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# Production, perception, and processing of focus in Turkish

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DISSERTATION

*submitted in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy (Dr. phil.) in Linguistics  
at the Faculty of Human Sciences*

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*Presented by*

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# List of Abbreviations

<b>1SG</b>	first person singular	<b>THM</b>	thematic suffix
<b>3SG</b>	third person singular	<b>TM</b>	topic marker
<b>ACC</b>	accusative marker	<b>TOP</b>	topic
<b>COM</b>	comment	<b>V</b>	verb
<b>DAT</b>	dative marker		
<b>DEF</b>	definite		
<b>DP</b>	determiner phrase		
<b>F</b>	feminine		
<b>FM</b>	focus marker		
<b>FOC</b>	focus		
<b>IMPF</b>	imperfective marker		
<b>IND.PAST</b>	indirect evidential past marker		
<b>IO3</b>	indirect object third person		
<b>LOC</b>	locative marker		
<b>NOM</b>	nominative marker		
<b>NP</b>	noun phrase		
<b>NV</b>	neutral version		
<b>O(BJ)</b>	object		
<b>PERF</b>	perfective marker		
<b>PL</b>	plural		
<b>POSS</b>	possessive marker		
<b>PROG</b>	progressive marker		
<b>PRS</b>	present marker		
<b>PRT</b>	preterite marker		
<b>QP</b>	question particle		
<b>REL</b>	relative marker		
<b>S(UBJ)</b>	subject		
<b>SA</b>	subject affix		





# Chapter 1

## General introduction

Communication is more than the mere transmission of information in the form of the words' meanings. Language in coherent communication requires consideration of what was said previously and what communicative partners know or want to know at any given moment or, to be more precise, what the speaker assumes the partners know or aim to know (see Krifka & Musan, 2012). In other words, information in language is 'packaged' according to the communicative context and informational needs of the interlocutors (see Chafe, 1976). For example, consider the English statements of *Mary bought the red dress*, and *It is the red dress that Mary bought* as brief examples. Fundamentally, these utterances convey the same information that a person *Mary* acquired something, *the red dress*. Let us suppose a communicative situation in which the interlocutors are specifically interested in who bought the red dress, either explicitly by posing the question *Who bought the red dress?* or implicitly, where the speaker merely assumes the interlocutors' interest. In this case, only the former utterance *Mary bought the red dress* is an appropriate, congruent answer, given that the syntactic subject *Mary*, being the so-called *focus* of the utterance, is realised with prosodic prominence of some kind. If, however, the interlocutors are interested in the question *What did Mary buy, the blue dress or the red dress?*, both utterances might be valid contributions to communication if *the blue dress* was not bought, rendering the object *the red dress* as the so-called *contrastive focus* (see Neeleman & Vermeulen, 2013). This aspect of language that involves the packaging of information according to context and interlocutors' current informational states and needs is called information structure (IS).

While the term *information structure* was introduced by Halliday (1967) in the second half of the past century, the idea that information in language consists of different information groups or packages "goes back to Plato and Aristotle" (von Heusinger, 1999, p. 104). As such, the notions subsumed under IS have undergone periods of research driven by distinct scientific periods and communities. As explored by von Heusinger (1999) in greater detail, the concept of IS was

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advanced in the German tradition by Hermann Paul (1880/1995), Georg von der Gabelentz et al. (1891/2016), and Hermann Ammann (1928/1969), the French tradition spearheaded by Henri Weil (1844), and the foundational work of the Prague School driven by works like Mathesius (1929), Firbas (1964), and Sgall et al. (1973). However, one detrimental consequence of these various contributions is that IS is plagued by imprecise concepts and terminology. Focus, being the basic IS notion of interest in this dissertation, is not immune to this problem:

It is difficult to trace back the history of “focus” as a linguistic notion, because the concept was expressed in different terms, the term was used to express different concepts, and it may be that there was not even a uniform concept in the first place. (Krifka & Musan, 2012, p. 6)

Crucially, the multitude of approaches and understandings of focus abound to this day, with researchers defining focus differently, considering conceptual dimensions of focus to different degrees, and using different encodings of focus in their experiments, ultimately culminating in inconsistencies in the research on focus (see Benatar & Clifton, 2014 for such consequences in focus processing studies). Research on focus in Turkish also exhibits such discrepancies, which we argue to be, at least partially, due to divergent or antiquated approaches to the notion of focus itself and related concepts. Given the extensively variable word order in Turkish and considering the ongoing debate surrounding the role of focus as outlined below, a clear understanding of how focus is realised and perceived in Turkish is crucial to our understanding of Turkish in general, lending motivation for this dissertation.

