.e., whether the focused constituent that *even* associates with is really situated at the end of a contextually relevant pragmatic scale).

To this end, she created test pictures where either (i) 3 characters who differed from each other along a quantitative dimension interacted with 1 object (subject-focus) or (ii) 1 character interacted with 3 objects that differed from each other along a quantitative dimension (object-focus). A sample object-focus item from Kim's study is reproduced below (Figure 3).



Figure 3. A sample picture from Kim (2009)

The picture above was accompanied by a story in which it was told that Bear could reach first the lowest cookie, then the mid-height cookie, and then the highest cookie. This story was followed by sentence (9).

(9) Bear was able to reach even [the VANILLA cookie]_F.

Children were subsequently asked to indicate which of the three cookies was the vanilla cookie, and the idea was that they should point to the cookie on the highest shelf if they understand that *even* is related to a scale and associates with an element at either the lowest or highest end of that scale, depending on which one results in the least likely or most informative proposition. In the context of this mini-story, Bear is least likely to reach the cookie on the highest shelf, so it is plausible to assume that the vanilla cookie must be the cookie on the highest shelf.

Kim's study showed that there was no difference between subject-focus and object-focus *even* sentences in terms of children's performance, but a significant difference between the 4-year-olds and 5-year-olds was found. Kim (2011) concluded that the age of 5 is an important milestone for the comprehension of the scalar presupposition of *even*.

Kim (2012) also conducted the same study on Korean-speaking children, and was able to replicate the results of her study on English. Just like their peers acquiring English, Korean-speaking 4-year-olds could interpret the scalar presupposition of even-sentences only 26.7% of the time, while 5-year-olds could access a scalar interpretation 83.3% of the time, which shows that Korean-speaking children appear to follow the same developmental trajectory as far as the comprehension of scalarity is concerned.

2.2.2 Japanese

In Japanese, Ito (2007) conducted the first study on the comprehension of the scalar additive focus particle *sae* ("even"). She tested 4-6-year-old children with an "appropriateness judgment task," which is an ameliorated version of the truth-value-judgment-task for contexts where the truth value of a sentence is not at issue. In this

task, children listened to a story and then to sentences about this story, which could be felicitous or infelicitous depending on whether their existential implicatures were warranted in the context.²⁷ For example, a sentence like *Even the squirrel touched Mama Rabbit* was infelicitous when the squirrel was the only individual touching rabbits. Children were supposed to judge the well-formedness of these types of test sentences by rewarding the puppet who uttered them with a cake, or by giving them a green pepper if he uttered an ill-formed sentence.

Ito (2007) found no significant differences between subject-focus and object-focus sentences in this experiment, but she discovered that children were overwhelmingly unable to label infelicitous sentences as infelicitous. Instead, they accepted almost all sentences as felicitous. Ito (2007) later repeated the same experiment with the same children, but this time used the scalar additive focus particle *made* ("even"), which is equivalent to *sae* in terms of its semantic and syntactic properties, but diverges from it in its absolute lack of tolerance for existential implicature violations. But she found that children were not any better at accessing the existential implicature that arose from *made* either, even though it was obligatory in the adult grammar.

In a later study, Ito (2009) focused on the scalar presupposition of *sae* and explored the question of whether information strength – specifically the overt presence of the alternative propositions – could help children access the scalar meaning of *sae* and make felicity judgments based on this. For example, in the story about the squirrel touching the rabbits, she emphasized the difference in the softness (and/or fluffiness) of the rabbits' furs, stating that Mama Rabbit's fur was the

²⁷ The scalar presuppositions evoked by *sae* were not tested in this experiment.

fluffiest, and based on this scale, she expected that (10a) should be judged as a felicitous sentence, while (10b) should be perceived to be infelicitous.

- (10)a. The squirrel touched Brother Rabbit, Sister Rabbit, and even Mama Rabbit.
b. The squirrel touched Mama Rabbit, Brother Rabbit, and even Sister Rabbit.

Ito (2009) found, however, that even the explicit mention of the alternatives (e.g., Brother Rabbit and Sister Rabbit) did not help children recognize the infelicity of the sentences where a weaker alternative (as opposed to Mama Rabbit who has the fluffiest fur) was associated with *even*. Indeed, children generally accepted both felicitous and infelicitous sentences as felicitous.

Finally, Ito (2012) repeated this experiment with yet another scalar additive focus particle, *datte*, which is supposed to be a synonym for *sae* that is more frequently used in the colloquial language. The experimental paradigm was similar to that used in Ito (2009), but again it was observed that children tended to accept all sentences as felicitous, regardless of whether the entity associated with *datte* was at the end of a pragmatic scale or not. Yet in a follow-up experiment Ito (2012) used a more "competitive" design where two puppets uttered the felicitous and infelicitous sentences for the same story and children were instructed to reward the puppet who described the story better. Only with this manipulation was Ito able to detect a difference between how the children treated infelicitous and felicitous sentences. She related her results to the Processing Limitation Hypothesis put forward by Chierchia et al. (2004) and Papafragou & Tantalou (2004), according to which children are not able to adjudicate between the pragmatic strength of alternative propositions based

on one utterance, but do better when these alternatives are given by two different speakers, thus making it easier to pit them against each other.

2.3 Summary

As seen above, there is quite a lot of variation in the results of the studies conducted to investigate the acquisition of the simple additive focus particles. It is possible that these differences are related to the methods employed by the researchers as well, since hardly any two study constitute a comparable pair.

Even less attention has been devoted to the acquisition of scalar additive focus particles. The small number of studies we have, however, either suggest that there is a developmental difference, such that 5-year-olds are able to access the scalar implicature of *even*-sentences while 4-year-olds are not; or they suggest that the scalar implicature may be easier to grasp when the felicity vs. the infelicity of an *even*-sentence is foregrounded. As a matter of fact, this latter point may be the most important one as far as the interpretation of presupposed/implicated content in child language is concerned. Experimental designs where the relevance of the alternatives evoked by focus is not underscored face a grave problem, since they do not create a communicative context that fosters an interpretation strategy where alternatives are taken into consideration and where the test sentence is evaluated in relation to these alternatives.

In the next section, we will be exploring the question of how Turkish-speaking children interpret sentences with simple additive focus particles. To practise what I preach, I will be employing an experimental design that makes the alternatives under discussion relevant for completing the task.

CHAPTER 3

INVESTIGATION OF THE ACQUISITION OF THE ADDITIVE AND TOPIC-SHIFTING PARTICLE *da* IN TURKISH

3.1 Aims

As I have pointed out in the previous chapter, the acquisition of focus particles that trigger presuppositions has not received as much attention in literature as the acquisition of similar other particles that contribute to the assertion of the sentence, such as exclusive focus particles exemplified by *only*. As discussed above, one of the principal reasons why this topic has been avoided is that it is very difficult to design experimental set-ups for offline tests that tap into children's presuppositional knowledge.²⁸ Since the semantic contribution of an additive focus particle does not alter the truth conditions of the sentence, a truth-value-judgment-task will not be appropriate to examine how children comprehend them; and a felicity-judgment-task is often too subtle to elicit accurate judgments from preschool-aged children, as successful performance depends upon sophisticated meta-pragmatic reasoning. For example, a truth-value-judgment task requires a test subject to compare the content of a test sentence to the observable facts provided in the context, and to see if the assertion of the sentence matches the facts. In that sense, this task can be classified as a more or less straightforward task of fact-checking. In a felicity-judgment-task, however, it is typically the case that falsity is not an issue, in fact, the truth of the sentence should be established beforehand to have a sound task anyway. Rather, this

²⁸ Sentences with *only* also have a presupposition, but this presupposition happens to be equivalent to the prejacent (i.e., the sentence without *only*). As such, one could argue that the comprehension of the presupposition of an *only*-sentence is not expected to be particularly difficult, as it is explicitly contained in the sentence itself. In the presence of focus particles such as *also* or *even*, however, the presuppositions are more 'implicit' in the sense that they are not transparently contained in the sentence itself, but the speaker is required to access alternative propositions.

task measures whether a test subject can reason about whether the given sentence – despite its true content – is an appropriate way of describing the situation at hand. This is a much more subtle judgment, as it requires a speaker to not compare linguistic expressions with external facts, but instead to compare a given linguistic expression with other potential competing linguistic expressions that could have been used more felicitously in the given context. Hence a felicity judgment, unlike a truth-value judgment, essentially draws upon metapragmatic and metalinguistic abilities. Perhaps for these reasons, we have only had a handful of on-line comprehension studies on the topic along with a slightly larger number of offline studies that did not always employ the most suitable testing methods.

In Turkish, too, there has been no research on children's comprehension of focus particles that have a presuppositional component. Hence my first aim in investigating this issue in Turkish is to shed light upon the developmental trajectory by which Turkish-speaking children come to interpret the additivity supplied by the simple additive focus particle *dA* in an adult-like manner. As a secondary goal, I believe an inquiry into the acquisition of *dA* in Turkish will also enable us to question whether Turkish-speaking children can utilize prosodic cues to distinguish between the different functions of *dA*, i.e., its use as an additive focus particle or a topic-change marker. The results that we may obtain from this study may potentially go some way towards finding an answer to the question of whether children can exploit prosody to compute reference sets (Gualmini et al., 2003; Szendrői, 2004; Reinhart, 2004; Baauw et al., 2004; Costa & Szendrői, 2006; Chen, 2010; Szendrői et al., 2017; among others), as we see that the two different *dA*-sentences are solely distinguished on the basis of prosodic cues, and one needs to compute different reference sets for these two different types of sentences.

Moreover, the question of whether Turkish-speaking children can differentiate between additive *dA* and topic-shifting *dA* also intersects with the question of whether subject-focus and object-focus have different statuses in child grammar. In Turkish, foci that are associated with the additive particle *dA* can appear either in the sentence-initial position or in the pre-verbal focus position (1a&b), but contrastive topics that are associated with the topic-shifting *dA* are bound to occur in the sentence-initial position (2a&b).

(1) a. [EDA]_F da kahve istedi.

Eda also coffee want-PAST.3sg.

"[EDA]_F also wanted coffee."

b. Eda [kahVÉ] de istedi.

"Eda also wanted [COFFEE]_F."

(2) a. [Eda]_{CT} da [kahVÉ]_F istedi.

"As for [Eda]_{CT}, she wanted [COFFEE]_F."

b. *[EDA]_F [kahVÉ]_{CT} de istedi.

"As for [coffee]_{CT}, [EDA]_F wanted it."

As seen above, while *dA*-marked additive foci are relatively unrestricted in the sense that they can occur anywhere in the sentence as long as they are pre-verbal; *dA*-marked contrastive topics are only compatible with the sentence-initial position, it seems. This is an interesting asymmetry, since it shows that the preverbal position is a reliable indicator of focus-hood (at least in the narrow context of these sentences with *dA*) while the sentence-initial position can host either contrastive foci or

contrastive topics. Does this cause children to associate the preverbal position with focus, and potentially misinterpret subject-focus sentences like (1a) as if they had object-focus as in (2a), i.e., assigning a contrastive-topic reading to additive sentences?

As previous literature has demonstrated, children often exhibit a bias towards default object-focus readings in sentences containing the exclusive focus particle *only*, presumably due to the quasi-default focus status of objects owing to the unmarkedness of the predicate-focus construction and/ or owing to the fact that main stress is placed on the object in neutral, out-of-the-blue utterances (with the consequence that subject-focus constructions constitute a deviation from the norm as far as sentential intonation is concerned) (Crain et al., 1994; Lambrecht, 1994, 2000; Müller, 2010; Topaloğlu, 2015; Topaloğlu & Nakipoğlu, 2017). To that end it is worth investigating whether similar default focus assignment preferences will be observed in the presence of *dA* as well. For example, will children continue to exhibit a tendency to interpret the subjects as topics and objects as foci; and will this tendency prompt them to interpret subject-focus sentences with additive *dA* (e.g., 1a) as if they were object-focused sentences (e.g., 1b or 2a)? Moreover, it is also worth asking whether this effect can even be magnified in these test sentences, because of the unique association of the preverbal position with *dA*-marked focussed items, due to the preclusion of the *dA*-marked contrastive topics from the same position.

A related question is whether and how any observations that we may make with test sentences where *dA* (be it an additive particle or a topic-shifter) attaches to the sentence-initial NP (e.g., (1a) and (2a)) may change when this sentence-initial NP happens to be the object of the sentence (e.g. 3a&b, given below), since Turkish allows scrambling.

(3) a. [KahveYİ]_F de Eda iç-ti.

coffee-ACC also Eda drink-PAST.3sg.

"[The COFFEE]_F, too, was such that Eda drank it.²⁹"

b. [Kahveyi]_{CT} de [EDA]_F iç-ti.

"As for [the coffee]_{CT}, it was [EDA]_F who drank it."

As seen above, the structures in (3a) and (3b) also help us dissociate focus status and syntactic position. For example, if children have an object-focus bias, and if this bias stems from the fact that objects are usually placed in the neutral focus position (i.e., the pre-verbal position in Turkish), children could be expected to correctly interpret sentences like (3b), as the focused element (even though it is the subject, and not the object) also appears in the preverbal focus position where it bears focal stress, and where a focus interpretation is most natural. In short, if the source of a putative object-focus bias is actually the unmarkedness of preverbal focus, then subject-focus may be easier to comprehend when the subject (and not the object) is placed in the preverbal position.

But of course, if such a tendency is detected in sentences of type (3b), then it would also be expected that children would incorrectly assign a subject-focus interpretation to sentences like (3a), since it is – again – the subject in these sentences that occupies the pre-verbal position.

This account only takes the naturalness of preverbal focus into account to explain the object-focus bias, however. Alternatively, an object-focus bias could also be motivated primarily by the object-status of objects as well (and not by their typical

²⁹ The scrambled object bears accusative marking in the examples (3a) and (3b), since noun phrases that are removed from the pre-predicate position do not tolerate the absence of this marker in Turkish, as they are perceived to be definite. The definiteness requires case-marking to be present for a more well-formed utterance, so I opted to include it.

preverbal position), because objects are generally prototypical candidates for foci, as they are generally novel, inanimate theme-like entities introduced into a discourse later than the animate agents who are typically the "protagonist" of the narrative we are weaving together, and who appear as subjects. Thus, subjects are quintessentially permanent, stationary, and "given," and the narratives we construct are usually presented from these agentive subjects' point of view, while the theme-like objects are the transient, mutable, new things that the pre-existing agents interact with. Given this ontological difference between "archetypal" subjects and objects, we can easily see that subjects often neatly map onto topics and objects onto foci, as they seem to have an intrinsic affinity with these information statuses, respectively; which can justify establishing an equivalence between subjects and topics, and objects and foci, as a default interpretation strategy.

Hence if children have such a tendency to associate objects with foci, placing a greater importance on the concept of "objecthood" per se instead of sentential position in deciding upon a constituent's information-structural status, then it is to be expected that they will opt for a wholesale object-focus reading and thus correctly interpret (3a), but not (3b); as only the former structure has object-focus, and therefore appears to affirm their bias.

Finally, the notion of contrastive implicature that we introduced in Chapter 2 also becomes relevant here (Sæbø, 2004). It is worth noting that while both the additive *dA* and the topic-shifting *dA* are strongly linked to a presuppositional contribution, only the presupposition introduced by the additive particle is truly dependent on the particle per se. For example, a sentence like (1a) has to have the additive particle in order to convey the presupposition that someone other than Eda wanted coffee as well. In contrast, sentence (2a) does not require the presence of the

topic-shifting *dA* to convey the presupposition that there is someone other than Eda who wanted something other than coffee. If this sentence is produced with the appropriate intonation (i.e., with an appropriate intonational break after the subject NP to signify its status as a contrastive topic), it can still be interpreted to introduce the same presupposition. This can be seen below, in sentences (4a) and (4b), where sentence (2a) can be a felicitous continuation for the antecedent sentence *Defne çay istedi* ("Defne wanted tea"), with or without the topic-shifting *dA*.

(4) a. Defne [ÇAY]_F iste-di. [Eda]_{CT} da [kahVÉ]_F iste-di.

Defne tea want-PAST.3sg. Eda *dA* coffee want-PAST.3sg.

"Defne wanted [TEA]_F. As for [Eda]_{CT}, she wanted [COFFEE]_F."

b. Defne [ÇAY]_F iste-di. [Eda]_{CT} || [kahVÉ]_F iste-di.³⁰

"Defne wanted [TEA]_F. [Eda]_{CT} wanted [COFFEE]_F."

Eda can still be interpreted as a contrastive topic and *kahve* can still be a focus in (4b), as long as the appropriate prosodic cues are in place. In line with Sæbø's proposal; it seems plausible, indeed, that speakers are ready to impose a contrastive reading on two parallel utterances that are juxtaposed with each other. As this contrastive implicature emerges as an upshot of basic conversational principles, its validity does not depend on there being a topic-change marker. The topic-change marker can only occur to reinforce the contrastive reading that would be available even in its absence, so to speak. In contrast, the additive *dA* is necessary in (5a), and its absence will cause the sentences to sound ill-formed, as we had also pointed out in the previous chapter in relation to the study by Wolterbeek et al. (2017).

³⁰ The double vertical bar represents an intonational break.

(5) a. Defne [KAHVE]_F istedi. [EDA]_F da kahve istedi.

"Defne wanted [COFFEE]_F. [EDA]_F also wanted coffee."

b. ??Defne [KAHVE]_F istedi. Eda kahve istedi.

"Defne wanted [COFFEE]_F. Eda wanted coffee."

If children have not yet reached the stage where they can interpret additive focus particles, but have already acquired the conversational principle of contrastive implicature; is it possible for them to impose contrastive readings on both structures with additive *dA* and structures with topic-shifting *dA*, invariably interpreting the associates of *dA* as contrastive topics, as was arguably the case for the study conducted by Wolterbeek et al. (2017). This is another potential pragmatically-motivated interpretation bias (in addition to the syntactic-prosodic bias of treating objects and/or preverbal NPs as default foci) that we may explore in this study. All in all, I hope that the study to be presented below will help further our understanding of how children's comprehension of semantics develops over time.

In the next section, I will be introducing the experiment that I designed to examine Turkish-speaking children's comprehension of sentences with additive and topic-shifting *dA*.

3.2 Experiment 1: Subject + *dA* sentences

3.2.1 Participants

The child participants in Experiment 1 were 74 monolingual Turkish-speaking children, divided into 3 age groups, as shown in Table 1 below.

Table 1. The Participants in Experiment 1

Age Group	Mean age	Age range	Number of children per group
Group 1	5;02	4;06-5;07	29 children (12 girls, 17 boys)
Group 2	6;03	5;08-7;00	27 children (14 girls, 13 boys)
Group 3	7;08	7;01-8;04	18 children (9 girls, 9 boys)

All the children who participated in Experiment 1 were recruited from preschools and elementary schools located in Istanbul. Parental consent was obtained before the children were tested. All children were born at term, and no language-related or non-language-related developmental delays were reported by their caregivers. All children were tested individually in a quiet room in their own kindergarten or school, and received stickers in compensation for their participation. In addition, 5 students from Boğaziçi University (3 male, 2 female) who were enrolled in an undergraduate-level linguistics course were tested as a control group. They received one (1) course credit in return for their participation.

3.2.2 Materials and procedure

Experiment 1 comprises three broad groups of test sentences. In a sense, we have already become familiar with the structure of the sentences in the first two groups in our discussion in the preceding section. The first group contains 4 subject-focus SOV sentences where the additive focus particle *dA* is associated with the subject, while the second group contains 4 object-focus SOV test sentences where the topic-shifting *dA* is associated with the subject, which is designated as the contrastive topic of the sentence. The sentences in the third group were designed to probe into the question of how children's comprehension will be affected in cases where a high number of alternative sets needs to be computed, and this group thus contained 2 object-focus

SOV sentences, where an additive focus particle *dA* followed the object NP.³¹ In addition to these, the test contained 3 practice items that were intended to ensure that children could interpret sentences with both additive *dA* and those with topic-shifting *dA*, when the antecedent sentences to these sentences were overtly given, in order to ascertain that any errors that may be detected in the subsequent test sentences are attributable to the problem of accessing the presuppositions of the *dA*-sentences, and not to other idiosyncratic properties of the experimental procedure.

As we have discussed at length in both Chapter 2 and the first section of the current chapter; it is difficult to design offline studies to assess young children's comprehension of presuppositional content, and we are confronted with the challenge of finding a novel design that indirectly taps into young children's pragmatic ability to interpret presuppositions. It is clear that one needs to find a design in which the presupposition will lead to an observable difference in the behavior of children during an experiment. For example, sentence (6) below has the existential presupposition that there is at least one contextually relevant individual other than Kermit who is reading a newspaper. But crucially, this presupposition cannot be explicitly given, because it has to be accessed by the children. At the same time, it somehow has to be given, since the subsequent test sentence will be infelicitous in its absence.

³¹ The motivations for including this group of object-focus sentences in the test, as well as my predictions regarding their interpretation, will be elaborated upon below.

(6) [KERMIT]_F de gazete oku-yo.³²

Kermit also newspaper read-PROG.3sg.

"[KERMIT]_F is also reading a newspaper."

The same is true for the sentences where *dA* functions as a topic-change marker, of course. Given the context, sentence (7) below introduces the presupposition that someone who contrasts with Elmo (i.e., Kermit) ate something other than a cake (i.e., a sandwich). But as before, there should be a way to imply the presence of this presupposition in the conversational context, without overtly producing it.

(7) [Elmo]_{CT} da || [PASTA]_F yi-yo.

Elmo *dA* cake eat-PROG.3sg.

"As for [Elmo]_{CT}, he is eating [a CAKE]_F."

I reasoned that this could be achieved by creating an "espionage-story" where two spies (i.e., Cookie Monster and Big Bird) watching Kermit and Elmo, respectively, communicate via their walkie-talkies and talk about what their "targets" are doing. The antecedent sentence that satisfies the existential presupposition of the test sentence (e.g., "Elmo is reading a newspaper") could presumably be assumed to have been uttered during this dialogue by the spy at the other end of the line – but it is heard by the listeners as gibberish. Thus, this design enables us to make sure that the

³² Since the final [r] sound of the progressive marker is not pronounced in the spoken language when the verb is inflected for the third person, it was also not used in the recordings of the test sentences that we have made. Therefore I also do not include it in the written representations of the test sentences.

presupposition is both there, and not there. The walkie-talkie dialogues that lead up to sentence (6) and sentence (7) are given below, along with English translations.³³

<i>Dialogues leading up to sentence (6)</i>	
Big Bird: Hey, Kurabiye Canavarı! Şunu gördün mü? Sanırım Elmo ve Kermit okumak için kitap veya gazete almak istiyorlar. Cookie Monster: <i>gibberish</i> Big Bird: Elmo ne okuyo? Cookie Monster: <i>gibberish</i> Big Bird: Anlaşıldı, tamam. [KERMIT]_F de gazete okuyo.	Big Bird: Hey, Cookie Monster! Did you see that? I think Elmo and Kermit want to buy books or newspapers to read. Cookie Monster: <i>gibberish</i> Big Bird: What is Elmo reading? Cookie Monster: <i>gibberish</i> Big Bird: Copy that. [KERMIT]_F is also reading a newspaper.
<i>Dialogues leading up to sentence (7)</i>	
Cookie Monster: Hey Minik Kuş, orda mısın? Big Bird: <i>gibberish</i> Cookie Monster: Kermit'i gözetliyorsun di mi? Kafede oturuyorlar. Sanırım sandviç veya pasta yiyecekler. Big Bird: <i>gibberish</i> Cookie Monster: Kermit ne yiyo? Big Bird: <i>gibberish</i> Cookie Monster: Anlaşıldı, tamam. [Elmo]_{CT} da [PASTA]_F yiyo.	Cookie Monster: Hey Big Bird, are you there? Big Bird: <i>gibberish</i> Cookie Monster: You're spying on Kermit, right? They are sitting in the cafe. I guess they will eat a sandwich or a cake. Big Bird: <i>gibberish</i> Cookie Monster: What is Kermit eating? Big Bird: <i>gibberish</i> Cookie Monster: Copy that. As for [Elmo]_{CT}, he is eating [a CAKE]_F.

The dialogues were pre-recorded and were spoken by two native speakers of Turkish with linguistics training. Cookie Monster was voiced by a male speaker and Big Bird was voiced by a female speaker, in order to make it easy for children to recognize them as two different characters. These voice files were later superimposed on silent videos of Cookie Monster and Big Bird, with care being taken to ensure that

³³ The dialogues are prefaced by a "frame story" according to which Elmo and Kermit have found a treasure map showing the location of a treasure chest full of magical cookies, which is to be found in the Cookie Islands. Big Bird and Cookie Monster are sneakily following Elmo and Kermit in order to confiscate the cookies, and along the way they communicate via their walkie-talkies to exchange information about what Elmo and Kermit are doing.

the mouth movements of the puppets were reasonably in sync with the sentences being spoken, so that there were no noticeable discrepancies between the timing of the two. In addition, a walkie-talkie picture was added to all videos to make it look like the puppet characters were really talking to someone at the other end of the line.

The unintelligible speech sequences that I have referred to as "gibberish" above were created by clipping out a sequence of spoken Turkish from a Turkish cartoon and by speeding up the voice file fourfold (i.e., compressing the speech so that it played at 4x its usual speed). At this point, the speech became practically indecipherable, though it still bore a resemblance to spoken Turkish, since its other prosodic properties were preserved. It was just perceived as a gibberish that had a distinct "Turkish flavour." There were a total of 3 gibberish sequences per puppet character and as would be expected, the gibberish sequences for Cookie Monster were created from clippings of a male cartoon voice speaking, and the gibberish sequences for Big Bird were created from clippings of a female cartoon voice speaking. The duration of these gibberish sequences varied between 1-2 seconds, in order to match the average time it takes to utter a proposition. The gibberish sequences have been inserted between the utterances spoken by the puppet characters (as can be clearly seen in the transcriptions of the dialogues given above), and the puppets' mouths were closed during these gibberish sequences in order to create the realistic impression that the gibberish was heard from the walkie-talkie, so that it could be assumed to be spoken by the other spy. All 3 gibberish sequences per puppet have been randomly inserted to fill the gibberish-spots in the dialogues while the videos were being created. No video had more than 3 gibberish sequences in total, and no gibberish sequence occurred more than once within the same video, thus

allowing for the impression that each utterance that was produced by the other spy in reply to his/her accomplice constituted a different sentence.

At the end of each dialogue, the participants were presented with 4 cards that displayed all possible matches of agents and objects mentioned in the dialogue, and they were asked to choose the two pictures that showed what the agents (i.e., Elmo and Kermit) did.³⁴ The pictures were placed on the table by the experimenter and had no fixed order. The pictures that the children selected were later put in a "spy-album." To provide an illustrative example, the pictures that were presented after sentence (6) are reproduced below, in Figure 4.³⁵



Figure 4. The set of 4 pictures presented after sentence (6), *[KERMIT]_F is also reading a newspaper*

As can be seen above, these pictures encompass all the possible outcomes that one could reasonably expect to see given the premises of the story (i.e., Elmo and Kermit going to a newsstand where books and newspapers are sold).³⁶ Since sentence (6) states that *[KERMIT]_F is also reading a newspaper*, it conveys the information that

³⁴ The adults in the control group responded to this question by filling a questionnaire.

³⁵ The full list of test items (both the stories and the pictures) used in Experiment 1 can be found in Appendix A.

³⁶ The pictures were not numbered during the actual experiment, and as pointed out above, they were presented in a random order for each child anyway. They are only numbered here for ease of reference.

both Elmo and Kermit are reading newspapers, hence Picture 3 and Picture 4 should be chosen by the participants if they can successfully access the presupposition introduced by the additive focus particle *dA*.

If the participants happen to disregard the additive meaning of *dA* and instead assign a contrastive reading to the sentence (i.e., "As for [Kermit]_{CT}, he is reading [a NEWSPAPER]_F), effectively treating the additive *dA* as if it were a topic-shifting *dA*, then they are expected to choose Picture 1 and Picture 4. We do not expect Picture 2 to be selected under any circumstance, as it shows that Kermit is reading a book, which is in stark contradiction with the asserted component of the sentence.³⁷ Such a choice would indicate that the child in question has failed to comprehend the assertion of the sentence, and thus the error could not be attributed to a difficulty of processing presuppositions, which is what we are interested in exploring. Hence if children choose Picture 2 – or similar pictures that contradict the assertion of test sentences – these responses will be coded as *other* errors.

After selecting the pictures, the participants are also asked to provide a justification for their selection in order to prompt a response that may lay bare the reasoning that led them to this choice. For example, if a child chooses Picture 3 and Picture 4 in response to sentence (6), s/he may be asked how s/he knows that Elmo is reading a newspaper. The quality of the justifications obtained (i.e., the presence vs. absence of an explicit reference to the sentence or an emphasis on the particle *dA* itself) can often give us an idea as to whether the child made a haphazard choice or a well-informed decision based on the semantics of the test sentence.

³⁷ Of course, if children select Picture 2 in conjunction with Picture 4, this could be seen as a reasonable choice, under the assumption that they understood the additive semantics of *dA* but also assigned an object-focus reading to the sentence. But what I mean is that it would be very unusual for a child to pick Picture 2 to show what Kermit is reading to the exclusion of Picture 4. This would point to a different comprehension difficulty that is unrelated to the processing of presuppositions.

So far we have dwelt upon the test sentences where *dA* is associated with the subject. As a matter of fact, the title of this section proclaims that the upcoming discussion will be about *Subject+dA* sentences. That being said, as I have pointed out above, this experiment also comprised 2 SOV sentences where the additive *dA* was associated with the object. One of these object-focus sentences is provided below, followed by the lead-in dialogue, and the pictures that were made available to the participants for selection (Figure 5).

(8) [Kermit]_{CT} || [YENGEÇ]_F de yakala-dı.

Kermit crab also catch-PAST.3sg.

"[Kermit]_{CT} also caught [a CRAB]_F."

<i>Dialogues leading up to sentence (8)</i>	
Big Bird: Hey Kurabiye Canavarı, baksana Kermit ve Elmo'nun karınları acıktı sanırım, oltayla balık veya yengeç yakalamak istiyorlar. Cookie Monster: <i>gibberish</i> Big Bird: Elmo ne yakaladı? Cookie Monster: <i>gibberish</i> Big Bird: Anlaşıldı, tamam. [Kermit]_{CT} [YENGEÇ]_F de yakaladı.	Big Bird: Hey, Cookie Monster, look, I think Kermit and Elmo are hungry, they want to catch fish or crabs with fishing rods. Cookie Monster: <i>gibberish</i> Big Bird: What did Elmo catch? Cookie Monster: <i>gibberish</i> Big Bird: Copy that. As for [Kermit]_{CT}, he also caught [a CRAB]_F.

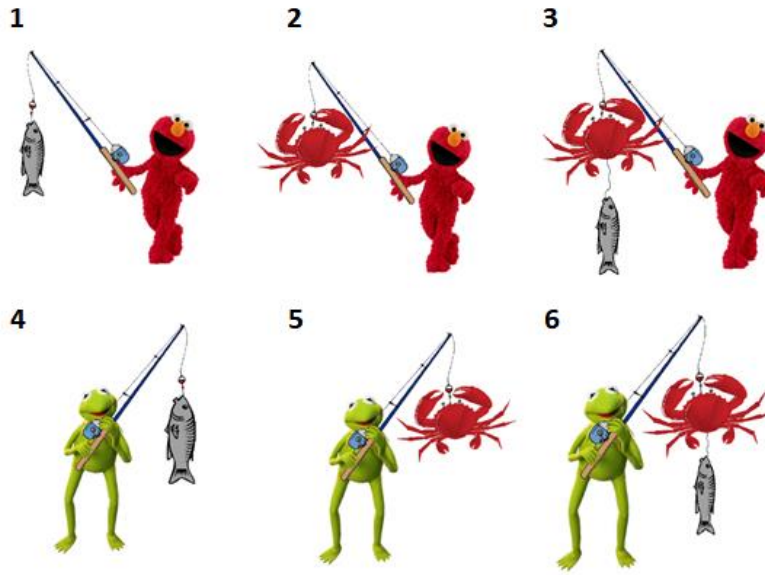


Figure 5. The set of 6 pictures presented after sentence (8), *As for [Kermit]_{CT}, he also caught [a CRAB]_F*

As seen above, sentence (8) is quite different from sentence (6) and (7), which we have dealt with earlier, and the most noteworthy difference in (8) may be that it comes with 6 pictures to select from, instead of 4. This is not an arbitrary choice, on the contrary, it is a direct consequence of the "contrast sets" that are at issue in these object-focus sentences.

For sentences such as (7); where the subject is associated with the topic-shifting *dA* and is therefore marked as a contrastive topic, and where the object is the focus; it is evident that speakers will need to compute two different alternative sets. The first set of alternatives will be generated for the contrastive topic (e.g., pitting "Kermit" against "Elmo") and the second set of alternatives will be generated for the additive focus (e.g., pitting "sandwich" against "cake"). Crossing the two alternatives for the contrastive subject with the two alternatives for the focused object, we get 4 possible outcomes, which are depicted on the cards. For sentences such as (6), however, one would normally expect only one alternative set, namely an alternative

for the focused subject, since the additivity will require that the open sentence without the focused constituent be the same for the individual that is in the contrast set of the focused subject as well. But since we are also testing whether children will show a tendency to interpret one type of *dA*-sentence as if it were of the other type, it is reasonable to provide object alternatives in the pictures for the subject-additive *dA* sentences as well.³⁸

Sentence (8), however, comes with 6 pictures, which is an offshoot of there being 3 contrast sets instantiated by sentence (8). First of all, even though the subject NP is not associated with a topic-shifting *dA*, the subject is still perceived as a contrastive topic in this sentence; firstly due to the story context in which Elmo and Kermit are juxtaposed with each other, and secondly due to the ad hoc contrastive implicatures that are generated, as explained in the previous section. Then we have a second contrast set generated for the object NP, due to its focal status, i.e., "fish," as opposed to "crab." Finally, since Elmo and Kermit are contrastive topics, the open sentences predicated over them have to be distinct. Thus, if the open sentence predicated over Kermit is about Kermit catching a crab and a contrasting entity (i.e., a fish), the open sentence predicated over Elmo must be about Elmo not catching also a crab, i.e., he must have caught only a fish. The contrast between catching only a fish and catching a fish and also a crab thus gives rise to the third contrast set under discussion here. Hence we have 6 pictures, exploiting all the logical possibilities implied by these 3 contrast sets. Both characters are depicted as catching i. only a fish, ii. only a crab, and iii. a fish and a crab.

³⁸ Indeed, there would be no pictures to select if a one-alternative reading had been imposed on the children. There would be two pictures, one showing Kermit as reading a newspaper and the other showing Elmo as reading a newspaper – and since the task requires a participant to indicate what Elmo and Kermit are doing, all the pictures would need to be chosen as a result. But it is clear that this would not be a real choice.