At the beginning of this general introduction, the encoding or realisation of focus in English indicated the involvement of prosodic and syntactic means. For focus realisation in Turkish, syntactic means of focus realisation have garnered most of the attention ever since the seminal work of Erguvanlı (1984). Notwithstanding a large number of studies on focus in Turkish, approaches continue to be disjointed. Divergencies mainly revolve around the word order variability of Turkish and the highly debated assumption of an immediately preverbal focus position (e.g., see Göksel & Özsoy, 2000; Kılıçaslan, 2004; Özge & Bozşahin, 2010). Another aspect of debate and uncertainty revolves around prosodic focus realisations in Turkish. While there is a small number of experimental investigations on the role of prosody and intonation in Turkish focus realisation, these investigations differ regarding whether or to which degree they presuppose a focus position (e.g., see Gürer, 2020; İvoşeviç & Bekâr, 2015; Kamali, 2014). In general, the literature on focus in Turkish is fragmented, with a clear need for experimental studies investigating focus realisation in Turkish in a bottom-to-top manner, going from production investigations free of the debated presumption regarding

a possible focus position, over studies on the perception of the observed realisations, to processing investigations. Given this need for experimental investigations independent of the debate in the literature regarding focus positioning in Turkish, the central goal of this dissertation is to provide such research based on a clearly defined, modern framework of IS and focus. Notably, we present three experimental studies on the production, perception, and processing of focus in Turkish, with their interconnected central research questions outlined below.

## 1.1 Issues addressed in this dissertation

Considering the need for experimental studies independent of positional restrictions in Turkish focus research, the current project addressed the following three core issues:

We first investigated how native speakers realise focus. Controlling for the focus dimensions of *focus size* (broad sentence focus vs narrow constituent focus), *focus target* (narrow subject focus vs narrow object focus), *focus type* (new-information focus vs contrastive focus), and *wh-question configuration* (in-situ SOV questions vs scrambled OSV questions), we specifically evaluated the effects of these focus dimensions on word order and acoustic measures (i.e., intensity and fundamental frequency) in Turkish focus realisations. Data on this issue were collected by conducting a production experiment in which transitive focus-bearing answers were elicited through *wh*-questions and contextual animations manipulated for the focus dimensions of interest mentioned above.

Secondly, the answers elicited in our production experiment were further investigated in a perception experiment. As will be elaborated on in the next chapter, the concept of a focus position is ill-defined in itself. Focus position can be understood as a strict limitation of focus positioning, an understanding that can be tested through our production experiment alone, or as a preferred, but not necessary focus realisation pattern. Investigating the latter understanding of focus position, the core question in our perception experiment was whether immediately preverbal foci in Turkish are preferred over other focus realisations. Using timed *yes/no* acceptability judgements in listening, we investigated (i) whether answers to *wh*-questions with left-peripheral, non-immediately preverbal (i.e., peripheral) focus display any processing cost (i.e., lower and/or slower acceptability judgments) when compared to answers with focus realised in the presumed immediately preverbal focus position, (ii) whether either focus target (narrow subject focus vs narrow object focus) in peripheral position is associated with any processing cost when compared to their immediately preverbally focused

counterparts, and (iii) whether either focus type (new-information focus vs contrastive focus) is preferred at the immediately preverbal or the peripheral position. Drawing from our observations in the production experiment, we also investigated (iv) whether answers to contrastive focus questions are interchangeable with answers to new-information focus questions, and (v) whether contrastive focus-bearing answers to closed alternative questions are interchangeable with contrastive focus-bearing answers to corrective questions.