Thus, including these two test items in this experiment makes it possible for us to investigate if the higher number of contrast sets at issue here places a demand on children's comprehension. Even though some previous studies have shown that children have an object-focus bias, they might possibly experience difficulties in these test items due to the large number of alternative sets that need to be computed – and there are already some studies claiming that it is not easy for young children to instantiate focus sets and related contrast sets (Paterson et al., 2003, 2006). This experiment takes approximately 20 minutes to complete.

3.2.3 Predictions

As extensively explained above, the sentences with *dA* used as an additive focus particle and those where *dA* is used as a topic-change marker are differentiated on prosodic grounds. Figure 6, Figure 7, and Figure 8 below respectively illustrate the intonational structure of a sample additive *dA*-sentence (subject=focus), a sample topic-shifting *dA* sentence (subject=contrastive topic) and another sample additive *dA*-sentence (object=focus) used in this experiment, generated by using Praat (Boersma, 2001).

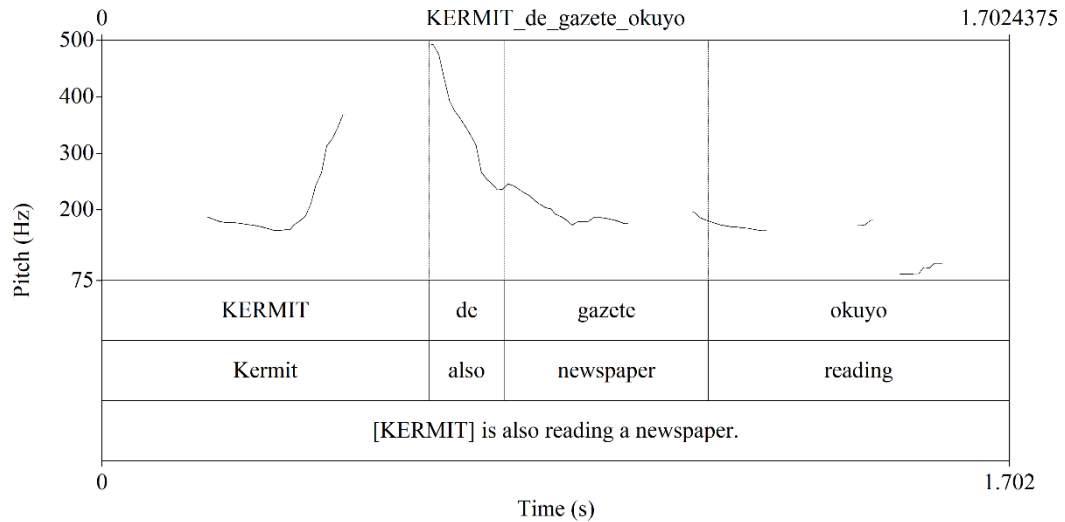


Figure 6. The intonational structure of *[KERMIT]_F is also reading a newspaper*

As seen above, a subject-focus sentence with an additive *dA* is characterized by a rising pitch on the final syllable of the subject NP "Kermit" and after this peak, the pitch falls.

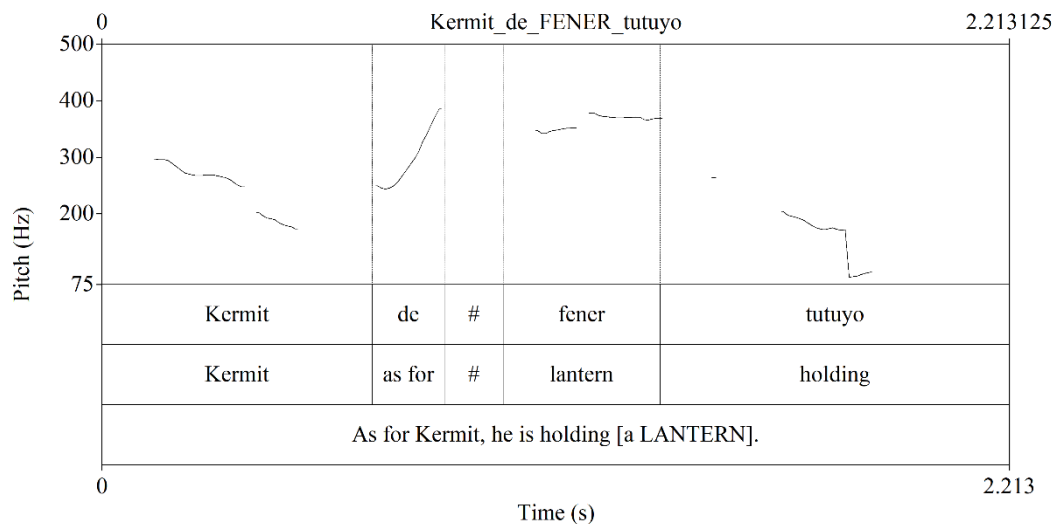


Figure 7. The intonational structure of *As for [Kermit]_{CT}, he is holding [a LANTERN]_F*

Figure 7, however, shows that the subject that is the contrastive topic of the sentence does not have high pitch. Yet it is followed by the topic-shifting *dA* which ends in a rising pitch and is in turn followed by a brief pause. These two intonational markers

(i.e., pitch rise and pause) help demarcate the *dA*-marked subject as a contrastive topic phrase. Then comes the focused object, which is produced with higher-than-average pitch compared to the other constituents in the sentence, as can be read off the graph.³⁹

³⁹ One may wonder why I have chosen to provide the intonational analysis of a contrastive topic sentence that I have not discussed previously. Indeed, the sample contrastive topic test sentence I provided above was *As for [Elmo]_{CT}, he is eating [a CAKE]_F*. The reason for this choice is mainly practical, as I simply wanted to circumvent some misunderstandings that could arise due to a speaker mismatch between these two sentences. While the sentence about Kermit reading a newspaper has been produced by a female speaker, the sentence about Elmo eating a cake was one of those sentences produced by a male speaker. One interesting thing I have realized when I did the Praat analyses of these two sets of test sentences is that the sentences produced by the female speaker happen to have wider (and therefore more visible) pitch fluctuations, while the pitch line for the sentences produced by the male speaker looks very flat in comparison. Although it is beyond the scope of this thesis to explore the gender differences in intonation, I believe that the "spurious" flatness effect that I detected in the male speaker's sentences is probably related to the Weber-Fechner law, which posits that there is an inverse relation between the magnitude of a physical stimulus and the change in magnitude that humans are able to perceive, e.g., an amplitude difference of 10 dB is easier to detect for humans if it is the difference between 60 dB and 70 dB, but the same difference will be much harder to discern if it is the difference between 100 dB and 110 dB. This law seems to hold across many different modalities, applying to other senses (vision, taste, smell, touch) as well. Within the realm of audition, though, it should also hold for pitch. This brings us to an interesting conclusion, namely that an absolute amount of change in pitch (measured in Hz) will be harder to detect when it occurs in a speech stream that is higher-pitched overall; compared to a lower-pitched speech stream. Thus, to achieve the same effect (of producing a perceptible pitch change), a speaker with a higher-pitched voice may have to manipulate their pitch more drastically. This, in turn, could very well explain why a female speaker has more exaggerated pitch variations in her speech, giving rise to an undulating pitch contour; while the pitch contour of a sentence spoken by a man looks more monotonous. As a matter of fact, there have been some theorists in the past who have attempted to make inferences about gender by relying on the relative pitch variation found in men's and women's speech; and indeed, objecting to these studies that aimed to find physical evidence for stereotypical gender differences in language, Henton (1989) showed that the sex differences in pitch range disappear when one reanalyzes the speech data using a logarithmic semitone scale (which is closer to the human perceptual scale) instead of a Hertz scale, which disregards the "non-linearity of human pitch perception." Since the pitch lines in Praat also take the Hertz scale into account, it is understandable why my male speaker's sentences look as if they had a flat intonation, even though it is clear that he did have perfectly easily perceptible pitch variations in his speech that were appropriate to mark foci and contrastive topics in this task. Both my subjective judgment of his sentences, as well as the ceiling performance of our adult control subjects (as will be presented below) attest to the fact that the pitch range that the male speaker exploits is adequate for purposes of the prosodic marking of focus. That being said, it is easy to see that the intonational analyses of the male speaker's sentences (as generated by Praat) would not be very illustrative here. Therefore I opted to include the intonational analyses of the sentences produced by the female speaker, as the pitch fluctuations are just more "visible" due to the Hertz scale used by Praat.

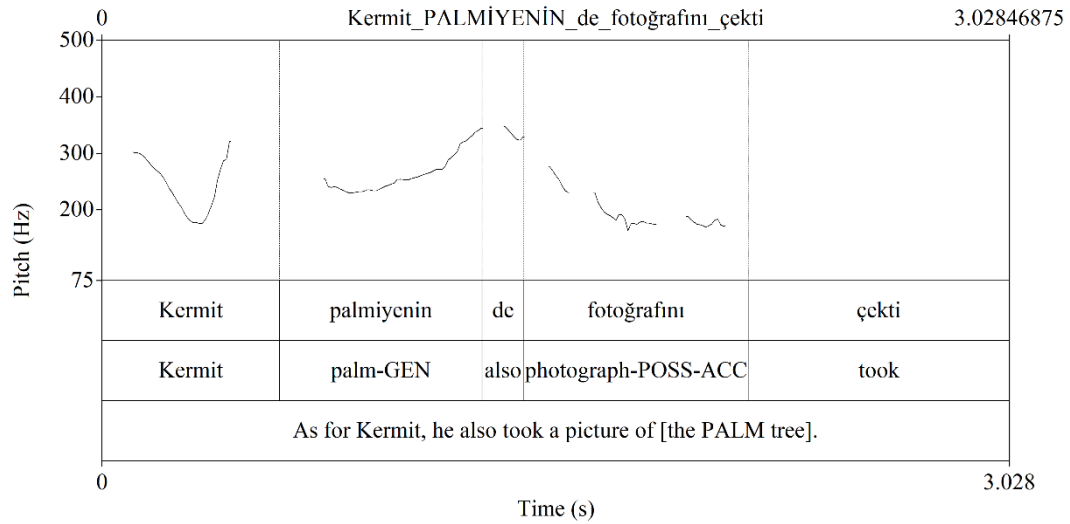


Figure 8. The intonational structure of the sentence *As for [Kermit]_{CT}, he also took a picture of [the PALM tree]_F*.

As seen above, this sentence has both a contrastive topic (i.e., the subject NP) and an additive focus (i.e., a part of the object NP). Similar to what is depicted in Figure 7, the contrastive topic has a rising pitch towards the end (though there is no topic-shifting *dA* here, so the pitch rise occurs on "Kermit," and not on *dA*, unlike what we see in Figure 7). The word *palmiyenin* (which is a subpart of the object NP) is produced with higher-than-average pitch and is followed by the additive focus particle *dA*, which has downward pitch.⁴⁰

It is clear that there are salient prosodic differences between these three kinds of sentences that contain *dA*. Thus, if a Turkish speaker knows about the semantics of *dA* (i.e., both the additive *dA* and the topic-shifting *dA*) and is also attentive to prosodic cues, s/he should be able to assign different interpretations to these different sentences. If a speaker either does not know the meaning of these two *dA*'s or is

⁴⁰ Actually the direction of the pitch change on *dA* might be one of the important markers that differentiate between an additive and a topic-shifting *dA*. In both Figure 6 where a subject-focused *dA*-sentence is depicted and in Figure 8 where an object-focused *dA*-sentence is depicted, we see that *dA* has a downward pitch glide after the high-pitch-marked focal element. In Figure 7, however, *dA* is associated with a contrastive topic, and there we see that the pitch contour takes on an upward trend on *dA*.

unable to utilize prosodic cues to differentiate between them, however, it is expected that they will experience difficulties in comprehending these sentences. If this is the case, there are two possible outcomes. First, since this hypothetical speaker cannot compute the meaning supplied by *dA* (regardless of what the source of this inability is), s/he may give random responses, alternating between object-focus and subject-focus readings, possibly relying on extralinguistic cues that are actually not relevant to sentence interpretation. Alternatively, speakers who cannot correctly interpret *dA*-sentences may have a bias for a default interpretation, so they may interpret most sentences as subject-focused or object-focused in a wholesale fashion. In fact, given that we have a quite robust precedent for default object-focus interpretations detected in studies done on the comprehension of exclusive focus particles (Crain et al., 1994; Lambrecht, 1994, 2000; Müller, 2010; Topaloğlu, 2015; Topaloğlu & Nakipoğlu, 2017), we have reason to expect that, if we happen to detect a preference here, this preference will also probably be in favor of object-focus. We do not expect this to be the case with the adults who were tested as a control group, of course, but in case our child subjects do not behave adult-like with respect to the comprehension of *dA*, it is entirely possible that they will exhibit one of these two prominent predicted error patterns (i.e., random responses or a default object-focus bias).

3.2.4 Results and discussion

All children succeeded in comprehending the practice items, so no child had to be removed from the data pool. Let us first discuss how children performed in *Subject + dA* sentences. The results we obtained in this section of Experiment 1 show us an interesting developmental trajectory that children go through when learning to interpret *dA*. First of all, as far as the two kinds of *Subject + dA* sentences are

concerned, even though there are occasional lapses, it appears that the two older child groups (i.e., Group 2 = First-graders, mean age: 6;03; and Group 3 = Second-graders, mean age: 7;08) can largely discriminate between the sentences where the subject is the additive focus and those where the subject is the contrastive topic, as they have opted for the correct focus assignment in both types of test sentences at a level that was significantly different from chance (see Table 2 below). Figure 9 and 10 also depict the same findings in a more illustrative way.

Table 2. Participants' AddFoc and CT Interpretations in Both Sentence Types.

Groups	Additive focus <i>dA</i>		Contrastive topic <i>dA</i>	
	AddFoc	CT	AddFoc	CT
Preschoolers (N=29, 12 female, age-range: 4;06-5;07, mean: 5;02)	2.52/4 (63%) <i>SD</i> =1.45 $t(28)=1.915$ $p>.05$	1.48/4 (37%)	0.79/4 (19,75%)	3.21/4 (80,25%) <i>SD</i> =1.11 $t(28)=5.833$ $p<.001$
First-graders (N=27, 14 female, age-range: 5;08-7;00, mean: 6;03)	3.07/4 (76,75%) <i>SD</i> =1.57 $t(26)=3.5614$ $p<.01$	0.93/4 (23,25%)	0.89/4 (22,25%)	3.11/4 (77,75%) <i>SD</i> =1.22 $t(26)=4.7343$ $p<.001$
Second-graders (N=18, 9 female, age-range: 7;01-8;04, mean: 7;08)	3.78/4 (94,5%) <i>SD</i> =0.55 $t(17)=13.7556$ $p<.001$	0.22/4 (5,5%)	0.72/4 (18%)	3.28/4 (82%) <i>SD</i> =1.18 $t(17)=4.60$ $p<.001$
Adults (N=5, 2 female, mean: >20)	4/4 (100%)	0/4 (0%)	0/4 (0%)	4/4 (100%)

Note: AddFoc → average number of additive focus interpretations over 4 items & converted into percentages, CT → average number of contrastive focus interpretations over 4 items & converted into percentages. P-values indicate whether the correct response rates are significantly different from chance (50%). *SD*=standard deviation.

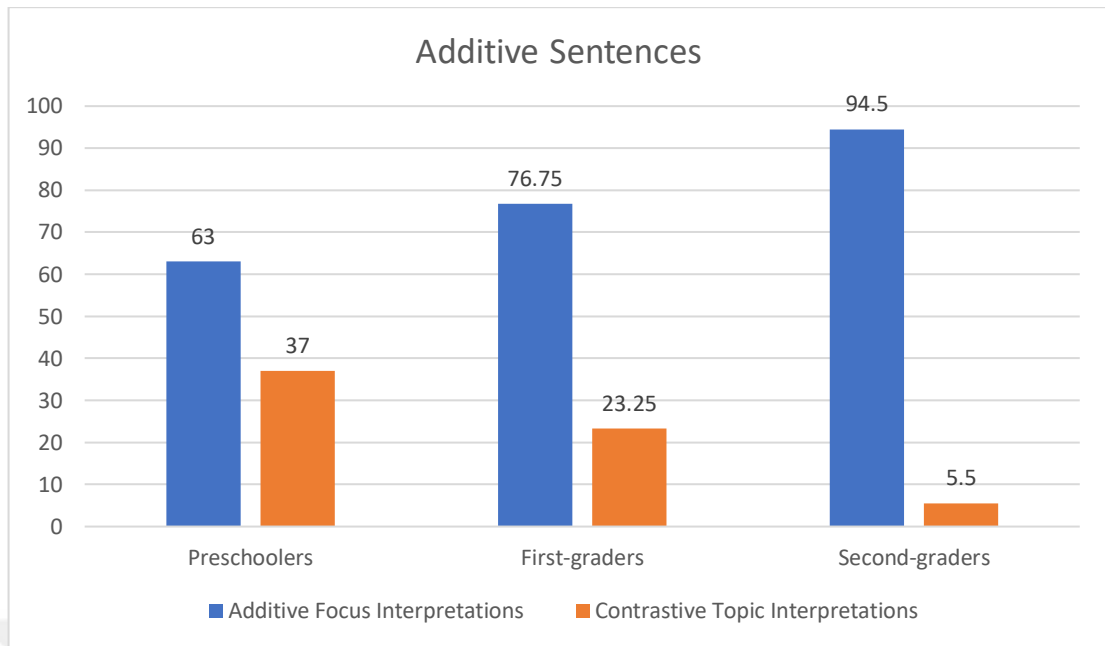


Figure 9. The distribution of children's AddFoc and CT readings in additive sentences by age group (in %).

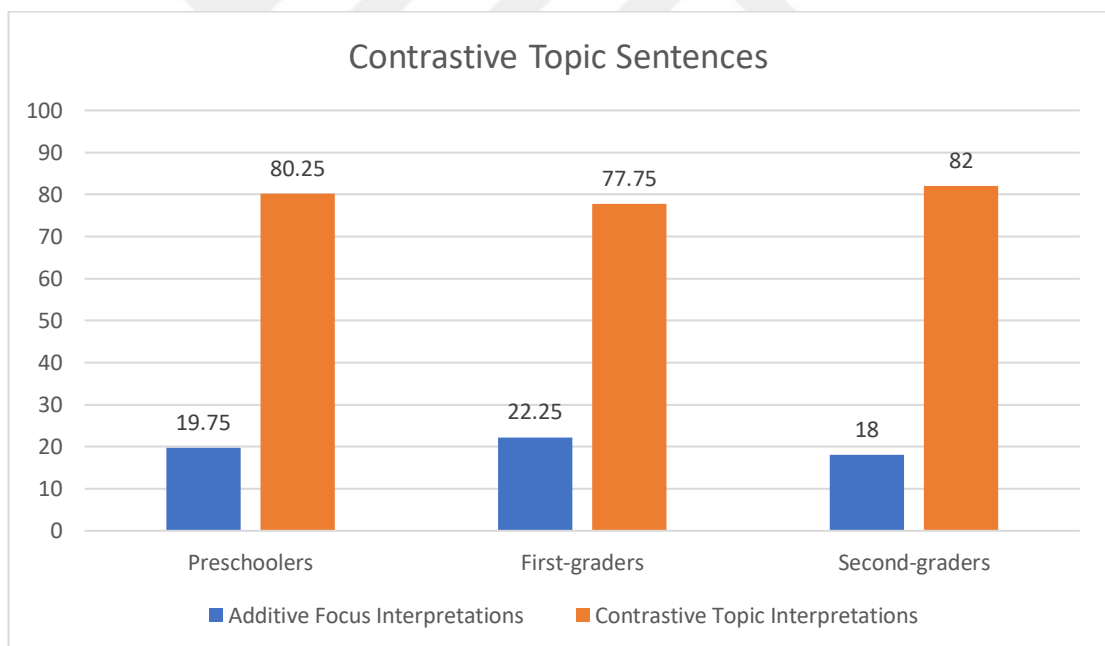


Figure 10. The distribution of children's AddFoc and CT readings in contrastive-topic sentences by age group (in %).

As seen above, First-graders (6-year-olds) ascribed an additive-focus interpretation to sentences with the additive *da* 76,75% of the time, while Second-graders (7-year-olds) did so 94,5% of the time, coming very close to the ceiling performance of

adults. The same was true for the *Subject + dA* sentences where the subject was a contrastive topic. First-graders assigned a contrastive interpretation to these sentences 77,75% of the time, while this rate was 82% for the Second-graders. In either case, it was shown that these older children could successfully discriminate between these two uses of *dA* to a considerable extent. This finding also allows for the inference that these same children could mostly attend to the differences in the prosodic structure of these two sentence types, they knew how a certain prosodic structure correlated with a specific function of *dA* (i.e., additive or topic-change marker), and finally, they knew about the different semantics of these two particles as well.

When we look at the youngest age group we tested, however, the picture changes. Preschoolers (5-year-olds) also did quite well in sentences where the *dA*-marked subject was a contrastive topic, making an appropriate picture choice 80,25% of the time. In the additive sentences, however, they could choose the correct pictures only 63% of the time, which was not revealed to be significantly different from chance. What this shows us is that, while Turkish-speaking children reach an adult-like grasp of contrastive structures as signaled by *dA* at least starting from age 5, there is no compelling evidence for comprehension of additive-focus in the youngest age group.

In addition, preschoolers were also significantly worse at interpreting additive-focus *dA*-sentences compared to the older groups (see Table 3 for between-group comparisons).

Table 3. Between-groups Comparison of Performance

Additive Focus <i>dA</i>	Contrastive Topic <i>dA</i>
$H(2)=10.0442, p<.01, N=74$ Between-group differences significant.	$H(2)=0.1919, p>.90, N=74$ No statistically significant difference between groups.
<u>Pairwise comparisons:</u> Preschool & 1st grade $\rightarrow U=271, p<.05$ Preschool & 2nd grade $\rightarrow U=114.5, p<.01$ 1st grade & 2nd grade $\rightarrow U=202, p>.30$	Pairwise comparisons: -

Note: Kruskal-Wallis H test was used to compare all three groups as there was no homogeneity of variances. Pairwise comparisons use Mann Whitney U test for the same reason.

Pairwise comparisons have shown that this between-groups difference was mainly attributable to the low performance of the preschoolers in the additive-focus sentences, as their correct response rate was much lower than that of the two older age groups. These two older groups (First-graders and Second-graders) did not significantly differ from each other.

In contrastive-topic sentences, however, all groups were able to make contrastive interpretations and consequently, there was also not a statistically significant difference between the three age groups. But why are 5-year-olds unable to interpret additive-focus as well as older children do?

I think we can tentatively hypothesize that this particular pattern of errors we have found could potentially be explained by two different views that have been put forward in the literature on children's acquisition of focus particles so far. First, the low performance of 5-year-olds in the additive sentences could be attributable to the theoretical asymmetry between subject-focus (exemplified by additive *dA*-sentences) and object-focus (exemplified by contrastive-topic *dA*-sentences), which can be induced by the neutral prosody of object-focus sentences. After all, it has long been known that the object, as the most deeply embedded constituent in a neutral, out-of-the-blue sentence; carries the main stress in the sentence in accordance with the

Nuclear Stress Rule (Lieberman & Prince, 1977). Though a stress-shift occurs in adult grammar when another constituent has to be prosodically prominent for other reasons (e.g., focusing), children may fail to inhibit the default intonation that they have come to expect to find in out-of-the-blue sentences and exhibit a reluctance/inability to interpret stress shift to determine the correct focus set, ending up interpreting subject-focus sentences as if they had object-focus (Szendrői et al., 2017).

Furthermore, it is widely acknowledged that the topic-focus ordering is the default (or unmarked) information packaging strategy in sentences, as there is a preference for presenting old information before new information (Birner & Ward, 1998, 2009; Chafe, 1970, 1987; Halliday, 1967; Herring & Paolillo, 1995; Hetzron, 1975; Lambrecht, 1994, 2000; Prince, 1981). Consequently, in sentences that follow this default strategy of information packaging, subjects also happen to overlap with topics and objects with foci; since the subject mostly precedes the object in sentences with canonical word order across many of the world's languages. The preponderance of this association between subjects-topics and objects-foci in canonical sentences may also play a role in motivating errorful object-focus readings. As a matter of fact, it has been demonstrated that such a bias for default object-focus can prompt errorful object-focus readings in the presence of exclusive focus particles, and we have also observed this in Turkish in our studies on the acquisition of *sadece* ("only") (Topaloğlu, 2015; Topaloğlu & Nakipoğlu, 2017). It seems the same bias may be detected here with additive focus particles as well. In other words, the children in the youngest group may be led astray by the same bias and thus end up interpreting the subject-focus test sentences (where *da* functions as an additive particle) as if they were like the object-focus sentences where *da* functions as a topic-change marker and designates the subject as a contrastive topic. This could explain why they

perform very well in the contrastive-topic sentences, while displaying a chance-level performance in the additive sentences.

But this is not the only possible explanation. If we recall our earlier discussion on contrastive implicature (Sæbø, 2004), and how a contrastive reading of two juxtaposed sentences constitutes the standard interpretation in the absence of an additive marker that overrules this default reading; it is also possible to say that the younger children in our study have failed in additive sentences because although they have learned the conversational principle of contrastive implicature, they have not acquired the meaning of the additive focus particle yet.⁴¹ Thus, similar to the 5-year-old children in the Wolterbeek et al. (2017) study, the children in our study may have chosen to assign contrastive readings to the test sentences and to their antecedent sentence (i.e., the sentence that expresses the presupposition of the test sentence and is presumed to be produced by the other spy), following the contrastive implicature. As far as the first hypothesis mentioned above (which we can dub "the object-focus bias hypothesis") is concerned, the results obtained in the *Object + dA* sentences included in this experiment could perhaps give us a clue as to whether children's error patterns have to do with such a tendency to associate objects with foci, since in these sentences we have object-focus that is also associated with the additive focus particle *dA*.⁴² Therefore let us cast a quick glance at how children performed in the 2 object-additive sentences included here. As predicted, the complexity of these sentences (i.e., the necessity of computing 3 contrast sets) appears to have made comprehension very difficult for children. Overall, I have encountered 4 different

⁴¹ Or perhaps they cannot use prosody to differentiate between the two, which amounts to the same thing in the narrow context of this testing condition.

⁴² Note the difference between these *Object + dA* sentences, and the contrastive-topic sentences included in this study. We had object-focus in the latter group as well, but *dA* was used as a topic-shifter in these sentences, and it was associated with the subject. In the former group, however, *dA* is used as an additive focus particle and is associated with the focused object.

response types here; i. there were responses that were indicative of a correct object-focus reading (coded as "object additive"), ii. responses that showed an incorrect subject-focus reading (coded as "subject additive"), iii. responses that showed an incorrect double-additive reading, e.g., in the context of sentence (8), saying that both Elmo and Kermit caught both a fish and a crab (coded as "double additive") and iv. responses that showed an incorrect subject-contrastive-topic reading (coded as "subject topic change"). Finally, there were also some confusing responses that could not be reliably classified as belonging to one of the categories mentioned above, so they were coded as "irrelevant."⁴³ Table 4, given below, shows the percentages of responses that fall into each category for each age group.

Table 4. Participants' Responses in *Object + dA* Sentences

	Subject Topic Change	Subject Additive	Double Additive	Object Additive	Irrelevant
Preschoolers (N=29, 12 female, age-range: 4;06-5;07, mean: 5;02)	0.72/2 36.21% SD=0.84	0.31/2 15.52% SD=0.60	0.38/2 18.97% SD=0.68	0.34/2 17.24% SD=0.72	0.24/2 12.07% SD=0.58
First-graders (N=27, 14 female, age-range: 5;08-7;00, mean: 6;03)	0.78/2 38.89% SD=0.85	0.48/2 24.07% SD=0.70	0.15/2 7.41% SD=0.46	0.26/2 12.96% SD=0.53	0.33/2 16.67% SD=0.55
Second-graders (N=18, 9 female, age-range: 7;01-8;04, mean: 7;08)	0.33/2 16.67% SD=0.69	0.44/2 22.22% SD=0.78	0.22/2 11.11% SD=0.65	0.72/2 36.11% SD=0.89	0.28/2 13.89% SD=0.67
Adults (N=5, 2 female, mean: >20)	0/2 0% SD=0	0/2 0% SD=0	0/2 0% SD=0	2/2 100% SD=0	0/2 0% SD=0

As seen above, children's responses were rather evenly distributed over the possible response categories, and did not display a preference for any one interpretation. No statistical difference was found among the relative frequencies of these response

⁴³ These responses typically involved a child misremembering the assertion of the sentence. So the error was not related to the comprehension of presuppositions.

types for any age group, Preschoolers: $H(4)=5.3661$, $p>.25$, $N=145$; First-graders: $H(4)=8.7987$, $p>.05$, $N=135$; Second-graders: $H(4)=3.3346$, $p>.50$, $N=90$. In short, no age group could successfully assign correct object-focus readings to these sentences, but nor could they be shown to have a preference for a default errorful response pattern.

Although it appears at first sight that the oldest age group has been able to provide a higher proportion of correct object-focus responses compared to the two younger groups, this difference has not been found to be statistically significant either, $H(2)=2.5281$, $p>.25$, $N=74$. Our results thus suggest that these object-focus sentences are very hard for children to interpret irrespective of their age (at least as far as the age groups I have tested are concerned), presumably due to the multiplicity of contrast sets that these structures evoke. One needs to perform a more complicated semantic computation to arrive at the correct interpretation, and this might explain the high error rates found here. Though these results give us a clue about the role that the process of computing contrast sets plays in focus comprehension (i.e., the more contrast sets one needs to compute in a sentence, the harder it becomes to interpret it), they do not tell us much about how children interpret sentences with object-focus under an additive reading. After all, it may not be the case that object-focus with additive *dA* is difficult for children, it is rather more likely that they tripped up on the challenging task of initiating 3 sets of alternatives. These results suggest that an inquiry into how children interpret object-focus in *dA*-sentences could benefit from deconfounding object-additives from the problem of generating more than 2 contrast sets, and indeed, this topic is explored in Experiment 2, which will be reported in the next section.

In Experiment 2, we will explore how young Turkish-speaking children interpret *Object + dA* sentences. I hope that this experiment will shed light upon this question by removing the confounding factor of "3 contrast sets" – which appears to be unmanageable for children – and by instead presenting the objects in the sentence-initial position, where they require the instantiation of one contrast set in additive sentences, and two contrast sets in contrastive topic sentences; as was the case for the *Subject + dA* items in Experiment 1. This experiment may also show us whether children will prefer an object-focus reading across the board, leading them to adopt additive interpretations for all sentences; or whether they will continue to assign contrastive readings to these sentences as well. The latter finding might indeed indicate that contrastive implicature may be playing a role in motivating these responses.

3.3 Experiment 2: Object + *dA* sentences

3.3.1 Participants

Table 5, given below, provides information on the participants tested in Experiment 2.

Table 5. The Participants in Experiment 2

Age Group	Mean Age	Age Range	Number of Children per Group
Group 1	5;06	5;00 – 5;11	12 (7 girls, 5 boys)
Group 2	7;00	6;00 – 8;01	13 (10 girls, 3 boys)

The participants in Experiment 2 were 12 preschoolers and 13 elementary school students. 3 additional children were tested, too, but their data have been removed from the pool.⁴⁴

All child participants in Experiment 2 were recruited from kindergartens and elementary schools located in Istanbul. Parental consent was obtained before the children were tested. All children were born at term, and no language-related or non-language-related developmental delays were reported by their caregivers. All children were tested individually in a quiet room in their own kindergarten or school, and received stickers in compensation for their participation. In addition, 20 students from Bogazici University (6 male, 14 female) who were enrolled in an undergraduate-level linguistics course were tested as a control group. They received one (1) course credit in return for their participation.

3.3.2 Materials and procedure

Experiment 2 had two groups of OSV sentences. The first group comprised sentences where the object was followed by the additive *dA* and designated as a focus by it. In the second group, the object was associated with a topic-shifting *dA* and was thus designated as a contrastive topic, while the subjects in these sentences were the foci.

In other words, the structure of these sentences was parallel to the structure of the

⁴⁴ First, 2 children were removed because they were outliers as they have failed to comprehend any presupposition, could only understand the assertion of the sentence, and were therefore only able to indicate what the character explicitly mentioned in the sentence did – while they could not choose a picture for the other individual who was not overtly mentioned in the sentence. 1 of these 2 children was from the younger group and the other was from the older group. They were both male. In addition, 1 girl from the younger group was removed, since she was 10 months younger than the second youngest child tested. Even though her performance did not make her an outlier compared to her older peers, including her in the pool pulled down the mean age for Group 1, and made the age range look like it was way wider than it should be. Therefore I have found it expedient to omit her data as well, so as to make the group more homogeneous with respect to age. Group 2, however, comprises both first-graders and second-graders. Upon closer inspection, it appears that first-graders and second-graders perform alike in this task, and therefore I believe I did not have a good reason to justify splitting them into two groups. They can be conveniently collapsed together to form one elementary school group.

Subject + dA test sentences in Experiment 1, the only difference being that the subject and the object have switched places here, so to speak. We had 8 test items in this experiment, 4 of them had additive focus and the remaining 4 had a topic-shifting *dA* and the object was marked as the contrastive topic. In addition we had 3 practice items, just as was the case in Experiment 1. As before half of the test sentences (those spoken by Cookie Monster) were spoken by a male native speaker with linguistics training, while the other half (spoken by Elmo) were spoken by a female native speaker with linguistics training. The procedure was very similar to that employed in Experiment 1, as the test sentences in this experiment have also been produced via walkie-talkie dialogues, to mask the antecedent sentence as gibberish. But the frame-story had to be different, of course, because it made sense for the "spies" to talk about Elmo and Kermit in Experiment 1 (since they had to follow these two individuals to reach the Cookie Islands), but Experiment 2 required that the spies be interested in exchanging information about "What?" and not "Who?"⁴⁵ In order to bring the objects to the foreground and to make them the point of discussion, I had to come up with a story where it would be relevant for the spies to observe which action a given object was being subjected to, rather than who was interacting with which object.

Therefore the frame story in this experiment mentions that Granny wants to go to the park today, and so she will not be able to take care of household chores. Hence she asks Kermit and Big Bird to help her by doing these chores, and after they comply with her request, she calls Elmo and Cookie Monster and instructs them to secretly watch which chore is done by which person and take note of that, as she wants to reward them for their help at the end of the day, but she also wants to

⁴⁵ Because uttering object-initial sentences in these walkie-talkie dialogues would only be felicitous under such an arrangement. Hence the dialogues had to revolve around which object this or that person interacted with, not around which individual performed which action.

distribute the rewards in a fair manner, and therefore she has to know exactly which task was performed by which individual. This object-oriented story thus made the subsequent object-initial sentences that would appear in Elmo and Cookie Monster's walkie-talkie dialogues felicitous.⁴⁶

In addition, in contrast to Experiment 1 where each item was associated with either an additive-focus sentence or a contrastive-topic sentence; Experiment 2 was designed to have two different versions (Version A and Version B), such that when an item was associated with a sentence where the object was the focus, the same item appeared in the "complementary version" with a sentence where the object was the contrastive topic. Needless to say, different groups of children were tested in Version A and Version B, so each child saw only one type of test sentence in relation to a given test item. The logic behind making this change was to make sure that it was not the case that some items had some idiosyncratic properties which, though unrelated to the presence of an additive focus vs. a contrastive topic, could bias the responses in a certain way. Although this did not appear to be a major concern in Experiment 1 (and the particular results we have found cannot be attributed to any extralinguistic, item-based properties), it is definitely within the realm of possibility to create a

⁴⁶ One might wonder why I have decided to switch Big Bird and Elmo in this experiment, making Elmo a spy, and making Big Bird one of the two individuals who are watched by the spies. The reason is that *Sesame Street* and *The Muppets* are no longer regularly broadcast by a TV channel in Turkey, and as a result, only few children recognize and can identify these characters by name. Instead, many children meet them for the first time in the context of the experiment. While conducting Experiment 1, I noticed that some children tended to confuse Elmo and Kermit (whose actions were supposed to be tracked by the spies) and it took them somewhat long to learn their names well. This is not too surprising, of course, considering that children were not already familiar with them, and that they also had non-Turkish names to boot. While this problem was certainly not so common that it would have affected the results of the experiment, it was nevertheless dispreferred. So I thought this problem could be remedied by replacing one of the characters (i.e., Elmo) with Big Bird, who both looks like a bird and whose name contains the word "bird." Hence children can reasonably be expected to quickly grasp the difference between Kermit and Big Bird and to not misidentify Kermit as Big Bird, even though they are seeing all these characters for the first time, since the match between their names and their appearance gives an unmistakable clue about their identity.

flawed test item that skews the responses in a certain direction.⁴⁷ I wanted to avoid this potential pitfall by presenting each item with both kinds of test sentences in the two versions of this experiment, so any spurious "improvement" or "deterioration" effect they may cause would thus be clearly seen (e.g., if a certain item elicits significantly more additive responses than others irrespective of the structure of the test sentence that it was presented with, it is possible to say with certainty that there was a flaw in the design of this item, and to remove it from the experiment).

A sample object-focus sentence with additive *dA* and its counterpart in Version B (where the object is the contrastive topic) are provided below (as 9a and 9b, respectively), followed by the walkie-talkie dialogue that leads up to them. Finally, the pictures that were presented to the children to select after hearing this item are provided (Figure 11).

(9) a. [LALELERİ]_F de Kermit sula-dı.

Tulip-PL-ACC also Kermit water-PAST.3sg.

"Kermit also watered [the TULIPS]_F."⁴⁸

b. [Laleleri]_{CT} de || [KERMIT]_F sula-dı.

"As for [the tulips]_{CT}, [KERMIT]_F watered them."

⁴⁷ I am not sure if there is a way to test whether any item in Experiment 1 may have given rise to a bias for additive readings or contrastive-topic readings. For example, the preschoolers tested in this experiment have performed at chance-level in additive sentences, but was this because there was an item (or multiple items) in the additive block that invited contrastive interpretations for some extralinguistic reason? Based on the successful interpretations we obtained from older children, my hunch is that this was probably not the case; and besides, this cannot be proven via a statistical test either, since there is nothing to which we can compare the additive items. After all, if we want to answer the question of "whether these particular additive items were more likely to elicit contrastive readings," we should also have a block of additive sentences the "neutrality" of which has somehow been confirmed, and using them as a kind of baseline, we should see whether the additive items in this experiment were in any way more likely to elicit contrastive readings. But this is obviously not possible.

⁴⁸ Perhaps a better way of translating this would be to say *[The TULIPS]_F were also such that Kermit watered them*. But I will sacrifice pragmatic appropriateness for the sake of brevity here, since this construction looks too cumbersome in English.

Dialogues leading up to the sentences (9a) and (9b)	
Cookie Monster: Hey, Elmo! Bahçedeki güllerin ve lalelerin sulanması gerekiyor, öyle değil mi? Elmo: <i>gibberish</i> Cookie Monster: Gülleri kim suladı? Elmo: <i>gibberish</i> Cookie Monster: Anlaşıldı, tamam. A: [LALELERİ]_F de Kermit suladı. B: [Laleleri]_{CT} de [KERMIT]_F suladı.	Cookie Monster: Hey Elmo! The roses and the tulips in the garden must be watered, right? Elmo: <i>gibberish</i> Cookie Monster: Who watered the roses? Elmo: <i>gibberish</i> Cookie Monster: Copy that. A: Kermit also watered [the TULIPS]_F. B: As for [the tulips]_{CT}, [KERMIT]_F watered them.

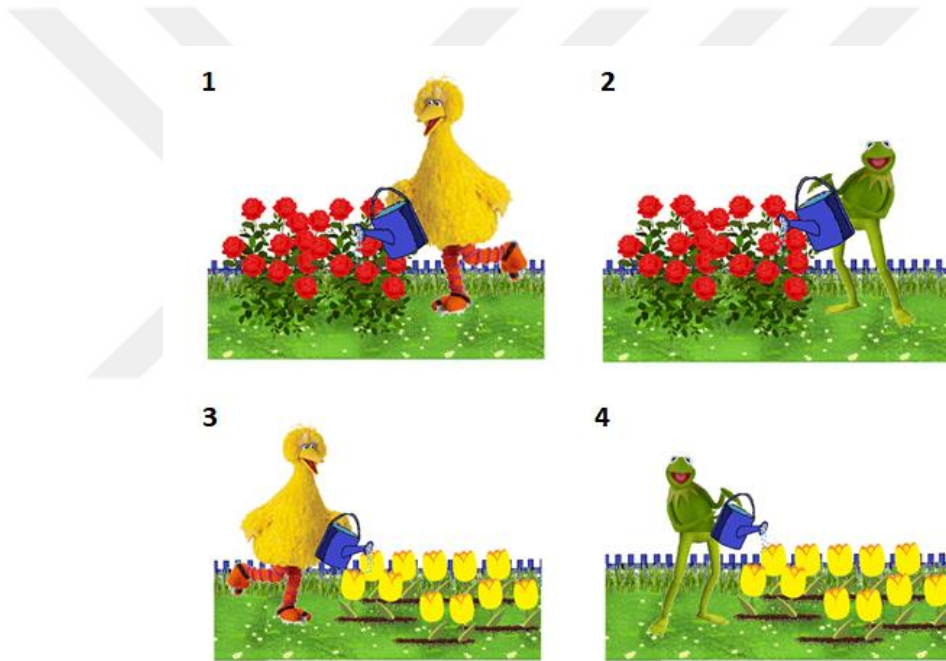


Figure 11. The set of pictures presented after sentence (9a) and (9b)

As seen above, sentence (9a) asserts that the tulips were watered by Kermit, but since the focussed object is associated with the additive particle *dA*, this sentence presupposes that the entity that is in the set of alternatives to "the tulips" (i.e., the roses, in this story) were also watered by Kermit. Thus, children are expected to choose Picture 2 and Picture 4 as the correct representation of the scenario that can be inferred from the sentence.

In sentence (9b), on the other hand, the scrambled sentence-initial object is designated as a contrastive topic. Thus, though (9b) also asserts that Kermit watered the tulips, it presupposes that the entity that is in the contrast set to "the tulips" (i.e., the roses, as before) were watered by another individual who contrasts with Kermit (i.e., Big Bird, given the story context). Hence children should select Picture 1 and Picture 4 after hearing this sentence.⁴⁹ This experiment, too, takes approximately 20 minutes to complete.

3.3.3 Predictions

We have seen in Experiment 1 that Turkish-speaking children can more or less successfully dissociate between additive-focus and contrastive-topic sentences with *dA*, based on the prosodic cues available. But the youngest age group (mean: 5;02) only performed well in contrastive-topic sentences; and performed at chance-level in additive-focus sentences, favoring an incorrect contrastive-topic reading in 37% of the cases. We have hypothesized that these errors could be attributed to an object-focus bias that might stem from a tendency to associate object NPs with foci, or a tendency to assign focus status to the most deeply embedded constituent that bears the nuclear stress – which also happens to be the object in SOV sentences.

Alternatively, it was pointed out that the pragmatic process of generating contrastive implicatures could also play a role in motivating errorful contrastive-topic readings, particularly if some younger children have not yet acquired the additive focus particle *dA* in Turkish. As explained before, while the presence of the additive focus particle *dA* is obligatory for an additive meaning, the presence of a topic-shifting *dA* is not obligatory to generate a contrastive meaning. The latter meaning can even be

⁴⁹ The full set of test items in Experiment 2 along with pictures, test sentences, and the frame story can be found in Appendix B.

accessed in the absence of a topic-change marker, provided that the sentence is uttered with an appropriate intonation, by virtue of conversational principles, and the "contrastive implicature" that they prompt speakers to compute.

Testing children with O-*dA*-S-V sentences can potentially help us dissociate between these two hypotheses. For instance, if children have a tendency to associate objects with foci, it is expected that they will have no difficulties accessing additive readings in these sentences, since the focused element that additive focus particles are associated with in these sentences is the object NP. In fact, if this is the case, we might see that the trend in favor of contrastive-topic readings which we detected in Experiment 1 may even be reversed here. If the rate of correct contrastive-topic readings of Group 1 had been inflated due to this object-focus bias, young children may exhibit the opposite response pattern and misinterpret some contrastive-topic sentences as if they had additive focus, since the additive focus reading in O-*dA*-S-V sentences happens to be an object-focus reading, which is compatible with an object-focus bias.

Alternatively, if children's object-focus bias is related to not the "objecthood" of the object per se, but to its placement in the preverbal focus position, then we would expect children to opt for subject-focus readings (i.e., exhibit a bias towards contrastive-topic readings across all items) in this experiment, as the subject is uniformly located in the preverbal position in all O-*dA*-S-V sentences. Similarly, if young children are unable to process the additivity of *dA* and their responses in Experiment 1 had in fact been guided by contrastive implicature, we can expect them to favor contrastive readings in this experiment as well. It is clear that these latter two scenarios do not differentiate between an object-focus bias (or, to be more exact, a "preverbal-focus bias") and a bias engendered by contrastive implicature. Thus, if we

detect a tendency to assign contrastive readings to the O-*dA*-S-V sentences in Experiment 2 as well, further testing will be needed to see what the source of these errors is.

3.3.4 Results and discussion

As expected, the adults who were tested as a control group in Experiment 2 performed very well, with a correct response rate of 100% in the additive OSV sentences and a correct response rate of 97.5% in the contrastive-topic OSV sentences. But there was an important difference between how the child participants performed in these two conditions. First of all, in the additive OSV sentences, both Group 1 (preschoolers) and Group 2 (elementary school students) performed significantly above chance, displaying a correct additive-focus reading of 79.17% and 88.46%, respectively. Although there were some errorful contrastive-topic interpretations in both groups, there were no instances where a child gave a response that had to be classified as *other* (i.e., a peculiar picture choice that shows that the child did not even understand the assertion of the sentence to begin with; e.g. when the child chooses the picture showing Kermit as watering the roses, for example). Errors that show that children did not understand the existential presupposition of the sentence (i.e., child fails to pick a picture to demonstrate what the "unmentioned" character did) were also almost non-existent. So, overall, children performed well in the additive sentences.

The sentences where the first constituent was the contrastive topic, on the other hand, were different. Interestingly, neither the preschoolers nor the elementary school students performed above chance in this condition. In both age groups, errorful additive readings outnumbered correct contrastive-topic readings; and in

addition, there was also a notable proportion of *no presupposition* errors (18.75%) in the preschool group. These results are summarized in Table 6 and Table 7 below.

Figure 12 and Figure 13 provide a visual representation of the same results.

Table 6. AddFoc and CT Interpretations in *Additive* OSV Sentences

Groups	Additive focus <i>dA</i>			
	AddFoc	CT	Other	No presupposition
Group 1	3.17/4 (79.17%) <i>SD</i> =1.53 $t(11)=2.6458$ $p<.03$.	0.75/4 (18.75%)	0/4 (0%)	0.08/4 (2.08%)
Group 2	3.54/4 (88.46%) <i>SD</i> =1.20 $t(12)=4.6291$ $p<.0007$	0.46/4 (11.54%)	0/4 (0%)	0/4 (0%)
Group 3 (adults)	4/4 (100%)	0/4 (0%)	0/4 (0%)	0/4 (0%)

Note: AddFoc → average number of additive focus interpretations over 4 items & converted into percentages, CT → average number of contrastive focus interpretations over 4 items & converted into percentages. P-values indicate whether the correct response rates are significantly different from chance (50%). *SD*=standard deviation.

Table 7. AddFoc and CT Interpretations in *Contrastive-topic* OSV Sentences

Groups	Contrastive topic <i>dA</i>			
	CT	AddFoc	Other	No presupposition
Group 1	1.25/4 (31.25%) <i>SD</i> =1.54 $t(11)=1.6818$ $p>.10$	1.83/4 (45.83%)	0.17/4 (4.17%)	0.75/4 (18.75%)
Group 2	1.85/4 (46.15%) <i>SD</i> =1.91 $t(12)=0.2907$ $p>.75$	2.15/4 (53.85%)	0/4 (0%)	0/4 (0%)
Group 3 (adults)	3.9/4 (97.5%)	0.1/4 (2.5%)	0/4 (0%)	0/4 (0%)

Note: AddFoc → average number of additive focus interpretations over 4 items & converted into percentages, CT → average number of contrastive focus interpretations over 4 items & converted into percentages. P-values indicate whether the correct response rates are significantly different from chance (50%). *SD*=standard deviation.

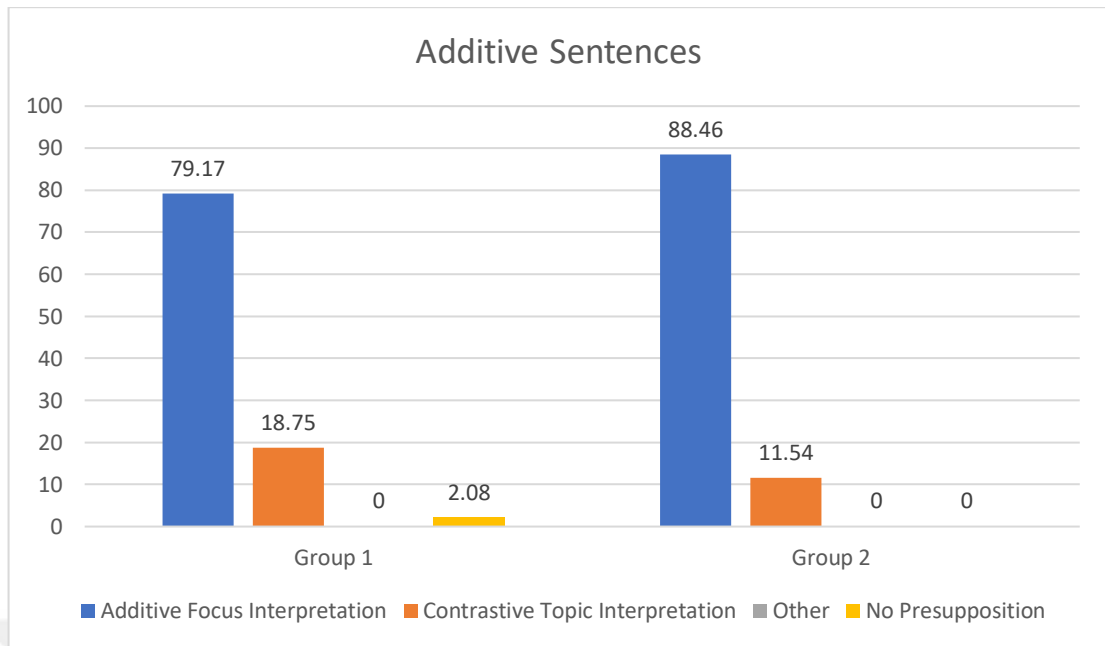


Figure 12. Children's response patterns in additive-focus OSV sentences (in %)

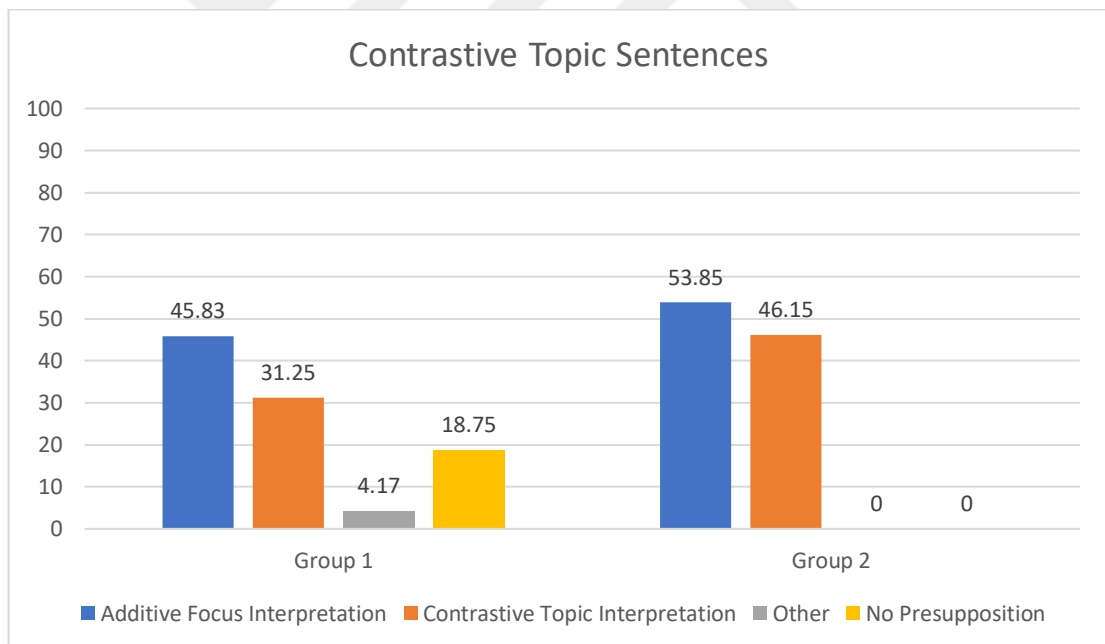


Figure 13. Children's response patterns in contrastive-topic OSV sentences (in %)

These results show that both age groups experience difficulties with OSV test sentences where the initial object is designated as the contrastive topic by the topic-shifting *dA*, while they are much better at correctly interpreting the sentences where

the same element is an additive focus. These findings are also diametrically opposite to the findings obtained in Experiment 1, where we had seen that the older age groups did well in both additive-focus and contrastive-topic conditions, and that the youngest age group performed at chance-level only in the additive-focus condition but not in the contrastive-topic condition, exhibiting the opposite of the bias detected here in Experiment 2.

In addition, two Mann-Whitney U tests were performed to compare Group 1 with Group 2 with respect to their correct response rates in the *additive-focus* condition and the *contrastive-topic* condition. As one might expect after scrutinizing the data given in Table 5 and Table 6 above, there was no significant difference between the two groups' performance in the *additive-focus* condition, $U=65$, $p>.45$. Nor was there any significant difference between these two groups in the contrastive-topic condition, $U=64.5$, $p>.45$. In short, the child participants in Experiment 2 were more or less equally good at interpreting additive sentences, and they were also more or less equally bad at interpreting sentences with contrastive topics.⁵⁰

Looking at these answer patterns, we can say that the results of Experiment 2 are at odds with the contrastive-implicature hypothesis advanced in the previous section. If the errors we observed were attributable to an inability to process the additive meaning of *dA* and if children were under the influence of a putative bias to impose a contrastive reading on such sentences, the default interpretation they opt for would have been the contrastive-topic interpretation. But since this was not the case, it appears that we cannot provide conclusive support for the contrastive implicature hypothesis at the moment.

⁵⁰ One should bear in mind that this study also suffers from a crucial limitation, as the sample sizes were rather small. Future research will aim at testing more participants to obtain more reliable results.

When we discussed the results of Experiment 1, we had pointed out that there was a theoretical asymmetry between subject-focus and object-focus sentences, and stated that object-focus sentences were more natural and frequent compared to subject-focus sentences, owing to the unmarkedness of the predicate-focus construction and the neutral stress pattern of object-focus sentences, as prescribed by the Nuclear Stress Rule. We had hypothesized that these factors could also play a role in motivating errorful contrastive-topic readings in Experiment 1, since treating the additive *dA* in subject-focused SOV sentences as a topic-changer imposed a subject-topic object-focus equivalence on the sentence, pairing these syntactic functions with the informational statuses that they are most naturally aligned with. Interestingly, when the object NP is scrambled to the beginning of the sentence (resulting in OSV word order) and when *dA* is placed after the sentence-initial object, the preference we detected in Experiment 1 is reversed, such that quite a lot of contrastive-topic sentences are misinterpreted as additive sentences, rather than vice versa. It is notable, however, that this reversed tendency – again – results in object-focus sentences, and this seems to be the only conceptual feature that the errors in Experiment 1 and the errors in Experiment 2 have in common. Although the limited sample sizes we have in this experiment do not enable us to make a very strong claim in this respect, it is worth investigating whether the "object status" is really the key factor that drives contrastive-topic generalizations in S-*dA*-O-V sentences and additive-focus generalizations in O-*dA*-S-V sentences. A potential future avenue of research can explore what happens when *dA* occurs in intransitive sentences; which, by definition, lack objects. For example, finding that children can successfully interpret both sentences like *As for [Elmo]_{CT}, he danced* and *[Elmo]_F also danced*;

could show us that the factor that motivated errorful interpretations was really the object NP. But we will have to leave this question to further research.

Now we are moving on to Chapter 4, where we will investigate how Turkish-speaking children interpret sentences with the scalar additive focus particle *bile* ('even').



CHAPTER 4

INVESTIGATION OF THE ACQUISITION OF THE SCALAR ADDITIVE
FOCUS PARTICLE *bile* IN TURKISH

4.1 Aims

As discussed in Chapter 2, research on the acquisition of additive focus particles has been scarce; but research on the acquisition of scalar additive focus particles has been even scarcer. So far, we have only had a handful of offline studies that tackled this problem in English, Korean, and Japanese. No other languages were investigated in this regard, nor was there any online study that aimed to "dodge" the difficulties that may arise in offline testing procedures.

The present study will also use an offline testing method, of course, but I hope that it may still provide important insights to us with respect to children's comprehension of the presuppositions and implicatures of scalar additive focus particles. Thus, my first goal in conducting this experiment will be to uncover whether and how Turkish-speaking children interpret the semantic contribution of the scalar additive focus particle *bile* to the test sentences that will be presented, and whether their performance varies depending on age. I will be specifically exploring whether children can access the existential implicatures and scalar presuppositions (or implicatures, if you like) evoked by this focus particle.

(1) Eda [kahVÉ]_F bile iç-ti.

Eda coffee even drink-PAST.3sg.

"Eda even drank [COFFEE]_F."

As seen above, by stating that *Eda even drank coffee*, sentence (1) is linked with a pragmatic scale along which (quite possibly) different beverages are ordered, and *coffee* happens to be located at one end of that scale and is thus designated as the beverage that Eda was least likely to drink. So perhaps she does not like coffee at all, hence it is surprising that she drank it; or maybe she had already consumed a great quantity of drinks, and one did not expect her to guzzle down a cup of coffee on top of that (thus putting *coffee+all the other drinks* at a higher rank compared to just *all the other drinks*).

In addition to this scalar presupposition that is about the "endpoint status" of *coffee* on a relevant pragmatic scale, it is also possible to argue that there is an existential implicature triggered by *bile*, as a concomitant of the scalar presupposition it introduces. For instance, unless there is a special communicative context; it sounds very odd, indeed, to continue sentence (1) with something like *but she did not drink anything else*⁵¹. Rather, this sentence seems to be way more felicitous in contexts where the open proposition is true of multiple relevant entities that can be substituted in place of the element associated with *bile* (here, *coffee*), and it is only the case that the highest ranking element mentioned in the sentence was the least likely (and thus, the most surprising one) to be the object of the action in question. Thus, the speaker probably preferred to express that "Eda consumed a multitude of beverages" by talking about the endpoint of the relevant scale with *bile*, due to the higher

⁵¹ What I mean by special communicative context is a context where someone – very surprisingly – did the one thing that no one would have expected of him/her, while failing to do any other thing that s/he would normally be considered to be more likely to do. For example, if there is a student named John who usually gets very low grades in chemistry while getting high grades in all the other subjects, and if one day he happens to get a very high grade in a chemistry exam while failing in all the other exams, I guess one could express surprise by saying *Oh, I can't believe John passed even chemistry and yet failed all the other courses!*, for heightened rhetorical effect. But that's about it. Though the existential implicatures of *even* sentences are defeasible in these special contexts; in many other contexts, they are perfectly intact. Thus I believe it is fair to assume that the Turkish *bile*-sentences, too, evoke existential implicatures, as long as there are no special circumstances involved.

informativeness and/or noteworthiness of this proposition compared to its weaker alternatives (Kay, 1990; Herburger, 2000).

Thus, a comprehension study should target these two covert inferences licensed by *bile*-sentences (i.e., a scalar presupposition and an existential implicature), and investigate whether children can access them. In addition, there may be other factors that could potentially affect how *bile*-sentences are processed, and those other factors are worth being looked into as well. For the purposes of the current study, three such factors that I believed might interfere with how children interpret *bile*-sentences have been selected. These factors are (i) polarity, (ii) the type of scale, and (iii) the outcome of the action described in the sentence.

Let us briefly explain what these three factors are, and why I reasoned that they might have an effect on comprehension. The first factor, polarity, does not really beg an explanation. As far as *bile*-sentences are concerned, the importance of polarity lies in the scale-reversing effect of negation. To demonstrate this, we can compare sentence (2), given below, with sentence (1).

(2) Eda [kahVÉ]_F bile iç-me-di.

Eda coffee even drink-NEG-PAST.3sg.

"Eda did not even drink [COFFEE]_F."

As seen above, adding the negative morpheme to the predicate results in a reversal of the pragmatic scale found in (1). Unlike what was the case in (1), sentence (2) now presupposes that *coffee* was the beverage (compared to the alternative beverages) that Eda would be most likely to drink, and if she did not *even* drink coffee, it follows – as a reasonable implicature warranted in this context – that she did not drink anything

(since all the relevant alternatives are ranked lower than *coffee* according to the ad hoc pragmatic scale found here).

It is also notable that (1) and (2) lead to diametrically opposite event construals, with (1) implicating that Eda drank everything, while (2) implicates that Eda drank nothing.⁵² Consequently, it becomes important to ask whether these two different structures and the different events they encode are equally easy to interpret – or is it the case that one type of *bile*-sentence is easier to interpret compared to its opposite with respect to polarity? To probe into these questions, Experiment 3 (to be laid out below) encompasses both affirmative and negative test sentences with *bile*.

The second potentially relevant factor that I touched upon above was the type of scale. What I mean by that is that it appears that the scalar additive focus particle *even* can be associated with both purely pragmatic scales that are contingent upon knowledge about context, and also with entailment scales that have an objective, context-independent reality. A good example for the former case has already been attested in sentences (1) and (2). Preference for drinks is entirely subjective, and therefore the sentence *She did not even drink coffee* might be perfectly felicitous if we are talking about an individual who likes coffee, but it will be completely infelicitous if this individual happens to abhor the taste of coffee. Thus the well-

⁵² Of course, one interesting question is how robust these conclusions are in each case. Do they admit exceptions (i.e., can (1) be uttered in a context where Eda drank most things, but not everything; or can (2) be uttered in a context where Eda drank few things, but not nothing)? My native-speaker intuition is that these constructions do admit exceptions under some circumstances (as pointed out in the previous footnote), so one could potentially both utter a sentence like *Eda [KAHVE]_F bile içti, ama çay içmedi* ("Eda even drank [COFFEE]_F, but not tea") and a sentence like *Eda [KAHVE]_F bile içmedi, ama çay içti* ("Eda did not even drink [COFFEE]_F, but she drank tea"). But it is beyond my ken to say if there is a difference in the degree to which affirmative and negative *bile*-constructions tolerate these implicature violations. At any rate, in Experiment 3 (which will be introduced shortly), I have taken utmost care to emphasize the importance of the ALL and NONE readings, and there was no legitimate reason for a speaker to assume the defeasibility of the existential implicatures of *bile*-sentences, though their right to do so is reserved, since nothing in the test items also specifically precludes them from doing so. Given the conversational contexts that I have constructed, however, the most natural reading to assign to these *bile*-sentences would be the ALL and NONE readings, depending on polarity. But I will have more to say on the issue of the pragmatic robustness/strength of the existential implicatures of affirmative and negative *bile*-sentences in the final section of this chapter.

formedness/ felicity of this sentence depends on world knowledge, and specifically on knowing the person's probability of drinking a certain beverage, contingent on their preferences. If the scale in question does not deal with a contingent issue such as one's fondness of a drink, but is logical (e.g., has to do with a physical magnitude) as in (3) below, there will be no such context dependency.

(3) Eda [en ağır taş-I]_F bile kaldır-dı.

Eda most heavy rock-ACC even lift-PAST.3sg.

"Eda lifted even [the HEAVIEST rock]_F."

Our ability to correctly interpret a sentence like *Eda lifted even [the HEAVIEST rock]_F* does not require us to be acquainted with Eda, as her personal preferences or capabilities do not affect the felicity of this sentence. Irrespective of any factor that might change from person to person, the heaviest rock is the hardest rock to lift for all individuals, since the likelihood or ease of lifting an object depends on its weight, which is a physical magnitude that remains constant regardless of the communicative context. The heaviest rock will always be occupying the endpoint of a weight scale, while coffee will not always be at the top of the "tasty beverages" scale for everyone.

One could plausibly expect that the types of scales that *even* becomes associated with in these structures (contingent vs. logical) could have an effect on how well children interpret them, and we could suspect that contingent scales could prove more challenging for young children, since they require them to reason about other people's preferences, strengths, and desires; and thus make higher cognitive demands (e.g., Theory of Mind) of children. I believe it is worth asking whether a linguistic task that indirectly taps into the ability of reasoning about other people's

preferences (e.g., such as the task we have here) could detect a difference in how children comprehend *bile*-sentences with contingent scales as opposed to those with logical scales. After all, though children's developing ability to make inferences about the mental states of other individuals can be demonstrated in child-friendly non-linguistic tasks, it remains to be seen what will happen when the task of deducing other individuals' mental states is combined with the task of computing the meaning of complex *bile*-sentences. Can children invoke contingent scales regarding other people's preferences just as easily as logical scales? To test this, I have constructed the test sentences in Experiment 3 in such a way that half of them would rely on contingent scales while the remaining half would rely on logical scales.

Finally, the outcome of an action (i.e., whether it is positive or negative) could also be expected to potentially sway children's judgments here. For example, if the extralinguistic context is such that Eda (whose favorite caffeinated drink is coffee) has been prohibited from consuming caffeine by her doctor, and if someone proudly says that Eda did not even drink coffee for breakfast, we can say that the outcome of her action is positive, as she followed the rules set by the doctor. If, however, the context had been such that Eda was invited to a party and she rudely refused all the drinks offered to her (i.e., "even coffee, which she would have otherwise enjoyed"), then the outcome of her action can be considered negative, as she engaged in an anti-social behavior in this context. It is also worth investigating whether an extralinguistic context of the kind described above can exert an influence over how children interpret such sentences, e.g., whether children have a bias to prefer pro-social actions with positive outcomes and whether they deliberately "twist" the interpretation of the sentences so as to have a positive outcome. At the very least, it is important to disentangle any confounding effect that may arise out of

non-linguistic biases from the interpretation effects that the focus particle *even* itself gives rise to. For that purpose, I have also balanced the test items with respect to the types of outcomes they had; so half of the test sentences could be construed as having a positive outcome in the extralinguistic context, while the other half signaled a negative outcome.

In the next section, I will lay out Experiment 3, which explores Turkish-speaking children's comprehension of the scalar additive focus particle *bile* ('even') and we will have more to say on the test items there.

4.2 Experiment 3: *Bile*-sentences

4.2.1 Participants

The child participants in Experiment 3 were 52 monolingual Turkish-speaking children, divided into 3 age groups, as shown in Table 8 below.

Table 8. The Participants in Experiment 3

Age Group	Mean Age	Age Range	Number of Children per Group
Group 1 (4-year-olds)	4;08	4;01 – 5;00	18 children (7 girls, 11 boys)
Group 2 (5-year-olds)	5;06	5;01 – 6;00	19 children (12 girls, 7 boys)
Group 3 (Elementary)	7;01	6;01 – 8;01 ⁵³	15 children (11 girls, 4 boys)

⁵³ This age range looks somewhat broad, however, as will be seen below shortly, children in this group performed in an adult-like fashion, and therefore I have decided to merge 1st graders and 2nd graders for the purposes of analysis here, as their scores were indistinguishable.

All the child participants in Experiment 3 were recruited from preschools and elementary schools located in Istanbul. Parental consent was obtained before the children were tested. All children were born at term, and no language-related or non-language-related developmental delays were reported by their caregivers. All children were tested individually in a quiet room in their own kindergarten or school, and received stickers in compensation for their participation. In addition, 23 students from Bogazici University (2 male, 21 female) who were enrolled in an undergraduate-level linguistics course were tested as a control group. They received one (1) course credit in return for their participation.

4.2.2 Materials and procedure

Experiment 3 had 8 test items in total, that were presented along with either a *bile*-sentence, or a simple sentence that lacked the scalar additive focus particle *bile*, resulting in a total number of 16 test sentences for the experiment. As was the case in Experiment 2, the participants in this experiment have also been split into two groups and administered two different versions of the same experiment (Version A and Version B). Though all children were exposed to the same 8 test items, the children in Version A received 4 of those test items followed by a *bile*-sentence, and the remaining 4 items were presented with a simplex sentence. Conversely, the test items that were presented with a *bile*-sentence in Version A appeared without *bile* in Version B; while the simplex sentences in Version A appeared with *bile* in Version B. As before, the motivation for shuffling the test items between the two versions like this was to balance out any spurious effects that could be attributed to the idiosyncratic properties of the items themselves, rather than the structure of the test sentences that they were associated with. Thus, if we – hypothetically – happen to

see that children perform much better with simplex sentences than with *bile*-sentences, we can be confident that this is not because the test items that simplex sentences accompanied were somehow more plausible and easier to interpret for children, while the test items that were presented with *bile*-sentences were somehow awkward and outlandish, leading to a higher error rate due to a design flaw, and artificially lowering children's scores in the *bile*-condition. When all items appear in both conditions, this possible alternative explanation is eliminated, and any difference that can be detected between the *bile*-condition and the simplex condition (henceforth referred to as the "non-*bile* condition") should be related to the presence vs. absence of the scalar additive focus particle.