Lastly, a processing experiment was conducted using self-paced reading to investigate potential effects of the focal word order variability in Turkish on comprehension. Following the only existing study of this kind by Uzun et al. (2021), we particularly investigated potential effects of *focus position* (i.e., whether the read sentence contains an immediately preverbal focus or a peripheral focus), *focus target* (i.e., whether the read sentence contains a focused subject or a focused object), and *syntactic function* (i.e., whether the read constituent is the syntactic subject or the syntactic object) on the processing of canonical and non-canonical focus-bearing answers to *wh*-questions. Simultaneously, we expanded the analysis of Uzun et al. by including the focus dimension of *focus type*, comparing given new-information foci to non-given contrastive foci elicited through closed *wh*-questions.

## 1.2 Structure of the dissertation

The current dissertation consists of three experiments and is structured as follows: **Chapter 2** provides an IS framework to this dissertation, primarily drawing from the work of Krifka and Musan (2012). Here, we present definitions and examples of the central notions of IS, as well as presenting an overview of their realisation mechanisms observed cross-linguistically. Turning to our experimental investigations, we present our production experiment in detail in **Chapter 3**, together with a review of the existing research on focus realisation in Turkish, emphasising the issue of the supposed focus position in Turkish. The perception experiment is presented in **Chapter 4**, investigating the realisations observed in chapter 3, further presenting the few existing experimental studies on the perception of focus in Turkish. Our processing experiment is presented in **Chapter 5**, with a literature review on the role of focus in processing in general and in Turkish. Finally, our observations and findings across these three experiments are discussed in **Chapter 6**, highlighting the limitations of the present dissertation and raising directions for future research.

## Chapter 2

# Information structure, its fundamental notions, and reflexes

As a term famously coined by Halliday (1967), information structure (IS) is probably best-known based on what von Stechow calls “contrast[s] in informativeness” (1999, p. 102), dividing a sentence into two parts along different axes. Particularly, Stechow argues that these dichotomies can be understood to be sentential (i.e., the aboutness distinctions of IS in psychological subject vs psychological predicate, theme vs rheme, and topic vs comment), or discourse-based (i.e., the discourse anchoring distinctions of IS in background vs focus or old/given vs new). While the idea of these dichotomies and IS in general roots in antiquity (see von Stechow, 1999; Krifka & Musan, 2012; Matic, 2015), research preceding as well as following Halliday’s work has investigated numerous linguistic phenomena under the term IS and its notions, leading to an inconsistent and potentially confounded use of terminology and theory persistent to this day. As a consequence, most of the literature on IS draws attention to this issue at some point, such as the extensive work on IS by Lambrecht (1994, p. 1):

There has been and still is disagreement and confusion in linguistic theory about the nature of the component of language referred to [...] as INFORMATION STRUCTURE and about the status of this component in the overall system of grammar.

Given these persistent disagreements in the literature on IS, the goal of this chapter is to present a clear-cut theoretical framework of IS for this dissertation. We also present an inventory of formal reflexes of IS in general, on which to build our experimental investigations and re-analyse the existing literature where necessary. To this end, we will use the communication-oriented understanding of IS as *information packaging* (Chafe, 1976) in the sense of *common ground management* (e.g., see Zimmermann & Onea, 2011), explicitly following the comprehensive work of Krifka and colleagues (Krifka, 2007, 2008; Krifka & Musan, 2012).<sup>1</sup>

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<sup>1</sup> The IS framework by Krifka has been presented in print multiple times. For clarity, we will refer to the most recent and elaborate version by Krifka and Musan (2012), although previous versions (Krifka, 2007, 2008) may contain similar or identical information.

It should be noted that this framework is not intended to represent a complete or definitive theory of IS and its notions. Given the terminological confusion engrained in IS and the vastness of approaches to it, we present this framework with minor critical considerations as a foundation for the main aim of this dissertation: contribution of experimental data on focus reflexes in Turkish. Furthermore, even within the work of Krifka and Musan (K&M; 2012), we will emphasise the pragmatic uses of focus and contrast(iveness), with priority given to open and closed question-answer pairs in relation to these notions. We also refrain from considering the persistent (theoretical) question of the level of grammar IS is to be placed at (see Lambrecht, 1994 for an overview).