There were 8 *bile*-sentences (and 8 non-*bile* sentences that serve as their simplex counterparts), because I wanted to exploit all the logical possibilities that arise due to my goal to control the 3 factors (i.e., polarity, type of scale, and type of outcome) that could be expected to potentially have an effect on how children interpret *bile*-sentences. To exhaust all possible combinations of these 3 factors, it is manifest that we should have at least 8 ($2*2*2$) test items. Considering the time restrictions that we have (i.e., the experiment cannot have a very long duration that would exceed young children's attention span), I thought it expedient to include 8 items in the experiment, and in accordance with the design I laid out above, each child viewed half of these test items with a *bile*-sentence and the other half with a non-*bile* sentence. All the *bile*- and non-*bile* sentences used in the study are given in Table 9 below.

Table 9. Test Sentences in Experiment 3

Version A	
<i>Bile</i> -sentences	Non- <i>bile</i> sentences
Trenini <i>bile</i> çıkarabildim. ("I could even take out [your TRAIN] _F .")	Elmayı yedim. ("I ate the apple.")
Robotla <i>bile</i> oynamadım. ("I did not even play with [the ROBOT] _F .")	Havuçları düşürmedim. ("I did not drop the carrots.")
Kedine eti <i>bile</i> verdim. ("I even gave [the MEAT] _F to your cat.")	Uçurtmayı alamadım. ("I could not take the kite.")
Ejderha kitabını <i>bile</i> okumadım. ("I did not even read [the DRAGON book] _F .")	Evi bozdum. ("I took apart the house.")
Version B	
<i>Bile</i> -sentences	Non- <i>bile</i> sentences
Dolmaları <i>bile</i> yedim. ("I even ate [the stuffed CABBAGE rolls] _F .")	Saatini çıkarabildim. ("I could take out your wristwatch.")
Domatesleri <i>bile</i> düşürmedim. ("I did not even drop [the TOMATOES] _F .")	Uçakla oynamadım. ("I did not play with the airplane.")
Balonu <i>bile</i> alamadım. ("I could not even take [the BALLOON] _F .")	Kedine yumurtayı verdim. ("I gave the egg to your cat.")
Şatoyu <i>bile</i> bozdum. (I even took apart [the CASTLE] _F .)	Prences kitabını okumadım. ("I did not read the princess book.")

In Experiment 3, children were first introduced to Elmo. The experimenter told them that Elmo's friends and family members would request or demand that Elmo fulfill a certain task; and the child's job was to listen to the conversations between Elmo and the person who made the request, and judge – based on the response Elmo gave – whether Elmo had complied with their request. If so, children were instructed to reward Elmo by throwing a coin (i.e., a round yellow disk made of cardboard) into Elmo's coin bank. If not, they were supposed to withhold reward and explain why Elmo did not deserve to be rewarded. Unlike Experiment 1 and 2 where the frame story in the experiment had to progress in a linear fashion (and where I could not play around with the temporal order of the test items for that reason), all the requests made of Elmo were logically independent of each other here, so they could be presented in a random order. Therefore I created two pseudo-random lists for the test

items, and children in Version A and Version B viewed the test items in these two different pseudo-random orders, respectively.

Two sample test items that are "mirror images" of each other in the sense that they have the exact opposite values for the binary factors in question, are provided below as an illustrative example.⁵⁴ Both the *bile*-sentences that they are paired with, as well as the non-*bile* sentences they co-occur with in the complementary version are given.

Sample Test Item #1 (i. affirmative, ii. contingent scale, iii. positive outcome)

Mini-story and Request: Elmo's mother brought three food items to Elmo: stuffed cabbage rolls, a fish, and an apple. Elmo loves the apple, is neutral to the fish, but he hates the cabbage rolls. His mother, however, wants him to eat ALL three of these food items. Thus, Elmo only qualifies for a reward if he eats ALL three food items, and all the other logical possibilities (i.e., Elmo eating 1 or 2 food items, or absolutely none of them) will cause him to forfeit the reward. Figure 14 and Figure 15 show the pictures that accompanied this story.

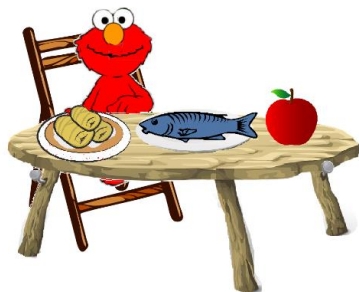


Figure 14. A picture that accompanies Sample Test Item #1

⁵⁴ The full list of test items in Experiment 3, as well as the stories that accompany them, can be found in Appendix C.

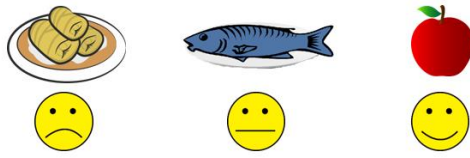


Figure 15. A picture that is intended to visualize Elmo's relative fondness of these 3 food items in a concrete way

Test Sentences for Sample Test Item #1

The structure of the test item	
Step 1 → Elmo's mother: Elmo, now I am going out. Please eat ALL of your food, while I am out, alright? Step 2 → The experimenter draws the child's attention to Elmo's food preferences and explains the conditions for him to qualify for a reward. Step 3 → Elmo's mother: Elmo, I'm back! What happened? Did you eat ALL of your food while I was away? Step 4 → Test sentence presented as Elmo's response to his mother's query (see below).	
VERSION A	VERSION B
Elma-y₁ ye-Dĭ-M. apple-ACC eat-PAST-1sg. "I ate the apple."	Dolma-lar-I bile ye-di-m. stuffed-cabbage-roll-PL-ACC even eat-PAST-1sg. "I even ate [the stuffed-cabbage-rolls]_F."
Expected outcome: NO REWARD Reason: Elmo did NOT eat ALL food items.	Expected outcome: REWARD Reason: Elmo ate ALL food items.

As seen above, this test item was presented with an appropriate mini-story that established the context for the request that Elmo's mother made of Elmo. The pictures that accompanied the story conformed to the plot. For example, in Figure 14, we clearly see that Elmo is sitting at the table and ALL the 3 food items at issue are easily identifiable on the table. Similarly, in addition to the verbal explanation given to the child by the experimenter during the brief story-telling period, the facial expressions captured on the emoticons (which are displayed on the computer screen while children listen to this story) show that Elmo loves the apple, is neutral to the fish, and hates the stuffed cabbage rolls; as can be seen in Figure 15. Thus the verbal story context was also reinforced by the presentation of these pictures, which served as a visual aid to help children understand the task and the conditions under which Elmo would earn a reward.

It is thus expected that children should choose to reward Elmo when they hear the sentence *Dolmaları bile yedim* ("I even ate [the stuffed-cabbage-rolls]_F"), since it comes with the existential implicature that there are other things that Elmo ate and those things are ranked higher on a pragmatic likelihood scale compared to the cabbage rolls. Given the story plot, it is easy to infer that these other things are the apple and the fish, which we know Elmo likes eating more. Thus, the proposition that Elmo *even* ate the food item he liked the least, invites the universal inference that he also ate these two higher-ranked items, i.e., everything.⁵⁵ Hence he should be rewarded.

When children hear the sentence *Elmayı yedim* ("I ate the apple"), however, they should assign an ad hoc exclusive reading to this sentence, even though the sentence lacks an exclusive focus particle, i.e., *sadece* 'only' in its overt form. Since

⁵⁵ So for the practical purposes of this study, one could say that the implicatures that *bile* gives rise to are universal implicatures, and not merely existential implicatures.

this sentence is uttered in reply to the question "Did you eat *all* of your food?," merely saying *I ate the apple* would be underinformative if Elmo had eaten other things in addition to the apple. One can thus impose an exclusive interpretation on this sentence by relying on this conversational implicature, and indeed, it has been shown before that 4-year-old children are capable of constructing ad hoc implicatures of this sort (Stiller et al., 2015).⁵⁶ I expect that Turkish-acquiring children, who are slightly older than the children tested in the aforementioned study, should also be able to generate a pragmatic inference of exclusivity in these sentences. If such a tendency is found as predicted, then it will serve as a good baseline against which we can compare children's readiness to assign non-exhaustive readings to *bile*-sentences. After all, if it is the case that children disregard the scalar and universal implicatures evoked by *bile*, they should interpret the *bile*-sentences as if they were simplex sentences, e.g., the sample *bile*-sentence given above should be read as *Dolmaları yedim* ("I ate the stuffed cabbage rolls"). Consequently, they could be expected to assign an exhaustive reading to this simplex sentence, concluding that Elmo had *only* eaten the stuffed cabbage rolls. If that is the case, the frequency of ad hoc exclusive (or exhaustive) readings in *bile*-sentences and *non-bile* sentences would be predicted to be roughly similar.

If children can successfully process the semantics of *bile*, however, they will assign non-exhaustive readings to *bile*-sentences, and deduce that the open propositions of these sentences are true for other objects mentioned in the context as well (e.g., Elmo ate not only the cabbage rolls, but also the fish and the apple).

⁵⁶ An ad hoc implicature refers to an implicature that is derived from the features of the conversational context, and not from the particular proposition expressed by the sentence. Thus, the sentence *Elmo even did X* implies that X was somehow the least likely action for Elmo to perform, but this inference is dependent on the proposition (and the lexical item *bile*) itself, so this is not an example for an ad hoc implicature. If we hear a sentence such as *Elmo did X* and, making use of the contextual cues, conclude that this sentence implies that *Elmo only did X*, this is an ad hoc implicature in the sense in which we use the term – and also in the terminology that Stiller et al. (2015) seem to subscribe to.

Therefore, if a significant difference is found between children's relative tendency to interpret sentences exhaustively in the presence vs. absence of *bile*, we can say that they can compute the contribution of *bile* and can appropriately interpret its implicatures.

Sample Test Item #2 (i. negative, ii. logical scale, iii. negative outcome)

Mini-story and Request: Abby is sad, because all her toys (a kite, a football, and a balloon) got stuck among the branches of a tree. She asks Elmo to retrieve AT LEAST ONE toy from the tree, so that she might have at least one toy to play with. As can be seen in the picture, the balloon is on the lowest branch, so it is the easiest item to retrieve; while it is expected that the kite will be the hardest item to retrieve, due to its height. Thus, Elmo will qualify for a reward if he can retrieve one toy from the tree, while he will forfeit the reward if he cannot take ANY toy. Figure 16 shows the picture that accompanied this story.



Figure 16. A picture that accompanies Sample Test Item #2

Test Sentences for Sample Test Item #2

The structure of the test item	
Step 1 → Abby: Elmo, my toys got entangled in the tree. Could you get them down? I'd be happy if you could take AT LEAST ONE of them, so we could play with it. Step 2 → The experimenter draws the child's attention to the difference in the height of the toys stuck in the tree and explains the conditions for Elmo to qualify for a reward. Step 3 → Abby: Hey Elmo, have you been able to take AT LEAST ONE of my toys from the tree? Step 4 → Test sentence presented as Elmo's response to Abby's query (see below).	
VERSION A	VERSION B
Uçurtma-yı al-A-ma-dı-m. Kite-ACC take-ABIL-NEG-PAST-1sg. "I could not take the kite."	Balon-U bile al-a-ma-dı-m. balloon-ACC even take-ABIL-NEG-PAST-1sg. "I could not even take [the BALLOON]_F."
Expected outcome: REWARD Reason: Elmo must have been able to take the balloon and the football.	Expected outcome: NO REWARD Reason: Elmo must have been unable to take any toy, since he couldn't get even the easiest/lowest one.

As seen above, unlike the previous sample test item, this item was about a logical scale, i.e., the height of the different toys stuck among the branches of the tree. The height difference between these toys was also clearly seen on the picture presented to the children, and the experimenter verbally explained it as well.

This item happens to be the exact opposite of the sample test item #1, in the sense that its polarity, the type of scale involved, and the type of outcome for the *bile*-sentence are inverted. Both test sentences associated with this item are negative, the type of scale is logical, and the type of outcome is negative in the *bile*-sentence, since *I could not even take [the BALLOON]_F* introduces the implicature that no other toy that had a lower likelihood of being retrieved (i.e., the toys that are higher in the tree) has been taken by Elmo. Given Abby's question (i.e., "Have you been able to take *at least one* of my toys?"), however, the simplex sentence *I could not take the kite* implicates an ad hoc exhaustivity reading, prompting us to conclude that Elmo could take the two lower toys, and now he merely apologetically tells that he could not reach the highest toy on the tree. Contrary to the *bile*-sentence, the simplex non-*bile* sentence here results in a reward.

In this experiment, I have opted to use only object-focus *bile*-sentences. There are mainly two reasons for this choice. First of all, my primary goal in conducting this experiment is to see whether Turkish-speaking children can access the presuppositions/ implicatures carried by the scalar additive focus particle *bile*, and any biases they may have with respect to associating a focus particle with a certain syntactic role is at best tangential to my research purposes here. Secondly, on an intuitive level, I find it much easier to generate relevant scales for (be they contingent or logical) object entities (which are mostly inanimate objects) than for subject entities (which are mostly animate, agentive individuals). For example, we could hypothetically have subject-focus *bile*-sentences as well, where agent subjects would be compared with each other in terms of their likelihood of carrying out an action, depending on their position on a relevant scale. A sentence like *Even [Elmo]_F could reach the cookie jar on the shelf*, for instance, would be felicitous in a context where

the individuals in contrast with Elmo are taller than him, and thus Elmo is the least likely person to be able to reach the cookie jar. But constructing such a context would require us to rank individuals (instead of objects) on a scale of height, and this would mean introducing new characters into the game, each of whom has a unique proper name (there is Cookie Monster who is taller than Elmo, and Big Bird who is in turn taller than Cookie Monster, etc.). Learning these new proper names within a short familiarization session for the purposes of this experiment would arguably be more difficult than recognizing the differences between objects that are referred to by common nouns already familiar to the children. Thus it was way more expedient to have only object-focus sentences in this study, though there is no reason why a follow-up experiment should not explore what happens when *bile* is associated with the subject NP.

In addition to the 8 test items used, there were two practice items presented in the beginning of the experiment. One of these practice sentences used the quantifier ALL while the other used the quantifier NONE, and the former test sentence was designed to elicit a reward, while the latter was supposed to elicit a refusal to reward Elmo. These practice items were intended to both warm the kids up for the testing procedure, and also to see whether they could successfully give out or withhold rewards as appropriate in the presence vs. absence of *even*. If children know what ALL and NONE mean, they should easily reward Elmo for having completed all tasks, and deny him reward when he fulfilled none of the tasks. If they succeed at this stage and fail in the test items with *bile*, we can assert that it was because they did not comprehend that the sentence "I *even* did X" implied that Elmo had finished all tasks, or the sentence "I did not *even* do Y" implied that Elmo had done nothing.

A minor point of note is that all test sentences and practice sentences in Experiment 3 were also spoken by a female native speaker of Turkish, even though I keep referring to Elmo as *he*. I prefer the male 3rd person singular pronoun for Elmo here, simply because Elmo was conceived of as a male character in the original *Sesame Street* series. But as I touched upon in a previous chapter, the average contemporary Turkish child is mostly not familiar with the *Sesame Street* characters, and even if they were, they might not have an idea about Elmo's gender since Turkish only has a gender-neutral 3rd person singular pronoun, and the other puppets in the show do not habitually emphasize that Elmo is a boy. So having a female speaker provide the voice for Elmo does not cause any confusion for the Turkish participants in this experiment. For the other characters in the story with whom Elmo has dialogues (e.g., his mother, father, his grandfather, etc.), however, I have requested the help of other native speakers (both male and female) and the voice of these characters thus agreed with their gender. In the next section, I will lay out the predictions of the study.

4.2.3 Predictions

As mentioned before, I predict that children should be able to generate ad hoc implicatures of exclusivity when they encounter simplex sentences without *bile*. First of all, as we have previously discussed, when a sentence such as "I ate the apple" is uttered in reply to the question "Have you eaten *all* of your food?" it would be underinformative in the event that the speaker had indeed eaten all of the food, or at least more than just one apple. Thus, the mere assumption that our interlocutor is a cooperative speaker who abides by the maxim of quantity (Grice, 1975) leads us to

assign an exclusive meaning to this sentence, and we interpret it to mean "I *only* ate the apple."

Secondly, looking at the intonational structure of these sentences, we can detect a parallel to the *dA*-sentences we have seen in the previous chapter, where *dA* had been used as a topic-shifter. Figure 17 and Figure 18 show the intonational structure of two non-*bile* sentences used in this experiment.

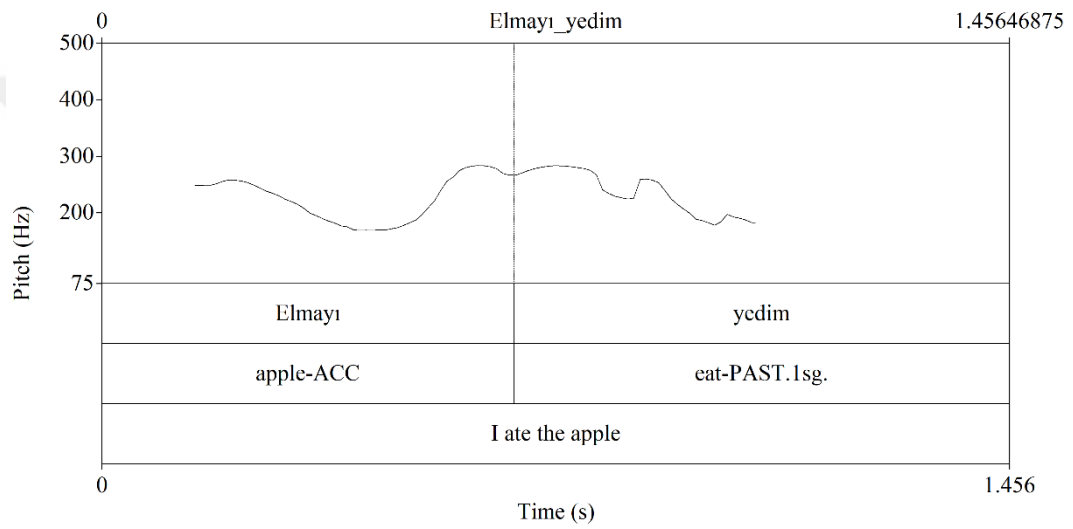


Figure 17. The intonational structure of the sentence *I ate the apple*

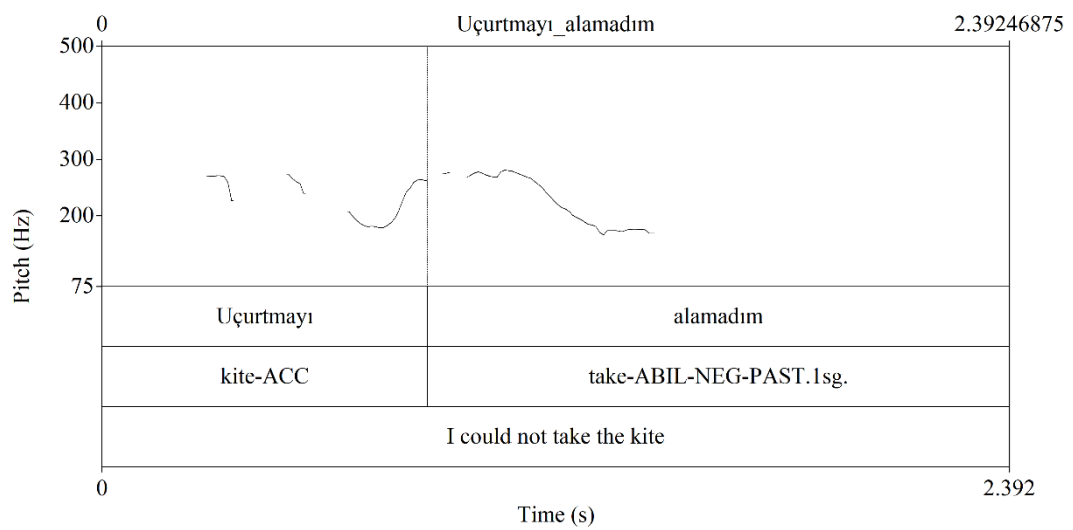


Figure 18. The intonational structure of the sentence *I could not take the kite*

As seen above, in both *Elmayı yedim* ("I ate the apple") and *Uçurtmayı alamadım* ("I could not take the kite"), there is a rise in pitch on the final syllable of the object NP, and then the pitch contour steadily declines throughout the verb. It will be recalled that we have also noted that the topic-shifting *dA*, which came after sentence-initial contrastive topics, was associated with a pitch rise, after which the pitch fell. In a sense, since the termination of a declarative sentence is typically signaled by a downturn in pitch, it is possible that this "upturn" is used as a device to signal that the opposite is the case, i.e., the utterance is incomplete.

We can also argue that these sentences do indeed have contrastive topics, even though they lack the topic-shifting *dA*. We had pointed out in Chapter 3, in relation to sentence (4a) and (4b) (reproduced below as (4a) and (4b) again), that the topic-shifting *dA* is not strictly necessary to indicate a topic shift.

(4) a. Defne [ÇAY]_F iste-di. [Eda]_{CT} da [kahVÉ]_F iste-di.

Defne tea want-PAST.3sg. Eda *dA* coffee want-PAST.3sg.

"Defne wanted [TEA]_F. As for [Eda]_{CT}, she wanted [COFFEE]_F."

b. Defne [ÇAY]_F iste-di. [Eda]_{CT} || [kahVÉ]_F iste-di .

"Defne wanted [TEA]_F. [Eda]_{CT} wanted [COFFEE]_F."

Even in the absence of *dA*, the pragmatically motivated contrastive implicature and the prosodic cues correlated with a topic-change reading can conspire to designate the sentence-initial element as a contrastive topic. Given the intonational structure we have in the non-*bile* sentences, it is plausible to maintain that they, too, are to be classified as contrastive sentences. A logical consequence of this recognition is that these sentences possibly also evoke a set of alternatives for the object, and trigger the

presupposition that the open proposition is false of the alternatives (i.e., *I did not eat the cabbage-rolls or the fish*). Thus the prosodic structure in these sentences, as well as the rules of pragmatics, supports a contrastive/ exclusive reading here.

Interestingly, the *bile*-sentences are also similar to the additive *dA*-sentences in terms of their broad intonational properties. Figure 19 and Figure 20 show the intonational structure of two *bile*-sentences used in this experiment.

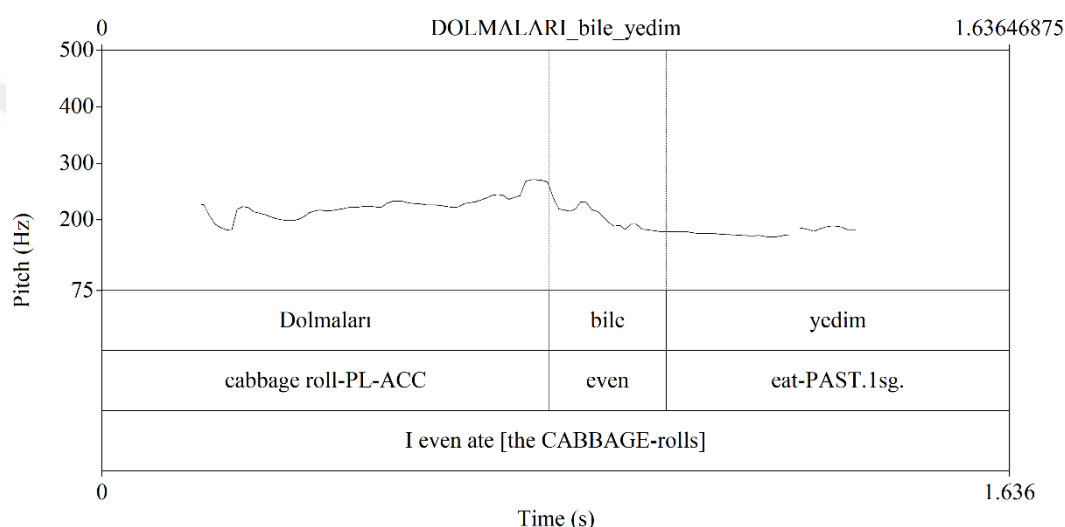


Figure 19. The intonational structure of the sentence *I even ate [the stuffed cabbage rolls]_F*

As seen above, the pitch contour of the sentence *Dolmalari bile yedim* ("I even ate [the stuffed cabbage rolls]_F") is roughly reminiscent of the pitch contour we encountered in the presence of the additive focus particle *dA*, as we see that there is a pitch rise towards the end of the focused object before *bile*, but the pitch falls on the focus particle *bile* itself. While these rises and falls are not very sharp here, they are much more conspicuous in the sample negative *bile*-sentence *Balonu bile alamadim* ("I could not even take [the BALLOON]_F"), as seen below.

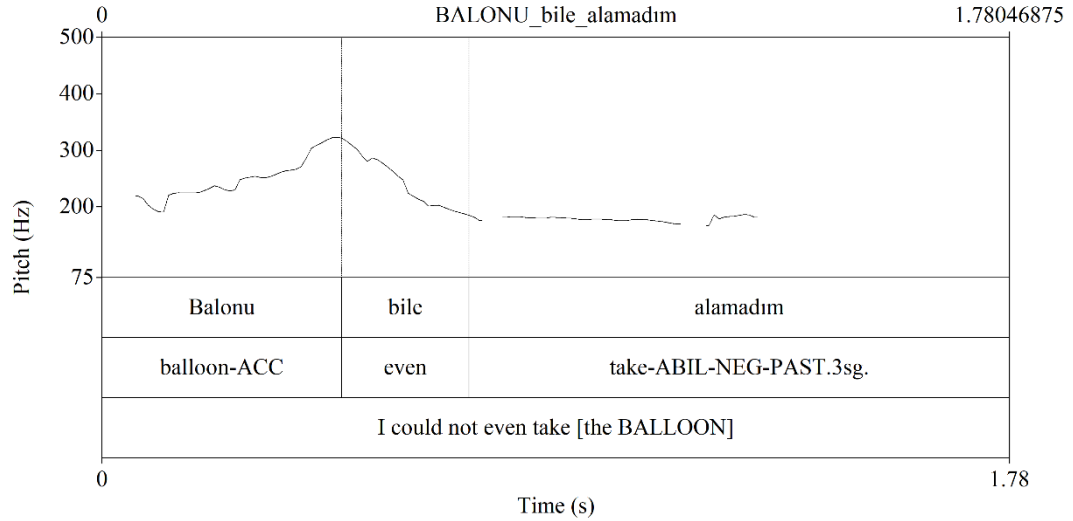


Figure 20. The intonational structure of the sentence *I could not even take [the BALLOON]_F*

I believe, however, that this difference has nothing to do with the polarity of these test sentences, as another affirmative test sentence, *Trenini bile çıkarabildim* ("I could even take out [your TRAIN]_F"), exhibits the same sharp pitch fall on *bile*, as seen in Figure 21.

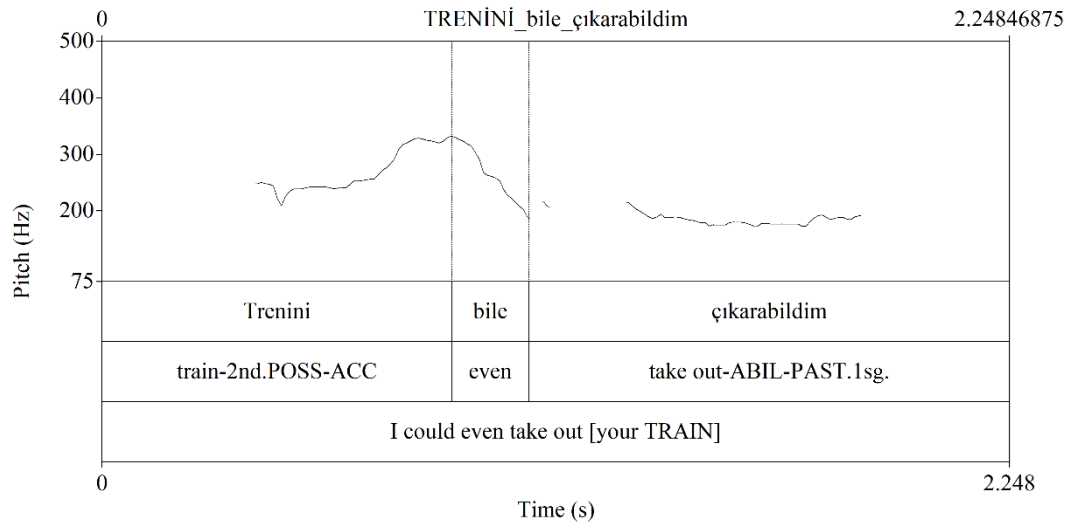


Figure 21. The intonational structure of the test sentence *I could even take out [your TRAIN]_F*

So I think there are no conclusions to be drawn from the relative flatness of the pitch contour in Figure 19. Although the graphic representation may not seem drastic or impressive enough, the prosodic cues to focus marking were there, and they were easily perceptible.

If children know the meaning of *bile* and can also successfully utilize these prosodic cues that accompany focus-marking and are able to incorporate the contextual cues given in the story-telling session into their mental model, they should be able to access the universal and scalar implicatures of *bile*, opting for an ALL reading in sentences where *bile* occurs in an affirmative context, and opting for a NONE reading in sentences where *bile* occurs in a negative context. If children are capable of comprehending this, along with assigning an exclusive meaning to non-*bile* sentences, then a significant difference should emerge between the frequency of exhaustivity readings in these two conditions, i.e., we should find way more exclusive interpretations in the non-*bile* sentences than in the *bile*-sentences.

In addition to that, we may find some differences in children's correct response rates depending on one or more factors that we have taken into account in designing the test sentences (i.e., (i) polarity, (ii) type of scale, and (iii) type of outcome) as elaborated upon in Section 4.1. For example, if there is a difference in the conceptual complexity of ALL and NONE readings, or if *bile* behaves differently in affirmative and negative contexts with respect to the pragmatic robustness of the presuppositions/ implicatures it is related to, for instance if a negative *bile*-sentence is a stronger cue for a NONE reading compared to an affirmative *bile*-sentence that is meant to cue an ALL reading or vice versa (as briefly touched upon in Footnote 51 of this chapter), we might expect to find a difference in children's performance in affirmative vs. negative contexts. The same reasoning applies to the factors "type of

scale" and "type of outcome" as well. For instance, if it is somehow easier for children to access concrete scales of physical magnitude as opposed to context-dependent scales; we might expect to find a difference in their interpretations depending on the type of scale used. Also, if children happen to be guided by an altruistic motive in their reward decisions in this task to the point of neglecting the semantic content of the sentence they hear, it is conceivable for them to gravitate towards an interpretation that favors giving Elmo a reward, i.e., to correctly interpret those sentences where the type of outcome is positive (i.e., "reward for Elmo"), while failing at the sentences where the type of outcome is negative (i.e., "no reward for Elmo"). If such a difference were to be found, however, it would raise a red flag about the experimental design, and we would need to rethink our task, of course. The next section will lay out the results of Experiment 3.

4.2.4 Results and discussion

As a first step towards analysing the results, I wanted to make sure that there were no item-based differences here that could muddle the results. Hence I have opted to compare the frequencies of correct scalar readings (in the case of *bile*-sentences) and correct ad hoc exclusive readings (in the case of non-*bile* sentences) on an item-by-item basis. All 4 test sentences in any given block (2*2, presence vs. absence of *bile* and test version A vs. test version B) were compared with each other using Cochran's Q test, and if it was found that one of the items contained in this 4-member block behaved significantly differently from the other 3 items in terms of the correct responses it elicited, it would be removed from the data pool. The results, however, showed that none of the items was significantly different from all three of its block-

mates at the same time.⁵⁷ Therefore I have decided to include all items in the analysis. The statistical item-by-item comparisons are reported in detail in Table 10 below.

Table 10. Item-by-item Comparisons

	Version A – <i>Bile</i> sentences	Version A – <i>Non- bile</i> sentences	Version B – <i>Bile</i> sentences	Version B – <i>Non- bile</i> sentences
Group 1 (4-year-olds)	$\chi^2(3)=6.6$, $p>.05$.	$\chi^2(3)=6$, $p>.10$	$\chi^2(3)=8.08$, $p<.05$. Pairwise comparisons* show no difference between items	$\chi^2(3)=8.4$, $p<.05$. Pairwise comparisons show that only two items are significantly different from each other, but no item is significantly different from all the other items
Group 2 (5-year-olds)	$\chi^2(3)=9.57$, $p<.05$. Pairwise comparisons show that only Item 2 is significantly different from Item 3 and 4, but no item is significantly different from all the other items	$\chi^2(3)=7.2$, $p>.05$.	$\chi^2(3)=4.29$, $p>.20$.	$\chi^2(3)=10.92$, $p<.05$. Pairwise comparisons show that only Item 2 and Item 4 are significantly different from each other, but no item is significantly different from all the other items
Group 3 (elementary)	$\chi^2(3)=3$, $p>.35$.	$\chi^2(3)=3$, $p>.35$.	$\chi^2(3)=N/A$, $p=N/A$ **	$\chi^2(3)=3$, $p>.35$.

*: Post-hoc McNemar's test was used for pairwise comparisons.

**: No χ -values or p -values could be calculated here, as all children had a correct response rate of 100%.

⁵⁷ See Table 9 for the test-items that have been compared with each other. The items in each block (i.e., (1) Version A – *bile*-sentences, (2) Version A – *non-bile* sentences, (3) Version B –*bile*-sentences, (4) Version B – *non-bile* sentences) have been compared with the other three items within the same block.

As a next step, it will be beneficial to look at the response patterns observed in this test. For example, in the *bile*-sentences, adults have performed at the ceiling level, assigning a scalar interpretation to 100% of all sentences presented to them. The elementary school students in Group 3 have also performed quite well, with a correct scalar interpretation rate of 98,3% (only one *bile*-item was incorrectly interpreted by one child). In addition, all participants (regardless of age group) had a 100% correct response rate in the practice items presented in the beginning of the experiment, which contained ALL or NONE. Thus, we can be sure that children have no difficulty comprehending these universal quantifiers.

As far as the actual test items are concerned, however, errors were detected in the performance of 4-year-olds (Group 1) and 5-year-olds (Group 2), as can be seen below in Figure 22 and Figure 23, respectively.

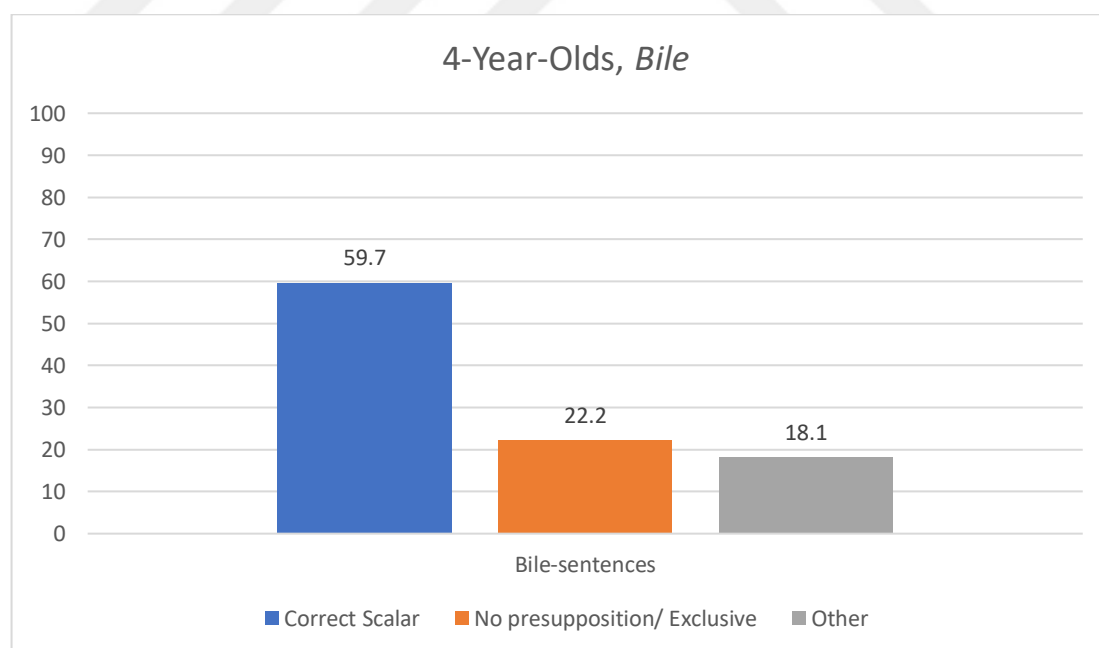


Figure 22. 4-year-olds' interpretations in the *bile*-condition

4-year-olds assigned a correct scalar interpretation to 43/72 items (59.7%), accessing an ALL reading⁵⁸ and their performance was thus marginally significantly above chance-level $t(71) = 1.6703, p < .10$. The rate of their ad hoc exclusive readings in this condition, however, was 16/72 (22.2%), i.e., in roughly one fifth of the items, children interpreted the sentence as if it did not contain *bile*, and then possibly imposed an ad hoc exclusive reading on it, which is what we have predicted would happen in the non-*bile* condition, in fact. For example, when children opted for this reading, they interpreted a sentence like *Dolmalari bile yedim* ("I even ate [the CABBAGE rolls]_F") to mean "I ate [the CABBAGE rolls]_F" and further took this to mean that Elmo had *only* eaten the cabbage rolls. This is what we call a "no presupposition/exclusive" reading, as opting for an ad hoc exclusive reading by disregarding *bile* also entails not processing the universal implicature of *bile*, i.e., that the open proposition is also true for entities ranked higher than the focussed item on the relevant likelihood scale. In addition, the interpretations assigned to 13 of the 72 items (18.1%) have been labeled as *other*, because they could not be reliably classified as correct scalar readings or incorrect exclusive readings. The *other* class subsumed a large variety of errors ranging from children's uncertainty about what Elmo exactly did (i.e., an inability to determine whether Elmo had done other things as well, though the child was also reluctant to infer the ad hoc exclusivity implicature, so ended up stating that what Elmo did could not be exactly known), errors that have to do with memory failure (e.g., the child misremembering what Elmo was supposed to do, for instance forgetting the requirement that Elmo had to eat ALL food items in Sample Test Item #1 presented above, and rewarding Elmo for

⁵⁸ I choose to call this reading "correct scalar," because the ALL reading of *bile*-sentences is a natural derivative of the scalar presupposition that they trigger, i.e., once one can interpret *bile* to mean that the least likely proposition has come to be realized, then, as a next step, they can compute the implicature that all propositions that are more likely than the one explicitly expressed in the *bile*-sentence must be true as well.

"having eaten the cabbage rolls," while showing no sign of having comprehended that he had eaten the other items as well – though the child may have indeed understood the scalar implicature here, his/her response is not sufficient for us to say this with any certainty, as the child has mistakenly thought that eating one item was enough for Elmo to qualify for a reward and responded accordingly), and any other error that appeared to be a sign of confusion or distraction.

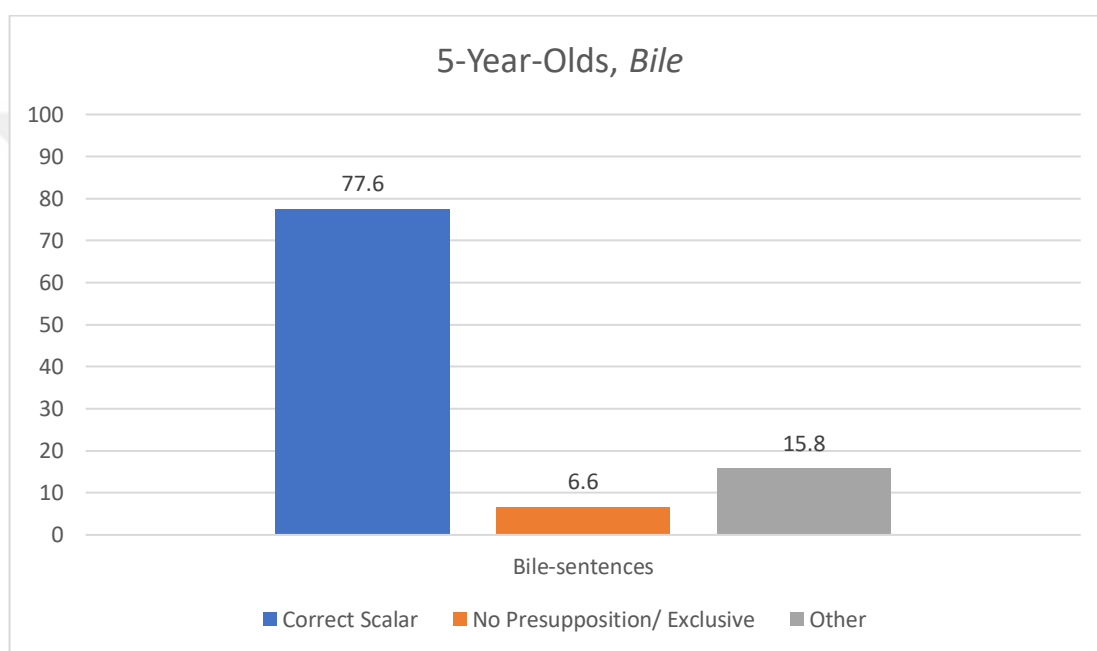


Figure 23. 5-year-olds' interpretations in the *bile*-condition

5-year-olds, in contrast, have assigned a correct scalar reading to *bile*-sentences 77.6% of the time (59/76), resulting in a correct performance that is significantly above chance-level, $t(75) = 5.7425$, $p < .0001$. An ad hoc exclusive reading was seen in only 5 out of 76 cases (6.6%), and finally the rate of *other* errors was 15.8% (12/76). A chi-square test has also shown that there was a statistically significant effect of age group on the distribution of these response types, $\chi^2(2) = 8.2096$, $p < .02$. Thus these results show us that there is a gradual development of the comprehension of *bile*-

sentences, where a full adult-like performance is observed in the 7-year-olds (elementary school students), while 5-year-olds also exhibit a generally good performance, though they are nowhere near as well as adults. 4-year-olds, however, can access the scalar implicature that *bile* triggers in 59.7% of the cases.⁵⁹ It is

⁵⁹ While I initially interpreted these results to suggest that 4-and-5-year-old children are largely able to access the scalar meaning of *bile*, and following up on this recognition, also the pertinent existential implicature that is derivable from the fact that the least likely proposition has been realized; it is possible to argue that the same pattern of results observed here could also be found if children treated *bile* not as a presuppositional, but as a truth-conditional focus particle; where the truth-conditional contribution of *bile* is roughly equal to "this is true, and so is everything else" in affirmative sentences, and to "this is not true and nor is anything else" in negative sentences – i.e., like the opposite of the exclusive focus particle *only*. I do not know whether there is any language in the world where an exact opposite of *only* – like the one briefly described in the above-given hypothesis – is indeed available, or whether there is a compelling reason to expect children to assign a truth-conditional reading to *bile*, rather than a purely presuppositional one. That being said, we would need to devise a different experimental design to reject this competing hypothesis with certainty. Arguably, since the existential implicature of *bile* is said to be a corollary of its scalar presupposition, and since a hypothetical truth-conditional version of *bile* that might be found in child grammar (i.e., meaning "this and everything else") does not get its universal inference as a secondary inference from a scalar presupposition as *bile* does, but from its own truth-conditional content; one could devise a context where *bile* is – albeit quite infelicitously – associated with a proposition, that is, in fact, the MOST likely one. If the ALL/NONE readings are derived from the scalar presupposition as a particularized implicature, children must be unable to assign a correct interpretation to such sentences, since the content of the sentence will be at odds with the scale relevant to the context, and therefore the computation of the scalar presupposition will fail, inevitably leading to the subsequent failure of the computation of the existential inference as well. Thus, children will not be able to demonstrate ALL or NONE readings. If, however, children do not treat *bile* as a presuppositional particle but as a particle with truth-conditional content, then the scale should not matter for licensing a universal inference, since an ALL/NONE reading would be assumed to directly stem from the truth-conditional content of *bile*, and not to be an offshoot of a scalar presupposition. In that case, children should be expected to access an ALL or NONE reading (depending on the polarity of the sentence) even when *bile* is associated with the most likely proposition in a given context, since a reading like "this is true and so is everything else" is not dependent on a scale. Alas, there is a problem here, and the crux of the problem is that this particular experimental design will force us to test children with sentences that are infelicitous in adult language, i.e., where *bile* is associated with the most likely proposition, unlike what happens in adult grammar. As I have pointed out in preceding chapters of this thesis as well, I am quite sceptical of studies that use infelicitous/odd sentences to test children's comprehension of them, especially if the task is offline; particularly because children are not good at supplying felicity judgments, possibly because such complex tasks heavily draw upon metapragmatic reasoning. One possibility, of course, could be to present children with two sentences with *bile*, where one sentence was felicitous (i.e., *bile* was associated with the least likely proposition) and the other sentence was infelicitous (i.e., *bile* was associated with the most likely proposition); and to ask them to choose the "better" sentence. (As a matter of fact, such a "comparative" design has previously been used to assess children's comprehension of scalar implicatures in underinformative contexts, see Chierchia et al. (2001)). But as Papafragou (2006) has also pointed out, these experimental designs still hinge on the implicit assumption that children will take felicity into account when giving their judgments, whereas it is entirely possible that they will continue to only pay attention to the truth-value of the test sentence even in felicity-judgment tasks. If this is the case, and if children also assign a truth-conditional semantics to *bile*, the above-mentioned task will basically give them two TRUE sentences. If they entirely disregard felicity, as Papafragou suggested they might, there is no reason for them to prefer one *bile*-sentence over another. Worse yet, they might have a bias for preferring one type of *bile*-sentence over its competitor, but that reason may be non-linguistic, e.g., if children have a tendency to pay more attention to least likely propositions than to most likely propositions due to an extralinguistic surprisal factor (i.e., finding less likely – and therefore, more surprising – propositions more

notable that even this constitutes a more or less satisfactory performance, as it shows us that 4-year-old children can understand the semantics of *bile* slightly over half of the time, and they can access a universal inference based on *bile*, while it may remain an open question whether this universal inference qualifies as proof of comprehension of universal implicatures derived from the scalar presupposition of *bile*, or whether they should more properly be viewed as products of an exotic non-adult-like truth-conditional semantics that young children might have assigned to *bile*. These findings are interesting, considering that scalar focus particles such as *bile* have complex semantics, and one could therefore expect 4-year-old children to have difficulty interpreting them; since it appears that children's judgments are generally compatible with an adult-like interpretation of *bile*. Needless to say, it would be worthwhile for a possible future avenue of research to explore how younger children (e.g., 3-year-olds) interpret such sentences and to see whether they are more likely than older children to ignore the scalar presupposition of *bile* and to assign an incorrect exclusive/exhaustive reading to these test sentences, for instance.

Now let us take a look at the non-*bile* condition. In this condition, adults have assigned an ad hoc exclusive/exhaustive interpretation to the test sentences 94.6% of the time (87/92), making only 5 *other*-type errors, which may be attributed to a momentary inattention. Elementary school students (Group 3) also had an adult-like performance, as their ad hoc exclusive interpretation rate was 96.7% (58/60). In addition, we see that 4-year-olds and 5-year-olds also performed very well in this condition, though they were – as before – not completely adult-like. This is shown in Figure 24 and Figure 25.

noteworthy), they might declare that the sentence that expresses the more surprising proposition is "better." Thus, since we cannot read a child's mind, we can also not be sure about the precise considerations they have that lead them to provide a certain felicity judgment.

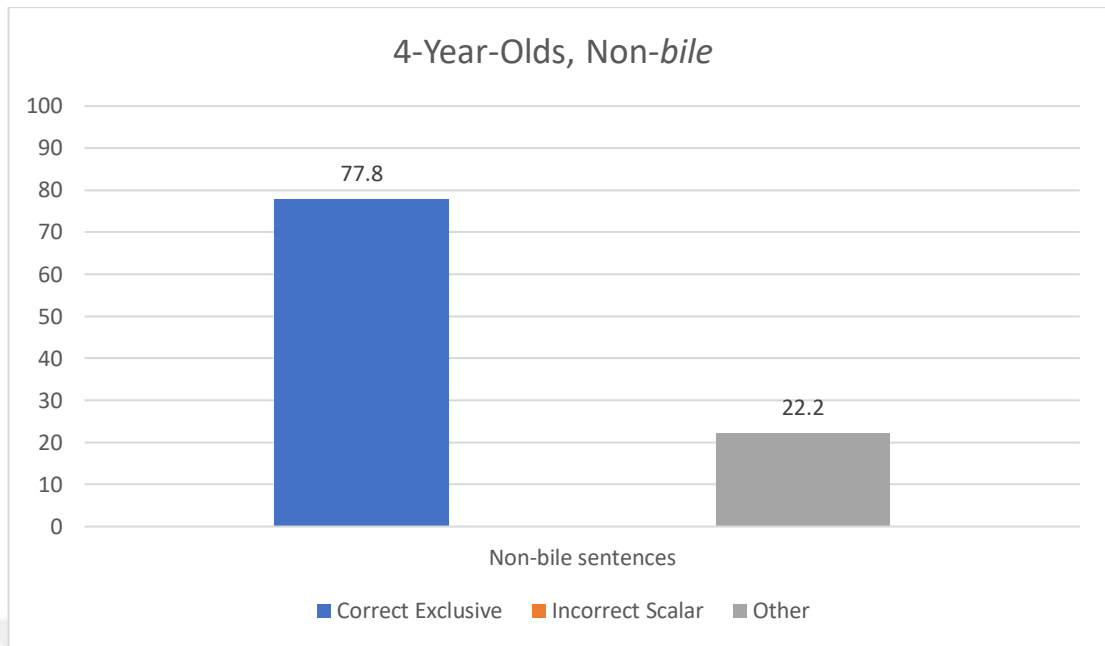


Figure 24. 4-year-olds' interpretations in the non-*bile* condition

As seen above, 4-year-olds could interpret the non-*bile* sentences exhaustively 77.8% of the time (56/72), and this response rate was statistically significantly different from chance, $t(71) = 5.6300$, $p < .0001$. Other than that, children gave responses classified as *other* 22.2% of the time (16/72). Another possible response type deemed possible was ad hoc scalar, as I thought that children could misinterpret some non-*bile* sentences as *bile*-sentences, due to a carry-over effect, since both kinds of test sentences co-occurred in the same test, and maybe children's scalar interpretations in the *bile*-sentences could "contaminate" their responses to the non-*bile* sentences as well, leading them to come up with incorrect scalar interpretations there. But this was not found to be the case for 4-year-olds. In addition, let us recall that we had stated in the Predictions section that the relative frequencies of ad hoc exclusive readings in the *bile*- vs. non-*bile* conditions could be used as a touchstone to measure whether and to what extent children pay attention to the contribution of *bile* to arrive at ALL/NONE readings. As we now see here, the percentage of exclusive readings in

the non-*bile* condition is 77.8% for 4-year-olds, while it was 22.2% in the *bile*-condition. To state the obvious, the difference between the frequency of exclusive readings in these two conditions was found to be statistically significant as well, $\chi^2(1) = 62.112, p < .0001$. This shows that 4-year-old children were much more likely to produce an exclusive response in simplex sentences, and conversely, they were statistically significantly more likely to produce responses that indicate an ALL/NONE reading in the presence of *bile*. While there may be uncertainties as to what young children take the meaning of *bile* to be (i.e., whether they interpret it as a presuppositional focus particle or whether they assign to it a non-adult-like truth-conditional semantics), it is clear that children are attentive to the presence of *bile* in a sentence and do take its contribution into account when they give a judgment based on that sentence.

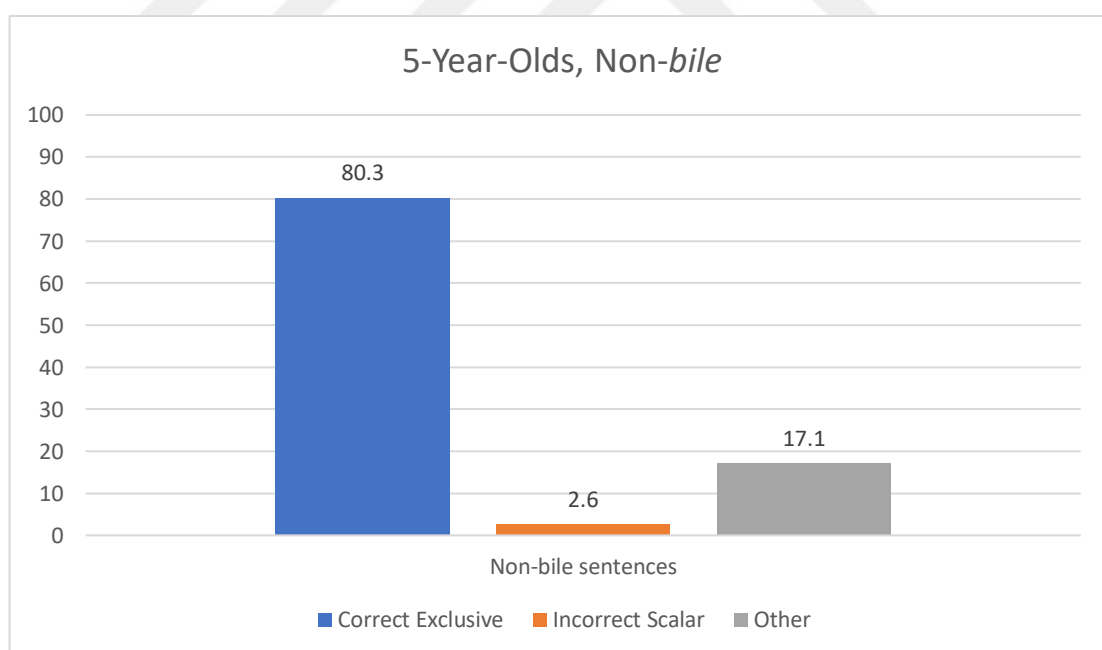


Figure 25. 5-year-olds' interpretations in the non-*bile* condition

As seen above, 5-year-olds gave exclusive interpretations to the non-*bile* test sentences 80.3% of the time (61/76), and *other*-type errors occurred 17.1% of the time (13/76). In contrast to the 4-year-olds, 5-year-olds also showed erroneous ad hoc scalar interpretations in 2 of the 76 test items, though this response type corresponds to only a negligible 2.6% of the total. As was the case for 4-year-olds, it was found that 5-year-old children also differentiated between *bile*- and non-*bile* sentences, and were much more likely to interpret non-*bile* sentences exclusively and they were also much more likely to interpret *bile*-sentences as indicating an ALL/NONE reading, $\chi^2(1) = 97.241, p < .0001$. Thus, 5-year-olds also appear to not ignore the contribution of *bile* when they interpret these sentences, and it is shown that they can draw a correct universal inference by taking *bile* into account. Quite unsurprisingly, this universal inference is missing in simplex sentences, which are assigned an ad hoc exclusive/ exhaustive interpretation instead.

In addition, unlike what happened in the *bile*-condition, a chi-square test showed that there was no difference between 4-year-olds and 5-year-olds in the non-*bile* condition, $\chi^2(2) = 0.7973, p > .65$. In line with our expectations, these results show us that simplex sentences without *bile* are generally not difficult even for 4-year-old children, and children of this age can successfully utilize the pragmatic principles (i.e., the Maxim of Quantity and the Cooperative Principle), and starting out from the ensuing assumption that a cooperative speaker will not make underinformative statements, they can assign exclusive/exhaustive interpretations to these sentences. Thus these results are in line with the results reported by Stiller et al. (2015), as they show that Turkish-speaking children can also derive ad hoc exclusive implicatures.

I had pointed out in the Predictions section that there were 3 factors that I thought could potentially have an effect on children's interpretations here. To recall,

these 3 factors were (i) polarity (affirmative vs. negative sentences), (ii) type of scale (logical vs. contingent scales), and (iii) type of outcome (when the action performed by Elmo has a positive vs. negative outcome). I have also analyzed the data to see if any of these factors really had a significant effect on how well children performed in Experiment 3.

The analyses show that Factor 2 (type of scale) and Factor 3 (type of outcome) do not have an effect on children's interpretations of the *bile*-sentences, and this holds true for both the 4-year-olds and the 5-year-olds, as can be seen below, in Figure 26 and Figure 27, respectively.

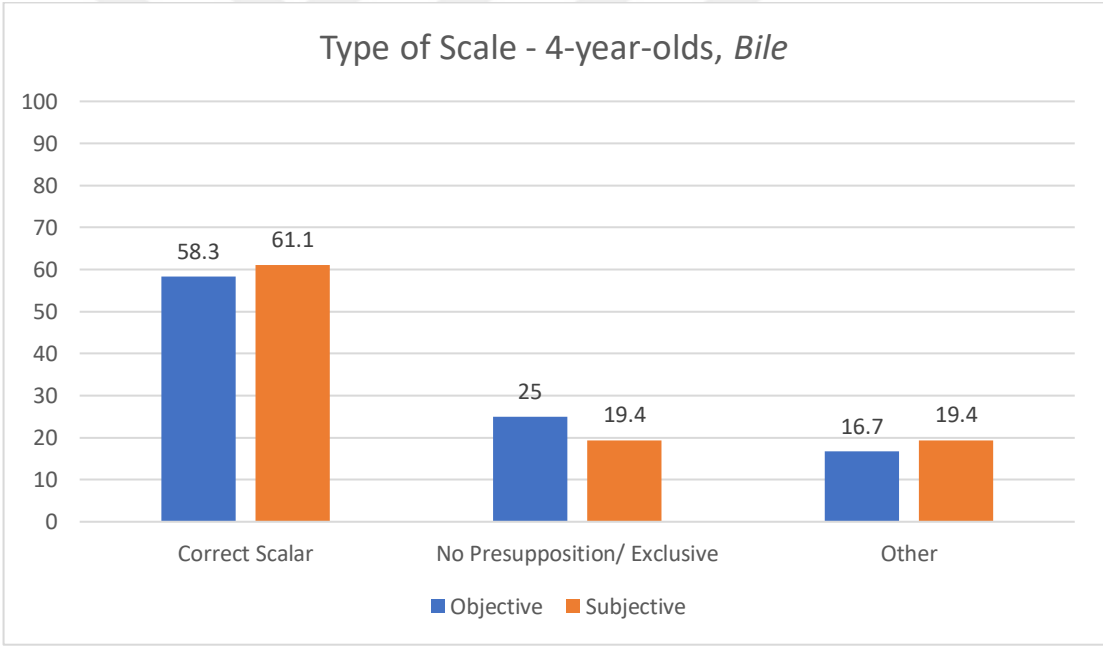


Figure 26. Distribution of 4-year-old children's responses according to Type of Scale

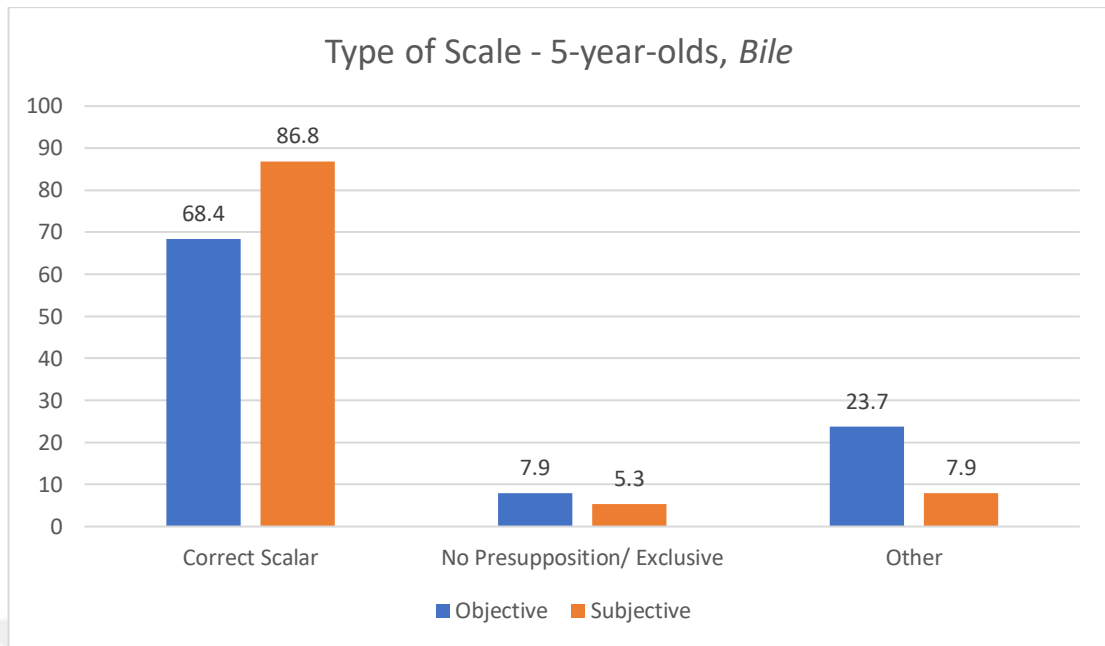


Figure 27. Distribution of 5-year-old children's responses according to Type of Scale

It can be clearly seen that the type of scale did not matter for the interpretations of 4-year-olds, and a chi-square test confirms that there is no statistically significant difference between *bile*-sentences with logical and contingent scales for this group, $\chi^2(2)=0.35$, $p<.80$. Although it appears that the 5-year-olds had a better performance in sentences where contingent scales were involved compared to those with logical scales, this difference was not found to be statistically significant, $\chi^2(2)=4.03$, $p>.10$. Thus we conclude that the type of scale did not have an effect on children's interpretation of *bile*-sentences. In other words, when children are taught about the contingency relations in the experimental context, they can incorporate this world knowledge into their mental model and utilize it as proficiently for giving judgments as they use logical scales (such as height, depth, etc.) that do not need to be explained. Next, we examine whether the type of outcome had any effects on children's performance. The results are shown in Figure 28 and Figure 29.

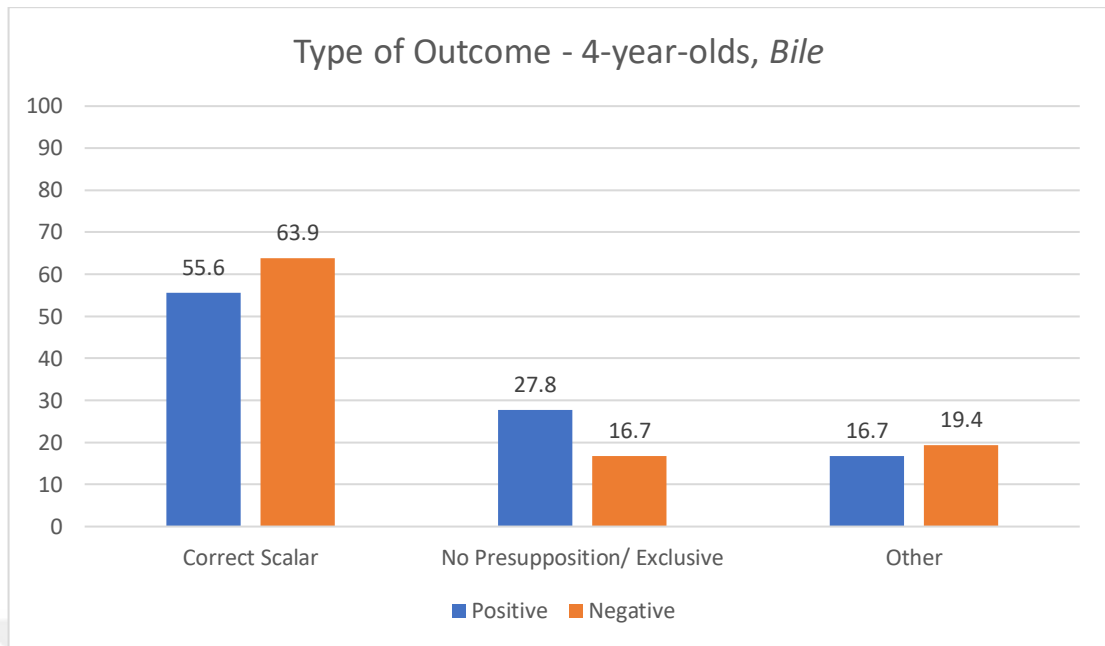


Figure 28. Distribution of 4-year-olds' responses according to Type of Outcome

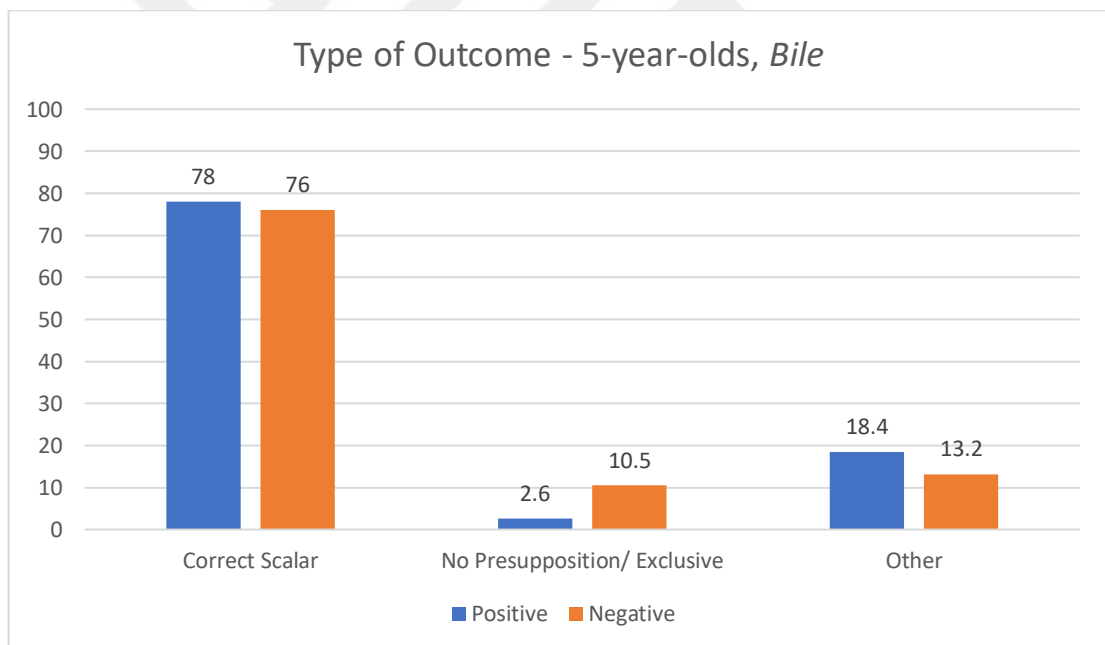


Figure 29. Distribution of 5-year-olds' responses according to Type of Outcome

As the charts above illustrate, children's correct response rates do not seem to co-vary with the type of outcome that Elmo's actions lead to, and this observation is confirmed by statistical tests for both 4-year-olds ($\chi^2(2)=1.29, p>.50$) and 5-year-olds ($\chi^2(2)=2.15, p>.30$). Thus it is evident that children did not have a bias to give

rewards to Elmo for altruistic reasons, and accordingly they did not necessarily perform better in the sentences where Elmo's statement showed that Elmo deserved a reward.

When we look at the effects of polarity, however, we see a more interesting picture. Polarity was observed to have an effect on the responses of 4-year-olds, such that children of this age were much more likely to access ALL/NONE readings in negative *bile*-sentences compared to affirmative *bile*-sentences, and they produced way more incorrect ad hoc exclusive readings in affirmative *bile*-sentences than in negative *bile*-sentences. This is shown in Figure 30 below.

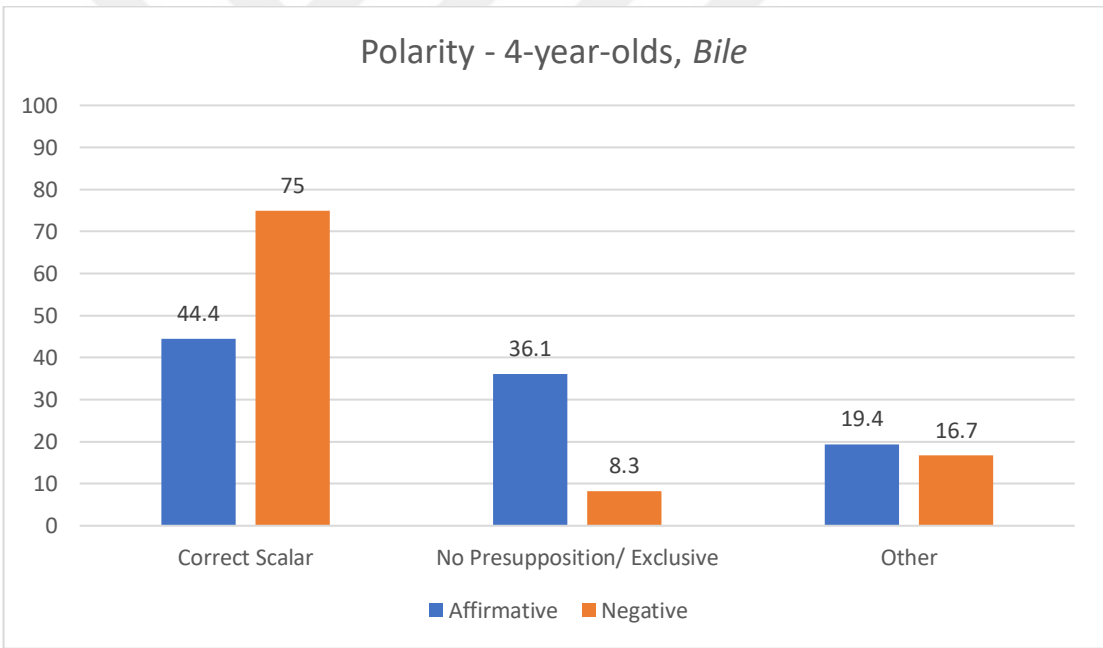


Figure 30. Distribution of 4-year-old children's responses according to Polarity

A chi-square test has also confirmed that there is a statistically significant difference between affirmative and negative sentences in this respect, $\chi^2(2)=9.14, p<.02$.