## 2.1 Information Structure, information packaging, and common ground

The theory of IS advocated by K&M (2012) and presented here follows the crucial work of Chafe (1976) and his concept of *information packaging*.<sup>2</sup> Briefly summarised, information packaging considers various states a (noun's) referent may have. Most interestingly regarding IS, packaging states are selected by the speaker to form coherent exchanges, depending on what the speaker assumes to be appropriate given the addressee's temporary state of mind. While we will refrain from further elaborations on the states described by Chafe in order to avoid potential confusion with the IS notions discussed below (e.g., Chafe's 'contrastiveness' and 'focus of contrast' states vs the IS notions of focus and contrast), the understanding of K&M (2012, p. 1) is that IS deals with the "aspects of natural language that help speakers to take into consideration the addressee's current information state and hence to facilitate the flow of information". This, in turn, necessitates a repository of ongoing and everchanging information states in a given exchange from which the speaker can draw. To this end, K&M incorporate the *common ground* (CG) as such a pool of information, which will be outlined below.

In the approach by K&M (2012), CG contains mutually accepted (but not necessarily true) propositions and previously introduced entities. As a notion originally coined by Stalnaker (1974/1999), the CG is continuously updated and enlarged, where the 'information entities' in the CG can—but need not—be introduced explicitly. CG can also be shaped through accommodation if the necessary

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<sup>2</sup> Following Lambrecht (1994, p. 2) and Krifka and Musan (2012), among many others, we will maintain the terminological tradition of calling this concept *information structure* although the understanding of IS as information packaging is distinct in some regards from IS as applied by Halliday (1967).

additions to CG are uncontroversial and minimal in kind. To illustrate this, consider examples (1) and (2).

- (1) *I have a cat, and I had to bring my cat to the vet.*
- (2) a. *I had to bring my cat to the vet because it was sick.*  
b. *I had to bring my gorilla to the vet because it was sick.*

(Adapted from Krifka & Musan, 2012, pp. 1–2).

In (1), the first clause introduces the proposition *the speaker has a cat* to CG, which is presupposed by the NP in the second clause. In (2a), the same proposition must be accommodated. However, a similar accommodation in (2b) is less acceptable due to the somewhat controversial nature of the proposition to be accommodated (i.e., *the speaker has a gorilla*).

In addition to the function of CG as a storage of information (believed to be) shared between interlocutors in a given communicative situation, what K&M call *CG content*, the CG also contains information about temporary communicative needs and goals of the parties involved. K&M call this aspect *CG management*. Consider example (3) for demonstration of CG management.

- (3) **Q:** *What did you bring to the vet?*  
**A:** *I had to bring [my cat]<sub>FOC</sub> to the vet.*

While the answer (3A) is subject to the same CG content accommodation pattern described above, the question (3Q) does “not add factual information to the common ground” (Krifka & Musan, 2012, p. 4). Instead, it indicates an informational need of the questioner, which requires to be resolved by the answerer, with the requested information marked through IS in the form of focus (i.e., focal question-answer congruence; see section 2.2). Similarly to CG content, CG management is thus shared and fulfilled between interlocutors to enable coherent communication.

Given the understanding of IS by K&M based on information packaging and CG as described above in a condensed fashion, it is to be pointed out that these communicative patterns are largely common cross-linguistically (2012, p. 5). Thus, the conceptual devices of IS are ‘universal’ to natural languages. However, this communicative universality of IS devices (i.e., notions) should be strictly differentiated from their encoding or realisation (Büring, 2010) (i.e., their formal reflexes), which are language-dependent and may involve prosodic, morphological, lexical, and/or syntactic means. In order to investigate these language-dependent means of IS realisation, then, as is the aim of this dissertation regarding focus in Turkish, we must first define the IS notions in question. Adapting

the proposal by K&M, the fundamental IS notions of *focus*, *topic*, and *givenness*<sup>3</sup> are presented in the following sections, with a specific extension in the form of an alternative approach to *contrast*, considering it as a separate notion, following the work of Neeleman and Vermeulen (2013).