Interestingly, as can be seen in the chart below, 5-year-olds were also found to exhibit a similar bias towards giving more correct readings indicating a universal

inference in the negative *bile*-sentences than in affirmative *bile*-sentences, though this difference was not revealed to be statistically significant, $\chi^2(2)=3.96$, $p>.10$. This is also shown in Figure 31 below.

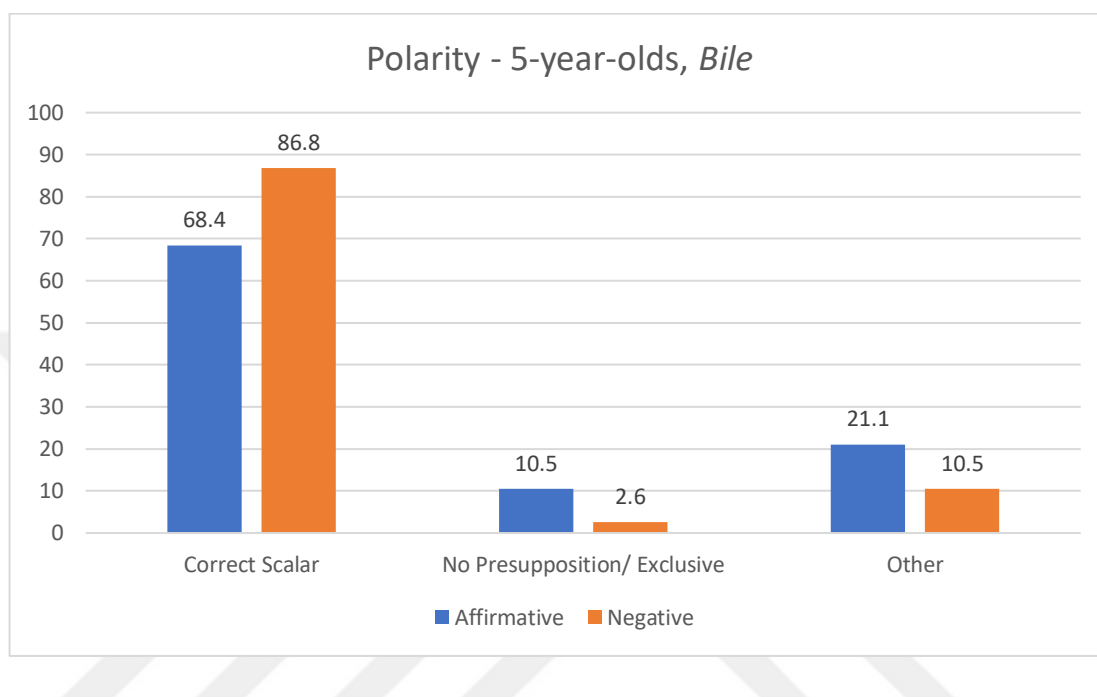


Figure 31. Distribution of 5-year-old children's responses according to Polarity

So, intriguingly, it appears that it is either easier to access the scalar presupposition introduced by *bile* (and hence to infer that the open proposition is true for all the higher-ranking alternatives made relevant in the context) in negative sentences or perhaps it is easier to assume that there can still be alternatives that are left out (i.e., a non-universal reading) in affirmative *bile*-sentences (such that the element associated with *bile* does not necessarily show us that its higher-ranking alternatives also verify the open proposition) and to assign exclusive/ exhaustive meanings to them. We will try to elaborate on this issue below, but let us now move on to report how children performed in the simplex non-*bile* sentences with respect to these 3 factors.

In non-*bile* sentences, too, we see that type of scale and type of outcome have no effect on children's performance in either age group, as presented in Figure 32, Figure 33, Figure 34, and Figure 35 below.

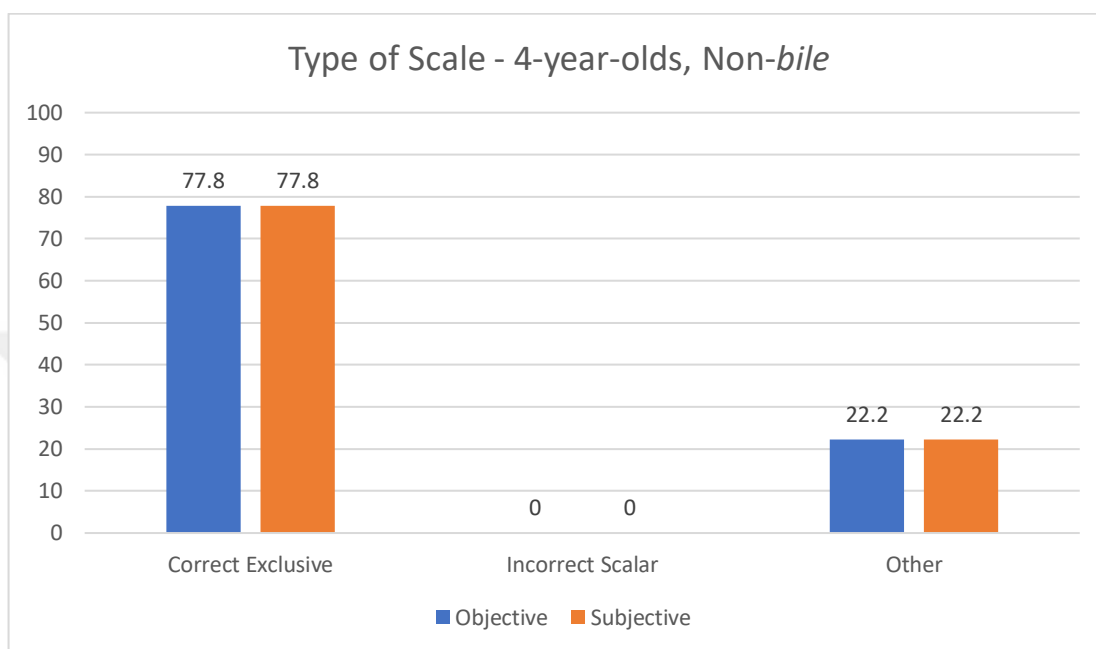


Figure 32. Distribution of 4-year-olds' responses according to Type of Scale

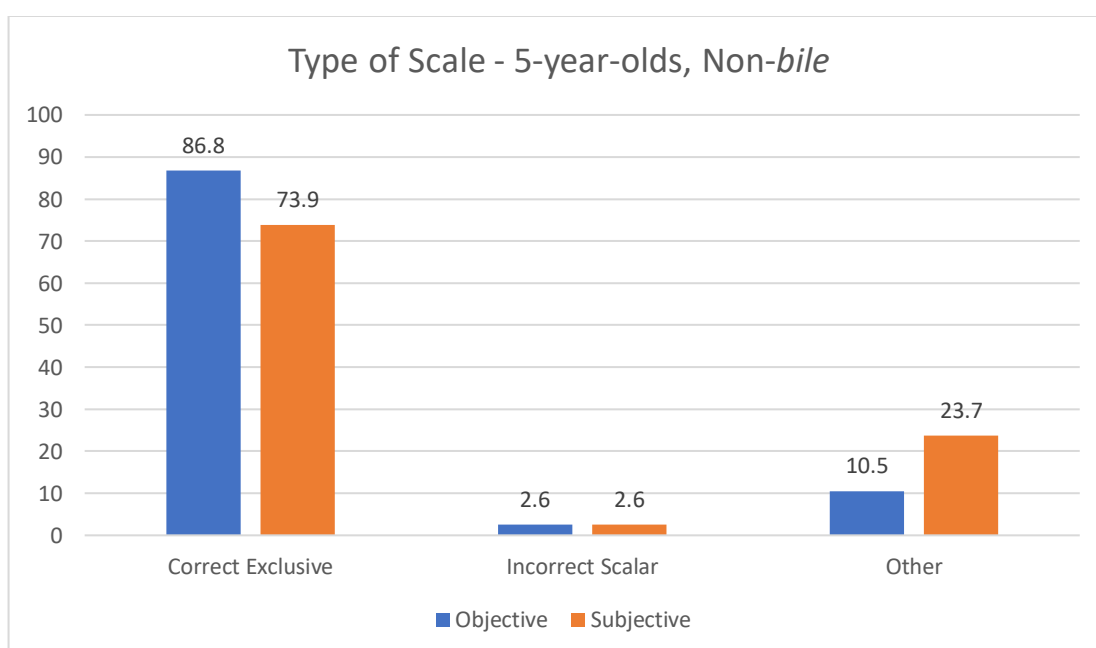


Figure 33. Distribution of 5-year-olds' responses according to Type of Scale

Statistical tests have also shown that the type of scale did not significantly alter children's response patterns either in the 4-year-old group ($\chi^2(2)=.0072, p=1$) or in the 5-year-old group ($\chi^2(2)=2.33, p>.30$).

Similarly, the type of outcome that Elmo's action brought about did not have an effect on performance either, and this was true for both the 4-year-olds ($\chi^2(2)=.0072, p=1$) and the 5-year-olds ($\chi^2(2)=2.22, p>.30$).

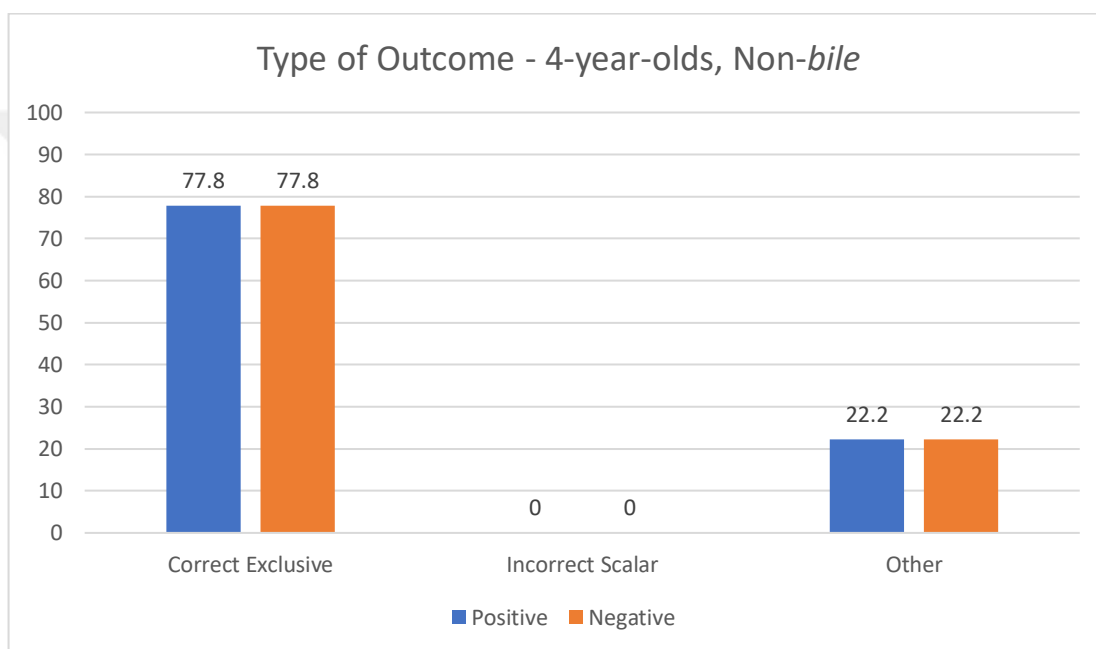


Figure 34. Distribution of 4-year-olds' responses according to Type of Outcome

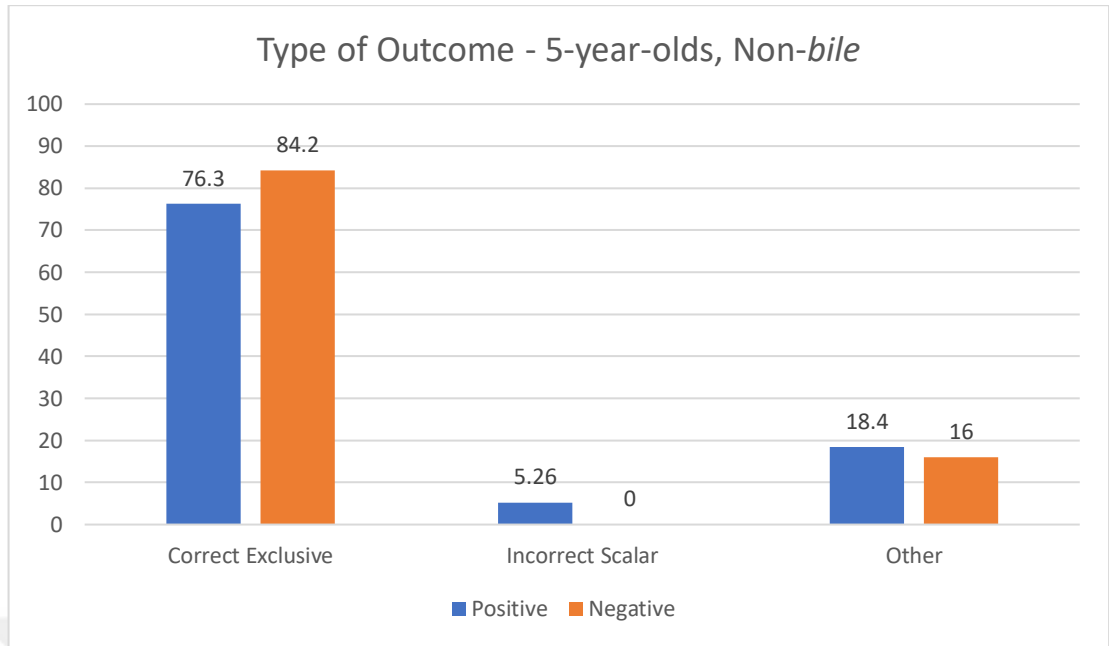


Figure 35. Distribution of 5-year-olds' responses according to Type of Outcome

But a significant difference was again observed between the affirmative and negative sentences, and it was found that children performed much better in affirmative sentences (e.g., *Elmayı yedim*) than in negative sentences (e.g., *Uçurtmayı alamadım*), in contrast to what was the case in the *bile*-sentences. This is shown in Figure 36 and Figure 37, provided below.

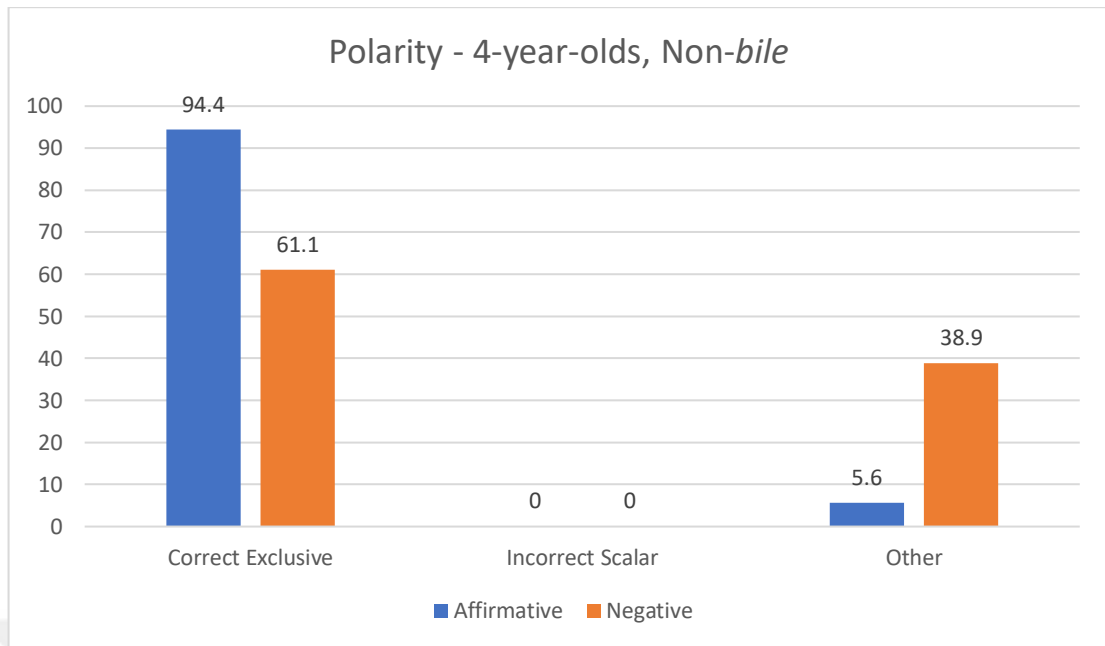


Figure 36. 4-year-olds' responses according to Polarity in non-*bile* sentences

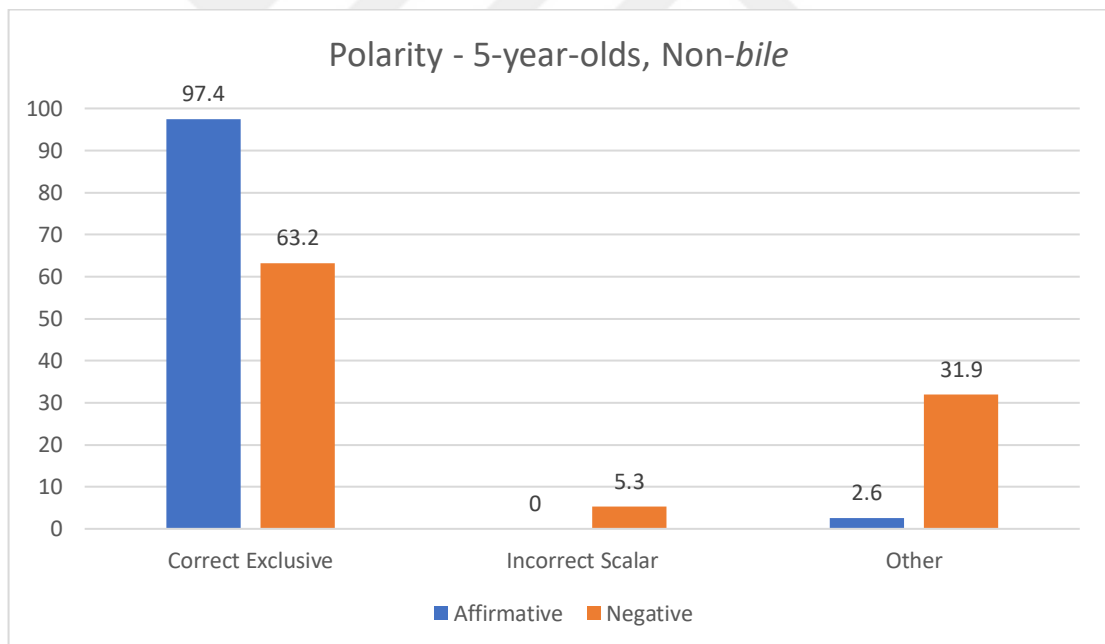


Figure 37. 5-year-olds' responses according to Polarity in non-*bile* sentences

The charts given above clearly show that both 4-year-olds and 5-year-olds are able to provide ad hoc exclusive readings in simplex non-*bile* sentences, when these sentences are affirmative. Indeed, the difference between affirmative and negative

sentences in this condition is found to be significant both for the 4-year-olds ($\chi^2(1)=11.57, p<.002$) and for the 5-year-olds ($\chi^2(2)=14.08, p<.002$). In fact, these results also show that the initial correct response rates we have obtained for these two groups of children by collapsing across both affirmative and negative sentences may be somewhat misleading. Because even though it appears that 4-year-olds have a correct exclusive interpretation rate of 77.8% and 5-year-olds have a correct exclusive interpretation rate of 80.3%, it appears that their exclusive interpretation rate would in fact be at almost the ceiling level if it were not pulled down by the low correct response rates in the negative sentences. To make sense of these data, I believe it is more natural to assume that it is the case that negative sentences elicit more incorrect (*other*-type errors), compared to assuming that there is something special about affirmative sentences that artificially drives up the correct response rate. In other words, the high performance in affirmative sentences is probably the norm rather than the exception. The question that remains to be answered is, of course, why negative sentences result in such a high proportion of *other*-type errors. Although I am unwilling to provide an ad hoc explanation for this difference at this point, I suppose it is possible to speculate that this high percentage of *other* errors in simplex negative sentences can be related to the necessity of instantiating the counterfactual affirmative counterpart of a negated situation (e.g., hearing a sentence like *I could not take the kite* may automatically necessitate the simulation of the situation that did not come to pass, i.e., taking the kite), leading to a more complex mental model (Kaup et al., 2007a, 2007b). In addition, some psycholinguistic studies conducted with adults have also shown that the memory retention of negative sentences are less robust than that of affirmative sentences, such that some negative expressions could be "misremembered" as if they had been affirmative (Mayo et al.,

2004). Thus it seems that there are some conceptual reasons for negative sentences to be harder to process and comprehend, and perhaps this could account for why children do not perform as well with simplex negative sentences as they do with simplex affirmative sentences.

As we have touched upon above, an intriguing point of note is that children are much better at accessing the presuppositions/implicatures evoked by *bile* when *bile* occurs in a negative sentence than in an affirmative sentence, and this tendency reaches statistical significance in the group of 4-year-olds. While the results at hand do not enable us to say anything conclusive about the potential causes of this tendency, there are at least two possible factors that could potentially explain this pattern of results. First of all, Turkish has a second scalar additive focus particle ('hatta') which only appears in affirmative contexts, as seen below.⁶⁰

(5) Sigara iç-mek astım-a, kalp hastalığ-ın-a, hatta kanser-e yol aç-abil-ir.

cigarette smoke-INF asthma-DAT heart disease-COMP-DAT even cancer
cause-ABIL-AOR

"Smoking can cause asthma, heart disease, and even [CANCER]_F."

Thus it is possible that there is a "blocking effect" induced by the presence of affirmative sentences with *hatta*, such that children might come to associate negative sentences with scalar presuppositions with *bile*, while they associate affirmative sentences with scalar presuppositions with *hatta*. Such a blocking effect could

⁶⁰ This is an expedient oversimplification. *Hatta* can actually also appear in negative contexts, but crucially, when it appears in negative contexts, it is often accompanied either by *bile* or *da*. For example the sentence *John does not like birthday parties, he even did not attend his own birthday party* could be translated into Turkish as *John doğum günü partilerini sevmez, hatta kendi doğum günü partisine bile / de katılmadı*. In the absence of *bile* or *da*, this sentence sounds odd, or at least somehow "incomplete." (?*John doğum günü partilerini sevmez, hatta kendi doğum günü partisine katılmadı*.)

potentially explain why the interpretation of affirmative *bile*-sentences is harder for young children. Of course, we need to admit that we have no solid evidence showing that this is the case yet. But it is an interesting aspect of Turkish that needs to be explored in future research.

Another relevant point concerns the relative pragmatic strength/robustness of *bile* when it is used in affirmative vs. negative contexts, as we have briefly touched upon in Section 4.1. To elaborate, the central question regarding the issue of pragmatic strength is whether the implicatures invoked by *bile*'s scalar presupposition (e.g., that affirmative *bile*-sentences imply an ALL reading and that negative *bile*-sentences imply a NONE reading) differ in the degree of their defeasibility depending on the polarity of the sentence. We have extensively explained – perhaps with a dose of idealization – that *bile*-sentences implicate the truth of the open proposition for the entities in the set of alternatives to the focused element, which is lower on a relevant likelihood scale compared to these alternatives, and is thus associated with *bile*. Thus, a sentence like (6a) implicates that Doruk could climb other mountains besides Everest, which were not as high as Everest; and (6b) implicates that Doruk failed to climb other mountains besides Vaalserberg, which were higher than Vaalserberg.⁶¹

(6) a. Doruk Everest'e bile tırman-abil-di.

Doruk Everest-DAT even climb-ABIL-PAST.3sg.

"Doruk could even climb [Mount Everest]_F."

⁶¹ Vaalserberg happens to be the highest mountain in the Netherlands, though with a height of 322 meters, it is dwarfed by Everest – and many other mountains.

b. Doruk Vaalserberg'e bile tırman-a-ma-dı.

Doruk Vaalserberg-DAT even climb-ABIL-NEG-PAST.3sg.

"Doruk could not even climb [Vaalserberg]_F."

Now, an interesting question is what happens when the affirmative and negative *bile*-sentences in (6a&b) are continued with an incongruent subsequent clause, as shown in (7a) and (7b), respectively.

(7) a. Doruk Everest'e bile tırman-abil-di, ama başka hiçbir dağ-a tırman-a-ma-dı.

Doruk Everest-DAT even climb-ABIL-PAST.3sg. but other no mountain-DAT climb-ABIL-NEG-PAST.3sg.

"Doruk could even climb [Mount Everest]_F, but he could not climb any other mountain."

b. ?Doruk Vaalserberg'e bile tırman-a-ma-dı, ama başka tüm dağ-lar-a tırman-dı.

Doruk Vaalserberg-DAT even climb-ABIL-NEG-PAST.3SG. but other all mountain-PL-DAT climb-PAST.3sg.

"Doruk could not even climb [Vaalserberg]_F, but he could climb all the other mountains."

As seen above, since affirmative *bile*-sentences should ordinarily implicate that the open proposition is true for ALL higher-ranking alternatives and negative *bile*-sentences should implicate that the negative open proposition is likewise true for ALL lower-ranking alternatives; sentence (6a) should mean that Doruk climbed all the mountains mentioned in the context, and sentence (6b) should mean that Doruk

was not able to climb any mountain relevant in the context. Given these presuppositions, it is clear that the subsequent clauses in (7a&b) are incongruent, as they contradict the implicature that the preceding clause carries. Thus, we can *only* interpret these sentences if these existential/universal implicatures are, in fact, defeasible.

Indeed I would argue that this is uncontroversially the case for affirmative *bile*-sentences. My intuition is that it is possible to detach *bile* from the universal implicatures it carries, and to mainly interpret it as a stylistic/rhetorical device that occurs as a concomitant of exaggeration, emphasis, or exaltation. In a sentence such as (7a), it is easy to adopt this interpretation. Saying that *Doruk even climbed [Mount Everest]_F* may be seen as a device to point out the difficulty of the task that Doruk accomplished, only to juxtapose this with the counterintuitive fact that Doruk has not been able to do things that were even easier, for heightened rhetorical effect.⁶²

⁶² Another issue that is worth bearing in mind concerns the polysemy of the abilitative suffix {-Abil}. Similar to the English modal *can*, {-Abil} can serve a range of closely interrelated, but nevertheless distinct functions, ranging from physical capability of fulfilling an action to having the opportunity/permission to perform an action, etc. Thus one could imagine that this polysemy is the primary reason why there is a difference in the acceptability of (7a) and (7b). For example, if people who read sentence (7a) assign a capability reading to the first {-Abil}, they can still accommodate the subsequent sentence by assigning an opportunity/permission reading to the second {-Abil}, i.e., maybe Doruk was such a good mountaineer that he was able to climb Mount Everest, but after that he did not have the opportunity to climb any other mountain. In (7b), however, committing to Doruk's incapability of climbing a very low mountain such as Vaalserberg in the first clause results in a contradiction when we come to the second clause. Irrespective of whether a capability or an opportunity/permission reading is assigned to the second {-Abil}, the subsequent clause will be at odds with the preceding clause, since the preceding clause has already established that Doruk is incapable of climbing even the lowest mountain. So (7b) might not be as easy to accommodate for speakers as (7a) is. That being said, as will be explained below in more detail, these judgments do not appear to change when the *bile*-sentences do not contain the abilitative morpheme. For example, we will introduce below the results of a mini-survey conducted with adults to see whether sentences parallel to (7a) and (7b) differed in their naturalness/acceptability. This survey contained a total of 10 sentences, where 5 sentences were affirmative, followed by an incongruent clause (i.e., similar to (7a)), and the remaining 5 were the negative versions of these sentences, again followed by an incongruent clause (i.e., similar to (7b)). Participants were asked to rate the naturalness/well-formedness of these sentences on a scale from 1 to 5, and sentences of type (7a) received an average acceptability score of 4.5, while negative sentences similar to (7b) received an average score of 1.5. Now, among the 10 sentences presented to the participants, 4 did not contain the abilitative morpheme. Interestingly, when we ignore the sentences that contained {-Abil} and only look at the scores that were given to the 4 sentences that lacked this morpheme, we see that affirmative sentences had an average score of 4.5, while negative sentences had an average acceptability score of 1.7. So it appears that there is a difference between the relative acceptability ratings of negative and affirmative

The question is whether the same rhetorical effect can also take precedence over the literal reading (where the primary function of *bile* is to evoke scalar presuppositions, which further give rise to universal implicatures in these contexts) in negative sentences as well. This, I believe, is less evident. My intuition as a native speaker of Turkish is that negative sentences such as (7b) are different from their affirmative counterparts (e.g., 7a) in terms of the defeasibility/ cancellability of their universal implicatures. It appears that a structure like *X did not even do Y* has higher pragmatic robustness (or its implicatures have lower defeasibility) in Turkish, such that, upon hearing such a sentence, I immediately construct a scalar model where NONE of the alternatives under consideration verifies the open proposition. After that stage, it is hard for me to tinker with the mental model I have already established to accommodate the new information (supplied in the subsequent clause) that Doruk had in fact climbed other mountains higher than Vaalserberg. So, for me, sentence (7b) is much more degraded in its acceptability than (7a). It thus appears that affirmative *bile*-sentences do not very strongly favor an ALL reading, while negative *bile*-sentences do reinforce a robust NONE reading that is not easily defeasible.

As a matter of fact, a semi-formal off-line judgment survey that I distributed to 5 native speakers of Turkish seems to confirm my intuitions in this regard. In this survey, I have supplied the participants with 5 short scenarios, after which 2 *bile*-sentences (1 affirmative and 1 negative) were presented, which were followed by incongruent subsequent clauses, as was the case for (7a) and (7b). In fact, the sentences (7a) and (7b) have been taken from this survey, and the background scenario that preceded them was as follows.

bile-sentences followed by incongruent/ contradictory clauses, even when no abilitative morpheme is present. So in the final analysis, I believe there is little reason to expect the polysemy of the abilitative morpheme to be the catalyst for the peculiar discrepancy found here.

Doruk bir dağcıdır ve bir rekor denemesi için 1 ay içerisinde Everest'e (8848 m), Kilimanjaro'ya (5895 m), Mont Blanc'a (4810 m), Fuji'ye (3776 m) ve Vaalserberg'e (Hollanda'nın 322.4 metre yüksekliğindeki en yüksek dağı) tırmanacaktır. Ancak Doruk ilginç bir ay geçirmiş anlaşılan.

Doruk is a mountaineer, and he will climb Mount Everest (8848 m), Mount Kilimanjaro (5895 m), Mont Blanc (4810 m), Mount Fuji (3776 m), and Vaalserberg (the highest mountain in the Netherlands with a height of 322 meters) within a month for a record attempt. But it seems Doruk had a very interesting month.

After this introductory scenario that clearly established the set of alternatives (i.e., the mountains which were ordered on a scale according to their height) and laid out a good context that would license universal implicatures (i.e., we point out that Doruk's goal is to climb ALL these mountains), the sentences given in (7a) and (7b) were presented, and participants were asked to rate the naturalness/ felicity of these sentences on a scale from 1 to 5, where 1 meant "it sounds very bad" and 5 meant "it sounds very good."⁶³

Interestingly, the respondents seemed to concur that negative sentences had indefeasible implicatures, as they have predominantly opted to give lower scores to negative *bile*-sentences, compared to affirmative *bile*-sentences. For example, the respondents gave affirmative *bile*-sentences followed by incongruent subsequent clauses an average well-formedness score of 4.5, while the average well-formedness score for negative *bile*-sentences followed by incongruent information was only 1.5. This indicates that the incongruent continuation was harder to tolerate after negative

⁶³ The complete questionnaire with all 5 items and the accompanying 10 sentences is given in Appendix D.

sentences, quite presumably because negative *bile*-sentences have higher pragmatic strength, and it is much harder to override the universal implicatures they carry.

Given these semi-formal findings, I believe it is possible to suspect that children's ability to more consistently access universal inferences in the presence of negative *bile*-sentences as opposed to affirmative ones could be attributable to this difference between their relative pragmatic strength. If a negative *bile*-sentence is a more robust cue for a NONE reading in comparison to an affirmative *bile*-sentence that is meant to cue an ALL reading, it is to be expected that universal inferences will be easier to comprehend in negative sentences, while errorful exclusive readings will be more dominant in affirmative sentences, as they seem to tolerate there being no other entity for which the open proposition is also true. The context certainly creates an expectation that the affirmative *bile*-sentence should cue an ALL reading, of course, and this tendency is clearly seen in the responses of adults and elementary school students. But perhaps lacking the attentiveness of adults and older children to these contextual cues, younger children of age 4 or 5 fail to infer this pragmatically-enriched reading and instead go for an exclusive reading that does not take into account the universal implicature. This reading is also technically allowed by affirmative *bile*-sentences, even though it might not be perfectly felicitous in the contexts we created for the test items in Experiment 3. But it is a permissible option, and as such, it could potentially explain the disparity between young children's performance in affirmative vs. negative *bile*-sentences.

A related question is what causes the difference in the defeasibility of the implicatures of *bile* in affirmative and negative sentences, of course. While discussing this issue is well beyond the scope of this thesis, I believe one could speculate that it is possible that the two *bile*'s that occur in affirmative and negative

contexts have specialized meanings and that they are not exactly synonymous. We have briefly pointed out in Chapter 1 that the word *bile* is also used as an adverbial to mean "already," when it occurs in sentence-final position (see 8a below). But this semantics is missing in negative sentences (8b), and rightly so, since the adverbial "already" fits together with an *already-completed* action, and would thus be incompatible with a negative sentence, which essentially reports that something has not been done.

(8) a. Deniz ödev-in-i bitir-di bile.

Deniz homework-POSS.3sg.-ACC finish-PAST.3sg. already

"Deniz already finished her homework."

b. ?*Deniz ödev-in-i bitir-ME-di bile.

"?*Deniz did not already finish her homework."

Thus, it seems that *bile* (in the sense of 'already') is better aligned with affirmative contexts than with negative contexts, simply because of its semantics. But it would be naive to assume that *bile* in the sense of *already* and *bile* in the sense of *even* are just two accidental homophones. It seems much more likely that these two functions of *bile* are connected, since they have enough semantic affinity to suggest a common origin. Thus *bile* might have had a broader meaning, where it signified some kind of "extension" or "completion" in affirmative contexts. In the sense of "already," *bile* indicates that an action has been fulfilled and crucially, a sentence such as (8a) can also be uttered as an "augmented" response to someone who asks a question that shows that s/he presupposes that Deniz has not done her homework yet. For example, if someone who assumes that Deniz has not done her homework asks "When will

Deniz go to her room and do her homework?" his/her interlocutor may reply by uttering sentence (8a). It is notable that asserting the "completedness" of the action of doing homework in this context in response to a question that appears to presuppose the opposite actually mimicks the function that *bile* fulfills when it is used as a focus particle as well. Just as (8a) debunks a hidden assumption of the questioner above (even though *bile* means already there), sentence (9) given below can also debunk a hidden assumption in a contextually-implied question, and challenge an expectation (i.e., the expectation that Deniz would not have completed her homework yet).

(9) Deniz yarın-in ödev-in-i bile bitir-di.

Deniz tomorrow-GEN homework-POSS.3sg.-ACC even finish-PAST.3sg.

"Deniz even finished [TOMORROW'S homework]_F."

Sentence (9) could felicitously be uttered in reply to the question "Did Deniz do her homework today?" for example. Since the speaker inquires about today's homework, we can confidently say that s/he definitely does not expect Deniz to have finished tomorrow's homework. Countering this question with a much stronger statement such as the one expressed by (9) also answers the hidden assumption in this question: Deniz even finished tomorrow's homework (and needless to say, she also finished today's homework). In fact, since the element that the focus particle *bile* is associated with is also a temporal expression (i.e., tomorrow), it is even easier to see the intimate connection between *already* and *even* here. She *already* completed tomorrow's homework, and when a task that was normally scheduled for later has *already* been done, so must have been a task that was scheduled to be finished earlier (i.e., doing today's homework). Thus, the scale of likelihood (more likely → less

likely) neatly maps onto a chronological scale (early → late) in this particular context, highlighting the affinity between *already* and *even*.

Perhaps nowhere is this affinity as apparent as it is in the presence of verb-focus, where *bile* is associated with the verb. Consider sentence (11a&b), uttered in response to the question (10).

- (10) Ayşe mektub-u yaz-dı mı?
Ayşe letter-ACC write-PAST.3sg. Q
"Did Ayşe write the letter?"

- (11) a. Evet, (hatta) postala-dı bile.
Yes, (even) mail-PAST.3sg. even.
"Yes, and she even mailed it."
b. Evet, (çoktan) postala-dı bile.
Yes, (already) mail-PAST.3sg. even.
"Yes, she already mailed it."

I think a sentence such as "Evet, postaladı bile" can be interpreted as having verb-focus (as in 11a) or *bile* can be interpreted to function as an adverbial meaning already, as is the case in (11b). These two different (but closely related) meanings can be highlighted further if we add another focus particle that augments the meaning of *even* (i.e., *hatta* in 11a) or if we add another time adverbial that augments the meaning of *already* (i.e., *çoktan* in 11b). This is presumably not a coincidence, and one could speculate that *bile* has this broad meaning that encompasses concepts like

completion in affirmative contexts, and perhaps it also evokes its existential/universal implicatures only as a secondary effect of having this semantics.

In contrast, *bile* (in the sense of *already*) is incompatible with negative contexts, due to a semantic clash, as pointed out above.⁶⁴ This discrepancy between *bile*'s functions in negative and affirmative contexts might suggest that *bile* evokes its universal implicatures in negative contexts by virtue of ruling out the possibility of the most likely action, and hence it signals a strong NONE reading. *Bile* in affirmative contexts, however, appears to be more amorphous, and the statement that the least likely action has come to pass seems to not as strongly implicate that ALL other actions that were more likely than this one have also been performed.

To re-iterate, the brief discussion I gave above has only been a mostly speculative excursion into the nuances of meaning that we see when *bile* is used in affirmative vs. negative contexts, but certainly more effort needs to be expended to disentangle all these intricacies, and this arduous task is way beyond the scope of this thesis, where we have aimed to explore how children interpret the presuppositions of (and implicatures related to) additive and scalar additive focus particles. It is to be hoped, however, that future studies will shed light on these intriguing questions.

Now, Chapter 5 will summarize the conclusions of this study, raise some additional questions, and suggest avenues for future research.

⁶⁴ The counterpart of *already* that is compatible with negative contexts is *yet* – and its Turkish counterpart would be *henüz*.

CHAPTER 5

CONCLUSION

5.1 Summary of proposals and findings

In this thesis, I have attempted to explore whether and how Turkish-speaking children can interpret the presuppositions introduced in contexts where the following logical elements appear: (i) the additive focus particle *dA*, (ii) the topic-change marker *dA*, (iii) the scalar additive focus particle *bile*.⁶⁵ As pointed out in Chapter 1, *dA* triggers the existential presupposition that the open proposition without the focussed item is also true of at least one other entity that is in a contextually relevant set of alternatives to the focussed item, when it is used as an additive focus particle. When it is used as a topic-shifter, *dA* still invokes a set of alternatives, since invoking alternatives is not only a concomitant of focus, but also a concomitant of contrastive topics. But as a topic-shifter, *dA*'s presence gives rise to a different presupposition, namely that there is an alternative proposition to the open proposition expressed by the sentence, and it is this alternative proposition that is true for the entity that is pitted against the contrastive topic marked with *dA*. Crucially, these two uses of *dA* are differentiated on prosodic grounds. Thus, our first experiment aimed to answer not only the question of whether and how children comprehend the meaning of these two homophonous particles, but also whether they can utilize prosody to distinguish between them to begin with.

Experiment 1 provided proof that Turkish-speaking children from 6 years of age onwards can use prosody to tell these two *dA*'s apart, as can be inferred from their overwhelming preference for same vs. different picture choices for additive and

⁶⁵ In the case of *bile*, existential implicatures were also of interest, of course.

topic-shifting *dA*'s, respectively. Considering that we have conducted an offline study that placed some task demands on the participants, it is also possible that the minimum age for comprehending *dA* might even be lower, and that this capability simply escaped detection in our task since some young children were not able to "do their best" due to the additional challenges of the task. This possibility is something that may need to be tackled in future studies. For children under 6, however, we have detected an interesting pattern, namely, that children in this age group largely made random picture choices in the presence of additive sentences (thus displaying a chance-level performance), while they had a quite high correct response rate in contrastive-topic sentences, suggesting an overall bias towards favoring contrastive readings. We have argued that this particular pattern of responses could be related to (i) a putative object-focus bias that leads children to treat object NPs as default foci, and thus to prefer contrastive-topic sentences (where the subject is the topic and the object is the focus) over additive-focus sentences (where the subject is the focus and the object is the topic), and to misinterpret some additive-focus sentences as if their subjects were contrastive topics, (ii) an inability to interpret the semantic contribution of *dA*, along with a pragmatic tendency to interpret juxtaposed propositions contrastively, due to the so-called contrastive implicature. Experiment 1 also tested children with SOV sentences with object-focus, but the results obtained in these sentences were quite mixed, and we concluded that this was presumably because these sentences, due to their complex semantic structure, required children to compute 3 different contrast sets, and this might have proved challenging for them in and of itself, making comprehension even harder.

Employing OSV sentences where *dA* was placed after the sentence-initial object, Experiment 2 aimed to investigate how children interpreted object-focus, and

also to tease apart the two hypotheses cited above as potential explanations for young children's tendency to prefer contrastive-topic readings. Interestingly, the results of Experiment 2 showed that, contrary to what had been found in Experiment 1, children preferred additive-focus readings over contrastive readings in O-*dA*-S-V sentences. Besides, unlike what happened in Experiment 1, there was also no age difference here with respect to the prevalence of this tendency. Both preschoolers and elementary school students performed significantly above chance-level in additive sentences, showing an overwhelming preference for correct additive readings; while both age groups performed below chance-level in the contrastive-topic condition. In fact, both groups also had a slight bias towards favoring additive readings in this condition as well. Based on the results, we have tentatively concluded that the contrastive-implicature hypothesis was not supported by these findings, though the findings appeared to lend support to an object-focus bias hypothesis, since in O-*dA*-S-V sentences where *dA* functions as an additive focus particle, the object is the focus. One should cautiously note, however, that the sample size in Experiment 2 was not as large as we would ideally like it to be, and further testing is needed to put flesh on the bones of this preliminary argument.

Experiment 3, on the other hand, explored whether and how Turkish-speaking children could interpret the scalar additive focus particle *bile*. *Bile* induces (i) a scalar presupposition, such that its associate is understood to be located at an endpoint of a pragmatically relevant scale, and (ii) supports a pertinent existential/universal implicature that the open proposition is also true for the other entities ranked lower on the relevant likelihood scale compared to *bile*'s associate, and this existential/universal implicature is thus a natural offshoot of the scalar presupposition.

The results obtained in Experiment 3 showed that even 4-year-old children were reasonably good at accessing the scalar presuppositions induced by *bile* and – not unrelated to that – the appropriate universal implicatures, opting for ALL readings in affirmative sentences and NONE readings in negative sentences.⁶⁶ But it was observed that children's ability to comprehend these presuppositions/ implicatures gradually increased with age, such that elementary school students (6-to-8-year-olds) achieved an adult-like performance with a near-ceiling correct response rate.

But perhaps the most interesting finding of Experiment 3 with respect to the comprehension of *bile* was that polarity had a significant effect on young children's interpretation of it, as 4-year-old children were shown to access universal inferences much more easily when the sentence they occurred in was negative than when it was affirmative. In fact, the same tendency was also observed in the 5-year-old group as well, though it did not reach statistical significance. Though we do not want to explain these results after the fact, we have mentioned two potential factors that could potentially motivate these results: (i) the presence of a competing scalar additive focus particle (i.e., *hatta*) that only appears in affirmative contexts unless it is also accompanied by *bile*, which might induce a blocking effect, or (ii) a possible difference that emerges in the semantics of *bile* when it occurs in affirmative vs. in negative contexts. But these factors, though they may have indeed played a role in bringing about these results, are speculative at this point; and more research is needed to bring these hypotheses to fruition and then to test them.

In addition, polarity was also found to be a decisive factor in the comprehension of simplex sentences that did not contain *bile*. In this condition, given

⁶⁶ Though for an alternative view that requires further testing, please see the explanation I have provided in footnote 59 of the previous chapter.

the contextual factors, it was expected that simplex sentences in the form of *I did X* would elicit ad hoc exclusive readings, giving rise to an interpretation along the lines of *I only did X*. Indeed, this was found to be the case in affirmative sentences. The same generalization also held for negative sentences, but it was less robust, since there was a considerable proportion (39% for 4-year-olds and 32% for 5-year-olds) of *other* errors as well. This is perhaps not too surprising either, since normally negative sentences are considered to be semantically and conceptually more complex than their affirmative counterparts.

There were two other factors that we suspected could have an effect on children's interpretations in this experiment, namely (i) the type of scale used (i.e., whether the scale in question was a contingent scale depending on a speaker's individual preferences or an logical scale depending on an uncontroversial ranking according to a physical magnitude), and (ii) the type of outcome (i.e., whether the action – or the lack thereof – mentioned in the sentence was designed to lead to a reward or denial of reward for Elmo). But these factors were shown to not have any effect on children's performance either in *bile*-sentences or in simplex non-*bile* sentences, so we concluded that children's interpretation did not vary depending on whether they had to attend to an incontestable physical scale or a contestable, contingent scale that requires a comprehender to reason about other people's desires, mental states, and/or priorities. Nor did the children perform differently depending on whether Elmo deserved a reward or not, which shows that children's responses were not swayed by a putative "altruism bias" that could prompt them to choose the interpretation that would give Elmo a reward, for example.

5.2 Future avenues of research

As pointed out above, I believe an inquiry into children's comprehension of focus particles that contribute presuppositional (rather than assertive) content to the sentence would greatly benefit from studies that make use of on-line tasks such as eye-tracking and/or EEG, as these tasks may eliminate any additional difficulties attributable to task demands, which may compromise children's performance. Thus, a potential future avenue of research may consider adapting these experimental designs for an online task and thus testing perhaps even younger children. For instance, it seems that the first two experiments would be particularly good candidates for adaptation for an eye-tracking task, as the picture-selection paradigm could easily be converted into a preferential looking paradigm, where the child would "select" the pictures by not pointing to them but by simply directing his/her gaze to them upon hearing the test sentence.

In addition, we have not been able to test a satisfactorily large sample of child subjects in Experiment 2, and our future studies could aim at amending this shortcoming by testing more children and thus obtaining more reliable results.

Another important issue that we have not been able to address in this thesis due to limitations of space and time is the issue of frequency. It is also possible that the relative frequencies of the occurrences of *dA* in different functions has an effect on children's performance, and research on the comprehension of focus particles could substantially benefit from a thorough corpus study that lays out the usage frequencies of these focus particles, as well as the common properties of the contexts in which they appear – if commonalities are found, that is. Of course, one limitation of conducting a corpus search of this kind is that, as far as *dA* is concerned, differentiating between different uses of *dA* depends on our ability to access the

prosodic structure, therefore written corpora are often not helpful, as they generally lack disambiguating contextual cues as well. For example, the two Turkish corpora found in the CHILDES database are not annotated for prosody, and nor are any recordings of the transcribed conversations available to the users. Even though some occurrences of *dA* are found in these corpora, it is in most cases impossible to tell whether a given instance of *dA* should be classified as an additive focus particle or a topic-change marker. Cognizant of this shortcoming, I have made an attempt to get a picture of the frequency distribution of different instances of *dA* by transcribing 3 old episodes of the TV show Sesame Street in Turkish (corresponding to roughly 100 minutes in total) and counting the occurrences of *dA*. In this mini corpus study, I have detected a total of 164 instances of *dA*, 77 of which could be classified as *additives* (47%), 43 of which were *topic-changers* (26%), and the remaining 44 were classified as *other* (27%). I have taken care to only label relatively uncontroversial additive-focus and contrastive-topic structures as such, and I provide 2 examples for each group below (1a&b for additives and 2a&b for topic-shifters).

(1) a. Ama devekuşu da bir kuştur ve bütün kuşlar uçabilir, öyle değil mi?

But ostrich also a bird-COP and all bird-PL fly-ABIL-AOR, so not Q

"But [an OSTRICH]_F is also a bird and all birds can fly, can't they?"

b. Kamyonun tekerleği var, sonra arabanın da tekerleği var.

truck-GEN wheel-POSS EXIST then car-GEN also wheel-POSS EXIST

"The truck has wheels, then [the CAR]_F also has wheels."

(2) a. Ben davulda bir parça çalacağım, sen de o parçayı sözle tekrarlayacaksın.

I drum-LOC a piece play-FUT-1sg. you dA that piece-ACC lyrics-COM
repeat-FUT-2sg.

"I will play a piece on the drum, and [you]_{CT} will repeat it with lyrics."

b. Şu nefis, taze, besleyici, ktır ktır, havucu da ben yiyeyim.

That delicious fresh nutritious crunchy carrot-ACC dA I eat-OPT-1sg.

"[I]_{CT} shall eat that delicious, fresh, nutritious, crunchy carrot."

While these cases are relatively straightforward and the numbers I just gave suggest at first glance that there are almost twice as many additives as topic-changers in the corpus, the picture is in fact more blurry than that. A crucial point of concern in this respect is the presence of *dA*'s that I have conflated under the umbrella term "other," for lack of a better term. But once we look at the individual *dA*'s subsumed under this umbrella term, we see great diversity. First of all, there are many multi-word conjunctions that contain the particle *dA*, such as *hem de* ("and also"), *bi' de* ("and also"), *şimdi de* ("and now"), *yine de* ("despite that," "even then"), *biraz da* ("and a little"), etc., and it is hard to fit them into an additive focus particle vs. topic-shifter dichotomy. One might discern, of course, that a conjunction like *şimdi de* leans towards a contrastive-topic reading (e.g., "I did this and this, *and now* I am doing this different thing"), and *hem de* appears to have more additive properties. But one can still be on the fence as to how every individual instance of *dA* should be categorized. In addition, there are even further uses of *dA* detected in the corpus that convey completely different meanings, such as continuative (3a&b), explanatory/exculpatory (4a&b), and even scalar additive (5).

(3) a. Bari gideyim de elbisesini provaya hazırlayayım.

if-so go-OPT-1sg. dA dress-POSS.3sg.-ACC rehearsal-DAT prepare-OPT-1sg.

"In that case, let me go and prepare her dress for the rehearsal."

b. Zeynep'i görsek de bi' sorsak.

Zeynep-ACC see-COND-1pl. dA once ask-COND-1pl.

"I hope we see Zeynep and ask her about it."⁶⁷

(4) a. Üç taş oynadım da o yüzden geç kaldım.

tic-tac-toe play-PAST.1sg. dA therefore late stay-PAST.1sg.

"I played tic-tac-toe and therefore I was late."

b. Hakan'la bahse girmiştik de...

Hakan-COM wager-DAT enter-PERF-PAST.1pl dA

"We had a wager with Hakan, so..."

(5) Tanımasak da fark etmez.

Know-NEG-COND-1pl. dA difference make-NEG-AOR.3sg.

"I wouldn't matter even if we did not know him."

Given the diversity of the different uses of *dA*, categorization proves to be a challenge. But one could still conceivably compile a prosody-annotated corpus of spoken language by recording and transcribing naturally-occurring conversations, preferably in child-directed speech, in a home environment. Such a corpus could be expected to supply more reliable results about the frequency statistics of different focus particles. If that is the case, however, one also needs to expend more effort and

⁶⁷ Note that this is actually an approximate translation, as it is very difficult – if not impossible – to find an equivalent structure in English.

time to home in on a more streamlined classification of different *dA*'s used in Turkish.

The same is true for *bile* as well. *Bile* is used in myriad contexts, and we have only dwelt upon two of its more common functions, namely its use as a scalar additive focus particle and as an adverbial meaning *already*. But *bile* also occurs in conditional structures (e.g., verb+sA *bile*), resulting in readings parallel to *even if X* in English. Besides, these conditional sentences can be used in factual or counterfactual contexts. Given this diversity of contexts and functions, it could prove fruitful to work out a "map" of the use of *bile*, marking how its different functions interact with these diverse contexts.

In addition, though we have smoothly partitioned the test sentences in which we used *bile* into two groups dubbed affirmative sentences and negative sentences, this ideal bifurcation is not always found in everyday conversation. Sometimes it might also be the case that the syntax and semantics of a *bile*-sentence are not aligned with each other, e.g., a structurally affirmative sentence can be semantically negative. An example for such an implicitly negative sentence could be something like *Ayşe en kolay dersten bile kaldı* ("Ayşe even failed the easiest course"), where the sentence has positive polarity, but the verb "to fail" has negative connotations – and indeed, this sentence could also be re-phrased as *Ayşe en kolay dersten bile geçemedi* ("Ayşe could not even pass the easiest course"), making the implicit negation hidden in "to fail" explicit by using an overt negation marker and a verb with positive content. In addition, there are also explicit negative contexts where negation is induced not at the sentential level, but by an affix attached to an adjectival predicate; for example in the sentence *Mehmet kendi çocuklarına karşı bile ilgisizdi* ("Mehmet was indifferent to/ disinterested in even his own children"). In

such a sentence, we do not find a sentential negation operator, but the negative content is expressed by the negative prefixes {in-} or {dis-} in English, and by the deprivative suffix {-siz} in Turkish. It is also worth investigating whether the asymmetry we have found between explicitly affirmative and negative *bile*-sentences would also hold in implicitly negative contexts or in contexts where negation is overt, but not expressed by a sentential negation operator.

As was the case for *dA*, I have also tried to conduct a small-scale corpus study to see in which contexts / syntactic structures *bile* was used, particularly focusing on the polarity aspect to see whether children's better performance in the negative contexts could be related to a potential preponderance of the use of *bile* in negative structures, for instance. For that purpose, I have randomly selected 500 occurrences of *bile* from the TS-corpus⁶⁸ (Sezer, 2017), and then I have annotated them by hand. Within this sample of 500 sentence snippets containing *bile*, there were 211 instances where *bile* occurred in an affirmative context (42.2%), 159 instances where it occurred in a negative context (31.8%), 10 instances where the sentence in which *bile* occurred was structurally affirmative but semantically negative (2%), 64 instances where the structure was conditional (i.e., *even if...*) (12.8%), 14 instances where it was used as an adverbial to mean "already," (2.8%) and 25 instances where the polarity of the sentence could not be determined (5%), as the sentence was incomplete, and the predicate was missing.⁶⁹ While these preliminary results suggest

⁶⁸ There were 325,551 matches in 2 different texts (in 491,360,398 words; frequency: 662.55 instances per million words). After downloading the results of this query as a .txt file, we could run a script to randomly select 500 matches from the list. I am indebted to Orhan Bilgin for writing the code that executes this command.

⁶⁹ When the results of a query in TS-corpus are downloaded as a file, the word that has been searched (here, *bile*) is presented as embedded in a context, with at least several other words following or preceding it. But sometimes when the sentence is a bit too long, this snippet that is captured in the list of the query results may not contain the predicate, which is often essential for determining polarity. One could get around this problem only by clicking on the query results in the website and seeing the "expanded" version of these contexts. But this was not possible in the .txt files I have downloaded to be able to randomly select a certain number of matches from the entire stack.

that the difference between children's performance in affirmative vs. negative contexts is probably not attributable to a frequency effect (as affirmative contexts appear to outnumber negative contexts) and thereby provide indirect support for our incipient hypothesis the high correct interpretation rate in negative sentences may be related to a difference in the semantics of *bile* as used in negative contexts, there still remains a lot to be sorted out. The effects of implicit and explicit negation needs to be explored more thoroughly, as well as the semantics of *even if* structures, as pointed out above. And while the small-scale corpus study I just presented constitutes a first attempt to provide a characterization of the contexts where *bile* is used and their relative frequencies, it is to be noted that the corpus we used was a written corpus that was compiled by sampling texts from websites, thus it is not necessarily representative of spoken Turkish, and much less of child-directed spoken Turkish. Thus, a corpus of child-directed Turkish could come in very handy to do this kind of a study in the future.⁷⁰

Finally, the difference that we detected between the comprehension of affirmative and negative *bile*-sentences still awaits a satisfactory explanation. Though I have attempted to point to some potential lines of inquiry that might promise success (e.g., a potential blocking effect induced by a competing near-synonymous scalar additive focus particle that is constrained to affirmative contexts, or a semantic difference that arises in the use of *bile* in affirmative vs. negative contexts), these suggestions I have made are yet to be materialized. Thus, future work could also try to make a more concrete attempt at investigating whether and to what degree these factors can account for children's tendency to access universal inferences better when *bile* is used in a negative context. Finally, our experiment on

⁷⁰ There were only 9 occurrences of *bile* (including those that were used to mean "already") in the Aksu corpus in CHILDES (Slobin, 1982), so I was not able to use them to draw any conclusions about the distribution of *bile* in child speech and child-directed speech in Turkish.

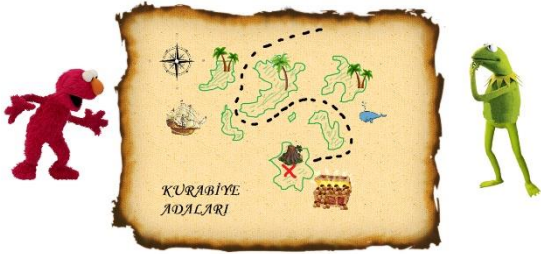
bile could also be administered to even younger children, since even the youngest group in our participant pool was generally good at interpreting *bile*-sentences.

Testing younger children may enable us to detect a larger number of (and potentially maybe also a greater variety of) errors, which might shed more light on the developmental trajectory of the acquisition of *bile*.



APPENDIX A
TEST STIMULI FOR EXPERIMENT 1

Background Story and Accompanying Images

One day, Kermit and Elmo find a treasure map.	 A red Muppet (Elmo) is holding a rolled-up treasure map. A green Muppet (Kermit) stands next to him, looking at the map.
The map shows that there is a chest of 'magical cookies' hidden in a cave in the Cookie Islands.	 A treasure map is shown with a dashed line leading to a chest. Elmo and Kermit are standing on either side of the map, looking at it.
Kermit and Elmo decide to go to the Cookie Islands to find this treasure, and they embark on a journey. On their way, they come across Big Bird and tell her about the treasure. Big Bird wishes them good luck and bids them goodbye and Kermit and Elmo depart.	 Big Bird is standing in the center, looking at Kermit and Elmo. Kermit is on the left, and Elmo is on the right, holding the treasure map.
Then Big Bird comes across Cookie Monster and tells him about the treasure in the Cookie Islands, and that Kermit and Elmo are on their way to the magical cookies. Cookie Monster gets mad at Big Bird for having let Elmo and Kermit go. He suggests that they secretly follow Elmo and Kermit to find out where the treasure is, and to claim the magical cookies.	 Cookie Monster is on the left, looking at Big Bird. Big Bird is on the right, looking back at Cookie Monster.

According to the plan, Cookie Monster will follow Elmo.	
Big Bird will follow Kermit.	
Along the way, Cookie Monster and Big Bird will communicate via their walkie-talkies and constantly share information about what Elmo and Kermit are doing, respectively. The child's task will be to choose the pictures that show what Elmo and Kermit are doing, based on the walkie-talkie conversations they eavesdrop on.	

Practice Items

<u>Item 1</u> Big Bird: Hey, Kurabiye Canavarı! Hava bugün biraz serin. Elmo ve Kermit'in sıkı giyinmesi gerekir, öyle değil mi? Mesela kazak veya palto giyebilirler. Cookie Monster: <i>gibberish</i> Big Bird: Elmo ne giymiş? Cookie Monster: <i>gibberish</i> Big Bird: Anlaşıldı, tamam. Demek Elmo palto giymiş. Kermit ise KAZAK giymiş. Big Bird: Hey, Cookie Monster! It is a bit cold today. Elmo and Kermit should be wearing warm clothes, right? For example, they could wear a sweater or a coat. Cookie Monster: <i>gibberish</i> Big Bird: What is Elmo wearing? Cookie Monster: <i>gibberish</i>	
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Big Bird: Copy that. So Elmo is wearing a coat. As for Kermit, he is wearing a SWEATER.	
<u>Pictures to choose from</u>	
	
	
<u>Item 2</u> Cookie Monster: Hey, Minik Kuş, baksana yağmur yağmaya başladı. Elmo ve Kermit'in şemsiye açmaları lazım. Big Bird: <i>gibberish</i> Cookie Monster: Kermit'in şemsiyesi ne renk? Big Bird: <i>gibberish</i> Cookie Monster: Anlaşıldı, tamam. Demek Kermit'in sarı bi şemsiyesi var. ELMO'NUN da sarı bi şemsiyesi var. Cookie Monster: Hey, Big Bird, look, it has started to rain. Elmo and Kermit need to open an umbrella. Big Bird: <i>gibberish</i> Cookie Monster: What color is Kermit's umbrella? Big Bird: <i>gibberish</i>	

Cookie Monster: Copy that. So Kermit has a yellow umbrella. ELMO, too, has a yellow umbrella.

Pictures to choose from



Item 3

Big Bird: Hey, Kurabiye Canavarı! Elmo'yla Kermit'in yolculuğa çıkarken bavul hazırlamış olmaları lazım.

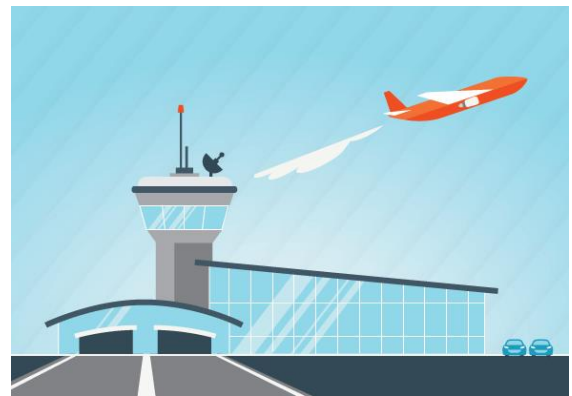
Cookie Monster: *gibberish*

Big Bird: Elmo'nun bavulu büyük mü yoksa küçük mü?

Cookie Monster: *gibberish*

Big Bird: Anlaşıldı, tamam. Demek Elmo'nun büyük bir bavulu var. Kermit'in de || KÜÇÜK bir bavulu var.

Big Bird: Hey, Cookie Monster! Elmo and Kermit must have packed their suitcases before starting on this



journey. Cookie Monster: <i>gibberish</i> Big Bird: Is Elmo's suitcase big or small? Cookie Monster: <i>gibberish</i> Big Bird: Copy that. So Elmo has a big suitcase. As for Kermit, he has a SMALL suitcase.	
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<u>Pictures to choose from</u>	
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Test Items

Item 1

Cookie Monster: Hey Minik Kuş,
orda mısın?

Big Bird: *gibberish*

Cookie Monster: Kermit'i
gözetliyorsun di mi? Kafede
oturuyolar. Sanırım sandviç veya
pasta yiyecekler.

Big Bird: *gibberish*

Cookie Monster: Kermit ne yiyo?

Big Bird: *gibberish*

Cookie Monster: Anlaşıldı, tamam.
Elmo da || PASTA yiyo.

Cookie Monster: Hey Big Bird, are
you there?

Big Bird: *gibberish*

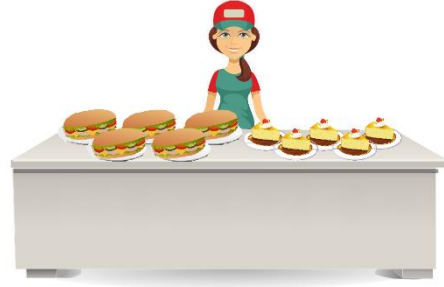
Cookie Monster: You're spying on
Kermit, right? They are sitting in the
cafe. I guess they will eat a sandwich
or a cake.

Big Bird: *gibberish*

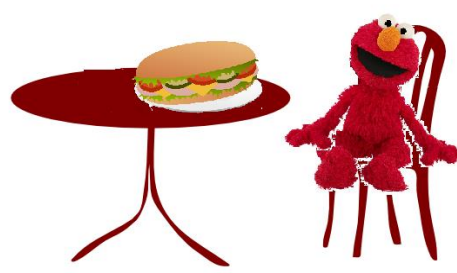
Cookie Monster: What is Kermit
eating?

Big Bird: *gibberish*

Cookie Monster: Copy that. As for
Elmo, he is eating a CAKE.



Pictures to choose from





Item 2

Big Bird: Hey, Kurabiye Canavarı!
Şunu gördün mü? Sanırım Elmo ve
Kermit okumak için kitap veya
gazete almak istiyorlar.

Cookie Monster: *gibberish*

Big Bird: Elmo ne okuyo?

Cookie Monster: *gibberish*

Big Bird: Anlaşıldı, tamam.

KERMİT de gazete okuyo.



Big Bird: Hey, Cookie Monster! Did
you see that? I think Elmo and
Kermit want to buy books or
newspapers to read.

Cookie Monster: *gibberish*

Big Bird: What is Elmo reading?

Cookie Monster: *gibberish*

Big Bird: Copy that. KERMIT, too,
is reading a newspaper.

Pictures to choose from



Item 3

Cookie Monster: Hey Minik Kuş,
beni duyuyo musun?
Big Bird: *gibberish*
Cookie Monster: Güzel. Baksana
hostesler meyve suyu ve çay
getiriyolar.
Big Bird: *gibberish*
Cookie Monster: Kermit ne içiyo?
Big Bird: *gibberish*
Cookie Monster: Anlaşıldı, tamam.
Elmo da || MEYVE SUYU içiyo.



Cookie Monster: Hey, Big Bird, can
you hear me?
Big Bird: *gibberish*
Cookie Monster: Nice. Look, the
flight attendants are serving juice and
tea.
Big Bird: *gibberish*
Cookie Monster: What is Kermit
drinking?
Big Bird: *gibberish*
Cookie Monster: Copy that. As for
Elmo, he is drinking JUICE.



Pictures to choose from



Item 4

Big Bird: Hey, Kurabiye Canavarı!
Çölde bi kaktüs ve bi palmiye var,
Kermit ve Elmo fotoğraf çekmek
istiyolar sanırım.

Cookie Monster: *gibberish*

Big Bird: Elmo neyin fotoğrafını
çektı?

Cookie Monster: *gibberish*

Big Bird: Anlaşıldı, tamam. Kermit ||
PALMİYENİN de fotoğrafını çekti.

Big Bird: Hey, Cookie Monster!
There is a cactus and a palm tree in
the desert, I think Kermit and Elmo
want to photograph them.

Cookie Monster: *gibberish*

Big Bird: What did Elmo
photograph?

Cookie Monster: *gibberish*



Big Bird: Copy that. As for Kermit, he photographed the PALM TREE, too.

Pictures to choose from



Item 5

Cookie Monster: Hey, Minik Kuş!
Baksana, Kermit ve Elmo bi deveye
veya bi ata binip çölü geçicekler
sanırım. Çok heyecanlıyım, acaba
hangi hayvanlara binicekler?

Big Bird: *gibberish*

Cookie Monster: Kermit hangi
hayvana bindi?

Big Bird: *gibberish*

Cookie Monster: Anlaşıldı, tamam.
ELMO da deveye bindi.



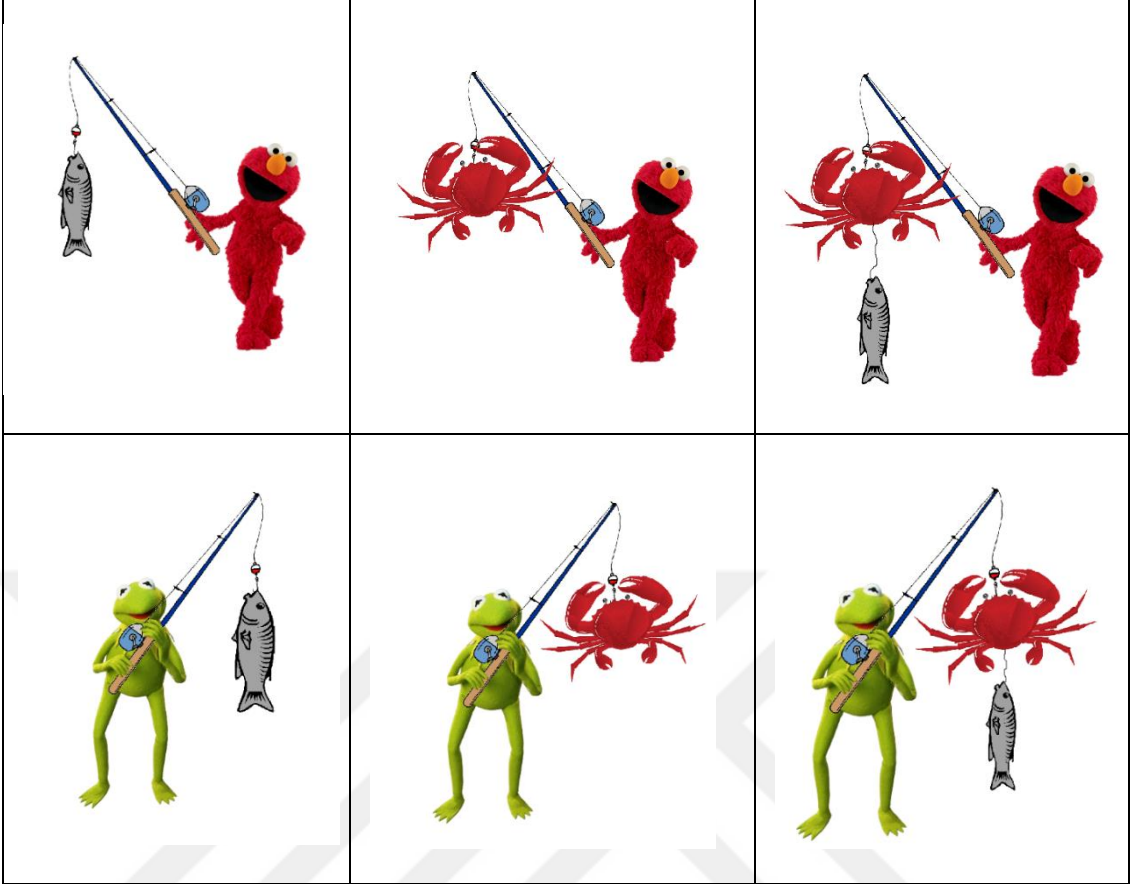
Cookie Monster: Hey Big Bird!
Look, I think Kermit and Elmo will
cross the desert by riding a camel or
a horse. I am very excited, I wonder
which animals they will ride.

Big Bird: *gibberish*

Cookie Monster: Which animal is
Kermit riding?

Big Bird: <i>gibberish</i> Cookie Monster: Copy that. ELMO, too, is riding a camel.	
<u>Pictures to choose from</u>	
	
	
<u>Item 6</u> Big Bird: Hey Kurabiye Canavarı, baksana Kermit ve Elmo'nun karınları açıldı sanırım, oltayla balık veya yengeç yakalamak istiyorlar. Cookie Monster: <i>gibberish</i> Big Bird: Elmo ne yakaladı? Cookie Monster: <i>gibberish</i> Big Bird: Anlaşıldı, tamam. Kermit YENGEÇ de yakaladı. Big Bird: Hey, Cookie Monster, look, I think Kermit and Elmo are hungry, they want to catch fish or crabs with fishing rods. Cookie Monster: <i>gibberish</i> Big Bird: What did Elmo catch? Cookie Monster: <i>gibberish</i> Big Bird: Copy that. As for Kermit, he caught a CRAB, too.	

Pictures to choose from



Item 7

Cookie Monster: Hey, Minik Kuş!
Baksana Kermit ve Elmo Kurabiye
Adaları'na yelkenliyle veya kayıkla
gidicekler galiba.
Big Bird: *gibberish*
Cookie Monster: Kermit neyle
gidiyo?
Big Bird: *gibberish*
Cookie Monster: Anlaşıldı, tamam.
Elmo da || KAYIKLA gidiyo.

Cookie Monster: Hey, Big Bird!
Look, it seems Kermit and Elmo will
go to the Cookie Islands by sailboat
or by rowboat.
Big Bird: *gibberish*
Cookie Monster: How is Kermit
going there?
Big Bird: *gibberish*
Cookie Monster: Copy that. As for
Elmo, he is going by ROWBOAT.



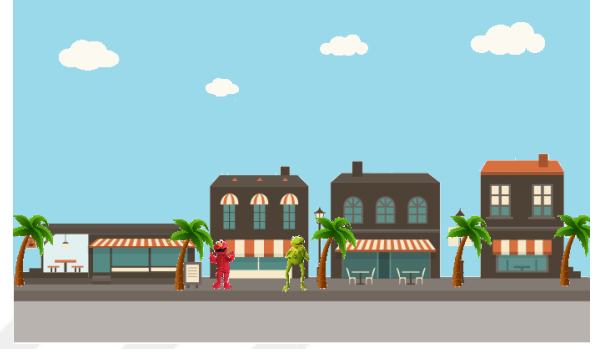
Pictures to choose from



Item 8

Big Bird: Hey, Kurabiye Canavarı!
Elmo'yla Kermit güneş gözlüğü ve
şapka satılan bir dükkana girdiler
gördün mü? Bence kesin şapka veya
gözlük takıp kılık değiştirecekler.
Cookie Monster: *gibberish*
Big Bird: Elmo ne taktı?
Cookie Monster: *gibberish*
Big Bird: Anlaşıldı, tamam.
KERMIT de şapka taktı.

Big Bird: Hey, Cookie Monster!
Elmo and Kermit just went into a
store where sunglasses and hats are
sold, did you see that? I am sure they
will put on hats or sunglasses to
disguise themselves.
Cookie Monster: *gibberish*
Big Bird: What did Elmo put on?
Cookie Monster: *gibberish*
Big Bird: Copy that. KERMIT, too,
put on a hat.



Pictures to choose from



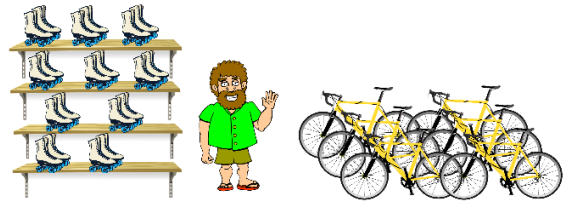


Item 9

Cookie Monster: Hey Minik Kuş,
baksana Kermit ve Elmo hazinenin
olduğu yere hızlı gitmek için paten
veya bisiklet almak istiyolar galiba.
Big Bird: *gibberish*
Cookie Monster: Kermit ne aldı?
Big Bird: *gibberish*
Cookie Monster: Anlaşıldı, tamam.
ELMO da paten aldı.



Cookie Monster: Hey, Big Bird,
look, Kermit and Elmo probably
want to buy rollerskates or bicycles
in order to go to the location of the
treasure very fast.
Big Bird: *gibberish*
Cookie Monster: What did Kermit
buy?
Big Bird: *gibberish*
Cookie Monster: Copy that. ELMO,
too, bought rollerskates.



Pictures to choose from



Item 10

Big Bird: Hey, Kurabiye Canavarı!
Bu mağara çok karanlık. Ama
Elmo'yla Kermit mum veya fener
tutup mağarayı aydınlatacaklar
sanırım.

Cookie Monster: *gibberish*

Big Bird: Elmo ne tutuyo?

Cookie Monster: *gibberish*

Big Bird: Anlaşıldı, tamam. Kermit
de || FENER tutuyo.

Big Bird: Hey, Cookie Monster! This
cave is very dark. But I think Elmo
and Kermit will illuminate the cave
by holding candles or lamps.

Cookie Monster: *gibberish*

Big Bird: What is Elmo holding?

Cookie Monster: *gibberish*

Big Bird: Copy that. As for Kermit,
he is holding a lamp.



Pictures to choose from



Conclusion of the story

Kermit and Elmo find the treasure chest with magical cookies inside the cave and take it out.



Then Cookie Monster and Big Bird appear from where they had been hiding, and lay a claim to the cookies.



Since they are all good friends, Elmo and Kermit offer Cookie Monster and Big Bird to share the cookies, and they accept this offer. The four friends celebrate their reconciliation with a party.



APPENDIX B

TEST STIMULI FOR EXPERIMENT 2

Background Story and Accompanying Images

Today, Kermit and Big Bird are going to Grandma's house, because she called them to ask for help.	
Grandma is going to the park to rest and have fun, but her trip also means that she will not be able to take care of her household chores. Instead, she made a list of these chores, which she hands to Kermit and Big Bird. They should do these chores before she comes back.	
When Grandma arrives in the park, she takes out her cellphone and calls Elmo and Cookie Monster. She tells them that she instructed Kermit and Big Bird to do some chores for her, and that she intends to reward them when she comes back. But she has to know who did what, in order to reward them fairly.	
Elmo and Cookie Monster's job is to secretly observe Kermit and Big Bird and make a note of what they are doing. They will be sharing information via their walkie-talkies. The child's task will be to choose the pictures that show which tasks are carried out by which person (Kermit or Big Bird?), based on the walkie-talkie conversations they eavesdrop on.	

Practice Items

Item 1

Elmo: Hey, Kurabiye Canavarı! Evin ve çitlerin boyanması gerekiyor, öyle değil mi?

Cookie Monster: *gibberish*

Elmo: Evi kim boyadı?

Cookie Monster: *gibberish*

Elmo: Anlaşıldı, tamam. Demek evi MİNİK KUŞ boyadı. Çitleri ise || KERMIT boyadı.



Elmo: Hey, Cookie Monster! The house and the fence need to be painted, don't they?

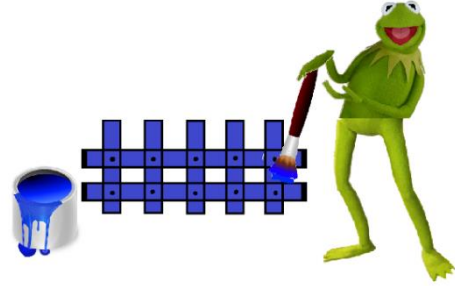
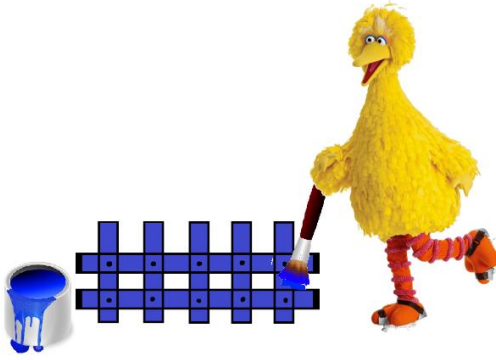
Cookie Monster: *gibberish*

Elmo: Who painted the house?

Cookie Monster: *gibberish*

Elmo: Copy that. So BIG BIRD painted the house. As for the fence, KERMIT painted it.

Pictures to choose from





Item 2

Cookie Monster: Hey, Elmo! Ağaçtaki elmaların ve muzların toplanması gerekiyor, öyle değil mi?

Elmo: *gibberish*

Cookie Monster: Elmaları kim topladı?

Elmo: *gibberish*

Cookie Monster: Anlaşıldı, tamam.

Demek elmaları MİNİK KUŞ topladı.

MUZLARI da Minik Kuş topladı.



Cookie Monster: Hey, Elmo! The apples and bananas on the trees must be picked, right?

Elmo: *gibberish*

Cookie Monster: Who picked the apples?

Elmo: *gibberish*

Cookie Monster: Copy that. So BIG

BIRD picked the apples. Big Bird picked the BANANAS, too.

Pictures to choose from



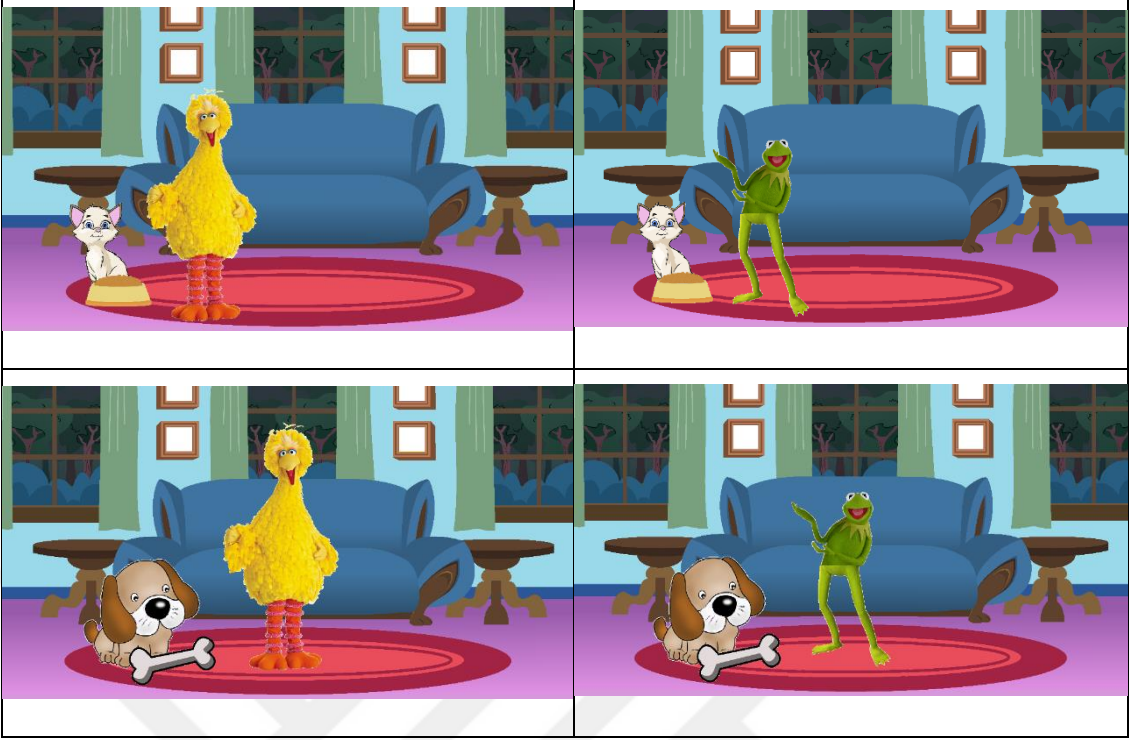
Item 3

Elmo: Hey, Kurabiye Canavarı! Kedinin ve köpeğin karınları açılmış. Beslenmeleri gerekiyor, öyle değil mi?
 Cookie Monster: *gibberish*
 Elmo: Kediye kim besledi?
 Cookie Monster: *gibberish*
 Elmo: Anlaşıldı, tamam. Demek kediye KERMIT besledi. Köpeği de || MİNİK KUŞ besledi.

Elmo: Hey, Cookie Monster! The cat and the dog are hungry. They must be fed, right?
 Cookie Monster: *gibberish*
 Elmo: Who fed the cat?
 Cookie Monster: *gibberish*
 Elmo: Copy that. So KERMIT fed the cat. As for the dog, BIG BIRD fed it.



Pictures to choose from



Test Items

Item 1

Cookie Monster: Hey, Elmo! Bahçedeki güllerin ve lalelerin sulanması gerekiyor, öyle değil mi?

Elmo: *gibberish*

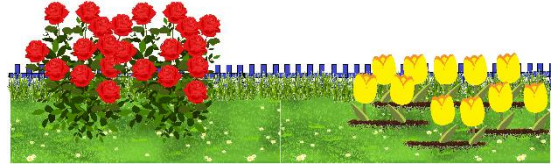
Cookie Monster: Gülleri kim suladı?

Elmo: *gibberish*

Cookie Monster: Anlaşıldı, tamam.

A: LALELERİ de Kermit suladı.

B: Laleleri de || KERMIT suladı.



Cookie Monster: Hey Elmo! The roses and the tulips in the garden must be watered, right?

Elmo: *gibberish*

Cookie Monster: Who watered the roses?

Elmo: *gibberish*

Cookie Monster: Copy that.

A: Kermit watered the TULIPS, too.

B: As for the tulips, KERMIT watered them.

Pictures to choose from



Item 2

Elmo: Hey, Kurabiye Canavarı!
Baksana, büyükanne evden çıkmadan
önce mutfakta kek ve kurabiye
hazırlamış, ama pişirememiş. Onların
pişirilmesi gerekiyor, öyle değil mi?
Cookie Monster: *gibberish*
Elmo: Keki kim pişirdi?
Cookie Monster: *gibberish*
Elmo: Anlaşıldı, tamam.

A: KURABIYELERİ de Minik Kuş
pişirdi.

B: Kurabiyeleri de || MİNİK KUŞ
pişirdi.

Elmo: Hey, Cookie Monster! Look,
Grandma prepared a cake and cookies
before she left home, but she did not
bake them. They must be baked, right?
Cookie Monster: *gibberish*
Elmo: Who baked the cake?



Cookie Monster: *gibberish*

Elmo: Copy that.

A: Big Bird baked the COOKIES, too.

B: As for the cookies, BIG BIRD baked them.

Pictures to choose from



Item 3

Cookie Monster: Hey, Elmo! Baksana, banyoda kirli çamaşırlar, ve mutfakta bulaşıklar var. Bunların yıkanması gerekiyor, öyle değil mi?

Elmo: *gibberish*

Cookie Monster: Çamaşırları kim



yıkadı?

Elmo: *gibberish*

Cookie Monster: Anlaşıldı, tamam.

A: Bulaşıkları da || KERMIT yıkadı.

B: BULAŞIKLARI da Kermit yıkadı.

Cookie Monster: Hey, Elmo! Look, there is dirty laundry in the bathroom, and dirty dishes in the kitchen. They must be washed, right?

Elmo: *gibberish*

Cookie Monster: Who washed the laundry?

Elmo: *gibberish*

Cookie Monster: Copy that.

A: As for the dishes, KERMIT washed them.

B: Kermit washed the DISHES, too.

Pictures to choose from



Item 4

Elmo: Hey, Kurabiye Canavarı!
Baksana, kedi ile köpek banyoda ve
mutfakta gezinip her yerde pati izi
bırakmışlar. Banyonun ve mutfağın
paspaslanması gerekiyor, öyle değil mi?
Cookie Monster: *gibberish*
Elmo: Banyoyu kim paspasladı?
Cookie Monster: *gibberish*
Elmo: Anlaşıldı, tamam.

A: Mutfağı da || MİNİK KUŞ
paspasladı.

B: MUTFAĞI da Minik Kuş paspasladı.

Elmo: Hey, Cookie Monster! Look, the
cat and the dog walked around in the
bathroom and in the kitchen, and left
paw stains everywhere. The bathroom
and the kitchen must be mopped, right?

Cookie Monster: *gibberish*

Elmo: Who mopped the bathroom?

Cookie Monster: *gibberish*

Elmo: Copy that.

A: As for the kitchen, BIG BIRD
mopped it.

B: Big Bird mopped the KITCHEN, too.



Pictures to choose from





Item 5

Cookie Monster: Hey, Elmo! Baksana, dışarıda asılı olan tişörtler ve pantolonlar kurumuş. Şimdi ütülenmeleri gerekiyor, öyle değil mi?

Elmo: *gibberish*

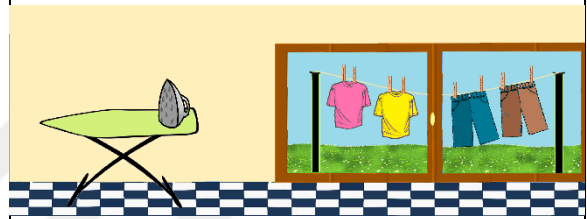
Cookie Monster: Tişörtleri kim ütüledi?

Elmo: *gibberish*

Cookie Monster: Anlaşıldı, tamam.

A: PANTOLONLARI da Minik Kuş ütüledi.

B: Pantolonları da || MİNİK KUŞ ütüledi.



Cookie Monster: Hey, Elmo! Look, the t-shirts and pants hanged outside have dried. Now they must be ironed, right?

Elmo: *gibberish*

Cookie Monster: Who ironed the t-shirts?

Elmo: *gibberish*

Cookie Monster: Copy that.

A: Big Bird ironed the PANTS, too.

B: As for the pants, BIG BIRD ironed them.

Pictures to choose from



Item 6

Elmo: Hey, Kurabiye Canavarı!
Salondaki çerçeve ve vazo çok
tozlanmış. Temizlenmeleri gerekiyor,
öyle değil mi?
Cookie Monster: *gibberish*
Elmo: Çerçeveyi kim temizledi?
Cookie Monster: *gibberish*
Elmo: Anlaşıldı, tamam.

A: Vazoyu da || KERMIT temizledi.
B: VAZOYU da Kermit temizledi.

Elmo: Hey, Cookie Monster! The
picture frame and the vase in the living
room have caught a lot of dust. They
must be cleaned, right?
Cookie Monster: *gibberish*
Elmo: Who cleaned the frame?
Cookie Monster: *gibberish*
Elmo: Copy that.



A: As for the vase, KERMIT cleaned it.
B: Kermit cleaned the VASE, too.

Pictures to choose from



Item 7

Cookie Monster: Hey, Elmo!
Büyükanne'nin odasındaki giysilerin ve
ayakkabıların dolaba yerleştirilmesi
gerekıyor, öyle değil mi?
Elmo: *gibberish*
Cookie Monster: Giysileri kim
yerleştirdi?
Elmo: *gibberish*
Cookie Monster: Anlaşıldı, tamam.

A: Ayakkabıları da || MİNİK KUŞ
yerleştirdi.
B: AYAKKABILARI da Minik Kuş
yerleştirdi.

Cookie Monster: Hey, Elmo! The
clothes and the shoes in Grandma's
room must be put away in the wardrobe,
right?
Elmo: *gibberish*



Cookie Monster: Who put away the clothes?

Elmo: *gibberish*

Cookie Monster: Copy that.

A: As for the shoes, BIG BIRD put them away.

B: Big Bird put away the SHOES, too.

Pictures to choose from



Item 8

Elmo: Hey, Kurabiye Canavarı! Büyükanne birazdan eve dönecek, ama evde yemek ve su yok. Pizzacının ve sucunun eve çağırılması lazım, öyle değil mi?

Cookie Monster: *gibberish*

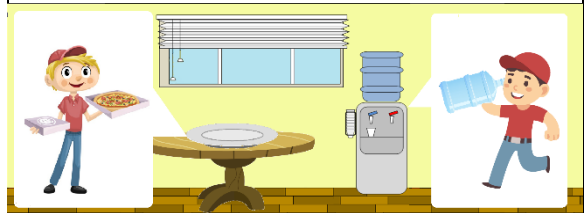
Elmo: Pizzacıyı kim çağırdı?

Cookie Monster: *gibberish*

Elmo: Anlaşıldı, tamam.

A: SUCUYU da Kermit çağırdı.

B: Sucuyu da || KERMIT çağırdı.



Elmo: Hey, Cookie Monster! Grandma will be home shortly, but there is no food or water at home. Someone needs to call the pizza guy and the water guy, right?

Cookie Monster: *gibberish*

Elmo: Who called the pizza guy?

Cookie Monster: *gibberish*

Elmo: Copy that.

A: Kermit called the WATER GUY, too.

B: As for the water guy, KERMIT called him.

Pictures to choose from



APPENDIX C

TEST STIMULI FOR EXPERIMENT 3

Background Story

Today, friends and family members will ask Elmo to do some things. Sometimes these may be requests of assistance, or sometimes Elmo may be asked to comply with a rule. If Elmo can succeed in fulfilling these tasks or requests, he will receive a reward (i.e., the child will throw a paper-coin into Elmo's piggy bank), but if Elmo cannot fulfill these tasks or requests, he will not receive a reward. Children are expected to explain why Elmo can (or cannot) qualify for a reward in each case.

Practice Items

Item 1

Abby has three dogs and the dogs have three kennels made of wood. Abby wants Elmo to paint **all** of these kennels.

Abby's final question (at the end of her turn, before Elmo speaks in reply to her):

- Elmo, kulübeleri boyadın mı? (Elmo, did you paint the kennels?)

Elmo's response:

- Bütün kulübeleri boyadım. (I painted all the kennels.)

Expected outcome: REWARD



Item 2

Elmo and Zoe are at a carnival arcade where one can win a teddy bear by hitting **at least one** of the three targets with a dart. Zoe wants Elmo to hit at least one target and win a teddy bear for her.

Zoe's final question:

- Herhangi bir hedefi vurabildin mi?



(Were you able to hit any of the targets?)

Elmo's response:

- Hiçbir hedefi vuramadım.
(I could not hit any target.)

Expected outcome: NO REWARD



Test Items

Item 1

Elmo and Kermit are on a sailboat, but Kermit looks pensive. He is a bit sad, because he dropped his belongings (a wristwatch, a pair of shoes, and a toy train) into the sea. He asks Elmo to dive into the sea and pick up **all** his belongings. As can be seen in the picture, the wristwatch is the easiest item to retrieve, since it is the one closest to the surface; while the train is the most difficult one to retrieve, as it is deep in the bottom of the sea.

Kermit's final question:

- Eşyalarımı denizden çıkarabildin mi?

(Have you been able to take out my belongings (from the sea)?)

Elmo's response:

- Trenini bile çıkarabildim.
(Group A)

(I could even take out your train.)

Expected outcome: REWARD

- Saatini çıkarabildim. (Group B)

(I could take out your wristwatch.)

Expected outcome: NO REWARD



Item 2

Elmo sees three toys on the table and he wants to play with them. He loves the robot and is particularly keen on playing with it, while he is neutral to the snowglobe, and he does not like the airplane very much. Nonetheless, Elmo's mother soon appears and says that the toys belong to Elmo's cousins, and Elmo must not play with **any** of them.

Mom's final question:

- Ben yokken kuzenlerinin oyuncaklarıyla oynadın mı?

(Did you play with your cousins' toys while I was away?)

Elmo's response:

- Robotla bile oynamadım. (Group A)

(I did not even play with the robot.)

Expected outcome: REWARD

- Uçakla oynamadım. (Group B)

(I did not play with the airplane.)

Expected outcome: NO REWARD



Item 3

Elmo's mother brought three food items to Elmo: stuffed cabbage rolls, a fish, and an apple. Elmo loves the apple, is neutral to the fish, but he hates the cabbage rolls. His mother, however, wants him to eat **all** three of these food items.

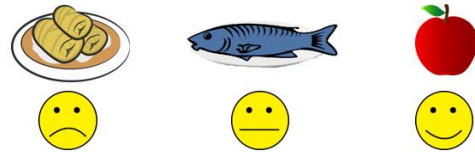
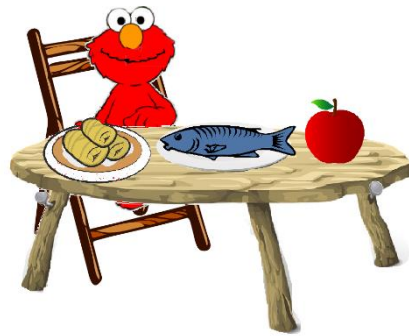
Mom's final question:

- Ben yokken yiyeceklerini yedin mi?

(Did you eat your foodstuffs while I was away?)

Elmo's response:

- Elmayı yedim. (Group A)



(I ate the apple.) Expected outcome: NO REWARD Dolmaları bile yedim. (Group B) (I even ate the stuffed cabbage rolls.) Expected outcome: REWARD	
<u>Item 4</u> Elmo and his father are in their vegetable garden. There are carrots, maize, and tomatoes in this garden. They pick them and put them in baskets. Elmo's father tells him that his grandma is going to cook and therefore Elmo has to carry all of these vegetable baskets to grandma's house, without dropping any of the vegetables. As can be seen on the picture, it is very easy to carry the carrots without dropping them, while it is only moderately difficult to carry the maize. But it is very difficult to carry the large heap of tomatoes without dropping any of them. <u>Dad's final question:</u> - Sebzeleri büyükannene yere düşürmeden götürebildin mi? (Were you able to take the vegetables to your grandma without dropping them?) <u>Elmo's response:</u> - Havuçları düşürmedim. (Group A) (I did not drop the carrots.) Expected outcome: NO REWARD - Domatesleri bile düşürmedim. (Group B) (I did not even drop the tomatoes.) Expected outcome: REWARD	

Item 5

Abby is going for a walk with her mother, and she asks Elmo to take care of her cat in the mean time. One of the things Elmo is supposed to do is to feed the cat, and there are three meals that he can give her: an egg, some fish, and a big chunk of meat. As her cat is very fat, Abby specifically requests that Elmo **not** give **all** food items to the cat.

Abby's final question:

- Kedime yiyecek verdin mi?

(Did you give food to my cat?)

Elmo's response:

- Kedime eti bile verdim.
(Group A)

(I even gave the meat to your cat.)

Expected outcome: NO REWARD

- Kedime yumurtayı verdim.
(Group B)

(I gave the egg to your cat.)

Expected outcome: REWARD



Item 6

Abby is sad, because all her toys (a kite, a football, and a balloon) got stuck among the branches of a tree. She asks Elmo to retrieve **at least one** toy from the tree, so that she might have at least one toy to play with. As can be seen on the picture, the balloon is on the lowest branch, so it is the easiest item to retrieve; while it is expected that the kite will be the hardest item to retrieve, due to its height.

Abby's final question:

- Oyuncaklarımı ağaçtan alabildin mi?

(Were you able to take my toys from the tree?)



<u>Elmo's response:</u> • Uçurtmayı alamadım. (Group A) (I could not take the kite.) Expected outcome: REWARD • Balonu bile alamadım. (Group B) (I could not even take the balloon.) Expected outcome: NO REWARD	
<u>Item 7</u> Elmo has been playing with LEGOs and he has built three buildings: a house, a skyscraper, and a castle. Now he is going to build something else, and he will need LEGO pieces for this project, so he will have to take apart these buildings. His friend Abby, however, asks him to not destroy at least one of these buildings, so that she may use it as a dollhouse. As can be seen on the picture, Elmo loves the castle the most among the three buildings, so we can anticipate that he would be most averse to destroying this building. But he does not like the house at all, so he might be more willing to destroy it, if need be. <u>Abby's final question:</u> • Yapıları bozdun mu? (Did you take apart the buildings?) <u>Elmo's response:</u> • Evi bozdum. (Group A) (I took the house apart.) Expected outcome: REWARD • Şatoyu bile bozdum. (Group B) (I even took the castle apart.) Expected response: NO REWARD	

Item 8

Elmo's grandpa brought him three books as gifts. There is a book about princesses, a book about pirates, and a book about dragons. Grandpa asks Elmo to read **at least one** of these books. As can be seen on the picture, Elmo dislikes the princess-book, while he somewhat likes the pirate-book, and he really loves the dragon-book.

Grandpa's final question:

- Hafta sonu hiç kitap okudun mu?

(Did you read any books on the weekend?)

Elmo's response:

- Ejderha kitabını bile okumadım. (Group A)

(I did not even read the dragon-book.)

Expected outcome: NO REWARD

- Prenses kitabını okumadım. (Group B)

(I did not read the princess-book.)

Expected outcome: REWARD



APPENDIX D

SURVEY

Aşağıdaki senaryolarla ilgili olarak verilen a ve b tümcelerini doğallık açısından 1'den 5'e kadar puan vererek değerlendirebilir misiniz? (Tümcelerın yanına puanınızı yazabilirsiniz. 1- çok kötü, 5-çok iyi)

Please rate the "naturalness" of the sentences a and b given below on a scale from 1 to 5 in relation to the scenarios provided. (You can write your scores next to the sentences. 1- very bad, 5- very good)

1) Ali dil öğrenmeyi çok sevmektedir ve şu ana dek Azerice, İspanyolca, Fransızca, İtalyanca ve Çince dersleri almıştır.

Ali loves learning languages, and until now, he has taken classes in Azeri, Spanish, French, Italian, and Chinese.

a) Ali Çince bile öğrendi, ama diğer hiçbir dili öğrenemedi.

(Ali even learned Chinese, but he could not learn any other language.)

b) Ali Azerice bile öğrenemedi, ama diğer tüm dilleri öğrendi.

(Ali could not even learn Azeri, but he learned all the other languages.)

2) Ayşe büyüyünce tarih öğretmeni olmak istediği için tarih dersine büyük bir ilgiyle çalışmaktadır ve notları genelde çok yüksektir, ancak diğer derslerden (özellikle matematikten hep kötü notlar almaktadır). Yalnız Ayşe'nin bu dönemki karnesi daha önceki dönemlere göre biraz daha ilginç.

Since Ayşe wants to be a history teacher when she grows up, she studies history with great interest and her grades are generally very high, but she always gets bad grades in other classes, especially in math. But Ayşe's report card this semester is more interesting compared to her earlier ones.

a) Ayşe matematikten bile geçti, ama başka hiçbir dersten geçemedi.

(Ayşe even passed math, but she could not pass any other class.)

b) Ayşe tarihten bile geçemedi, ama başka tüm derslerden geçti.

(Ayşe could not even pass history, but she passed all the other classes.)

3) Doruk bir dağcıdır ve bir rekor denemesi için 1 ay içerisinde Everest'e (8848 m), Kilimanjaro'ya (5895 m), Mont Blanc'a (4810 m), Fuji'ye (3776 m) ve Vaalserberg'e (Hollanda'nın 322.4 metre yüksekliğindeki heybetli mi heybetli en yüksek dağı) tırmanacaktır. Ancak Doruk ilginç bir ay geçirmiş anlaşılan.

Doruk is a mountaineer and for a record trial, he wants to climb Mount Everest (8848 m), Mount Kilimanjaro (5895 m), Mont Blanc (4810 m), Mount Fuji (3776 m) and Vaalserberg

(the highest mountain in the Netherlands with a height of 322.4 meters), within a month. But it seems Doruk had a very interesting month.

a) Doruk Everest'e bile tırmandı, ama başka hiçbir dağa tırmanamadı.

(Doruk even climbed Mount Everest, but he could not climb any other mountain.)

b) Doruk Vaalserberg'e bile tırmanamadı, ama diğer tüm dağlara tırmandı.

(Doruk could not even climb Vaalserberg, but he climbed all the other mountains.)

4) Normalde kitap okuma ödevlerini sadece kitap özeti okuyarak geçiştirmeye çalışan Recep bu kez bir değişiklik yapıp yaz tatilinde Cin Ali serisini, Tom Sawyer'ın Maceraları'nı, Anne Frank'ın Günlüğü'nü, Aşk ve Gurur'u, ve Suç ve Ceza'yı okumaya karar verir. Ama bu yaz ilginç şeyler olmuş anlaşılan.

Though Recep normally only reads book summaries, this summer he decided to make a change and read the Cin Ali series, the Adventures of Tom Sawyer, the Diary of Anne Frank, Pride and Prejudice, and Crime and Punishment. But it seems interesting things happened this summer.

a) Recep Suç ve Ceza'yı bile okudu, ama başka hiçbir kitabı okumadı.

(Recep even read Crime and Punishment, but he did not read any other book.)

b) Recep Cin Ali serisini bile okumadı, ama başka tüm kitapları okudu.

(Recep did not even read the Cin Ali series, but he read all the other books.)

5) Güneş ve Deniz soğuk havalardan nefret eden yeni evli bir çifttir, ve seyahat acentasından aldıkları katalogdan balayı için gidebilecekleri yerlere bakıp beğendikleri ve katılmayı düşünebilecekleri turları - haklarında daha fazla bilgi alabilmek için - katalogda işaretlemektedirler. Söz konusu seyahat acentası Antarktika'ya, Norveç'e, İngiltere'ye, İtalya'ya, ve Maldivler'e turlar düzenlemektedir. Ama Güneş ve Deniz tatilleri için biraz şaşırtıcı kararlar vermişler.

Güneş and Deniz are a newly-married couple that hates cold weather, and they are perusing the catalogue they got from the travel agency, and marking the destinations they can travel to for their honeymoon. The travel agency in question organizes tours to Antarctica, Norway, England, Italy, and the Maledives. Güneş and Deniz made some surprising decisions for their honeymoon.

a) Güneş Antarktika'yı bile beğenmiş, ama diğer hiçbir destinasyonu beğenmemiş.

(Güneş even liked Antarctica, but she did not like any other destination.)

b) Güneş Maldivler'i bile beğenmemiş, ama diğer tüm destinasyonları beğenmiş.

(Güneş did not even like the Maledives, but she liked all the other destinations.)

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