## 2.2 The notion of focus

Possibly the most well-known IS device and the centre of this dissertation, the notion of focus “was expressed in different terms, the term was used to express different concepts, and it may be that there was not even a uniform concept in the first place” (Krifka & Musan, 2012, p. 6). While this description is unfortunately applicable to most notions in IS, vagueness and variability concerning the concept of focus are rampant to this day, as will be shown during the course of this dissertation. Specifically, focus is often associated with “highlighting the most important or new information in an utterance” (Krifka & Musan, 2012, p. 17). K&M argue against such approaches on the basis that (i) it is unclear in what way (or scale) focus is highlighted, (ii) focus is not exclusively associated with importance, not even at an intuitive level, and (iii) focus may also be realised on a given constituent, as is the case in answers to closed *wh*-questions. While we will return to the last point of ‘newness’ regarding focus in section 2.2.3, we will begin by defining focus and its subtypes in the absence of importance, highlighting, or newness.

Continuing to follow the framework by K&M (2012), we will consider focus as relating to or inducing alternatives. More specifically, we implement the definition of focus provided in (4).

(4) **Definition of focus:**

Focus indicates the presence of alternatives that are relevant for the interpretation of linguistic expressions.

(Adapted from Krifka & Musan, 2012, p. 7).

The alternatives-based approach to focus was famously introduced in Rooth’s *Alternative Semantics* (AS) framework (1985, 1992, 1996, 2016). While a detailed and formal deconstruction of focus in AS is beyond the scope of this framework,

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<sup>3</sup> As the present dissertation is specifically concerned with the notions of *focus* and *contrast*—considering the notions of *topic* and *givenness* mainly for coherence of the framework—we will not elaborate on Krifka and Musan’s additional notion of *delimitation* which is of interest mainly with regards to (contrastive) topics (2012, pp. 31–34).



consider the open question-answer pair in (5) for an informal illustration (small capitals indicate main pitch accent).

- (5) Q: *What does Mary want?*  
 A: *Mary wants [CAke]<sub>FOC</sub>.*

AS builds on the assumption that a question like (5Q) is interpreted as a set of propositions (i.e., the *question set*) (see Hamblin, 1973). Each of these propositions forms the denotation of a possible, congruent answer to the question which may or may not be correct: {[Mary wants *cake*], [Mary wants *bread*], [Mary wants *water*], ...}. Interpretation of the answer in (5A) involves two sets of iteratively generated propositions or semantic values: the *ordinary semantic value* and the *focus semantic value*. Focus status on the direct object evokes alternatives within propositions gathered in the focus semantic value: {[Mary wants *cake*], [Mary wants *bread*], [Mary wants *water*], ...}. On the other hand, the ordinary semantic value does not bear alternatives: [Mary wants *cake*]. The prediction of (unconstrained) AS is that for focus-bearing congruent answers to be felicitous (i.e., focus licensing), the question set must be identical to or a subset of the answer's focus semantic value (in other terms, the focus semantic value is a superset of the question set). As this is the case in (5), the answer is congruent with focus on the direct object *cake*. Contrarily, an answer like '[Mary]<sub>FOC</sub> wants *cake*', with a focus semantic value of {[*Mary* wants *cake*], [*Jill* wants *cake*], [*Peter* wants *cake*], ...}, would not fulfil this requirement and would thus not constitute a congruent answer to the question in (5Q).

The definition in (4) in the framework of AS encapsulates all uses and forms of focus as relating to alternatives in one way or another. However, focus is far from a homogenous concept. There are, in fact, various dimensions or subtypes of focus, all of which have distinct interpretational focus effects using the connection of focus to alternatives depending on the communicative needs and intentions given. Crucially, the ubiquitous terminological and conceptual confusion regarding focus also plagues the differentiation of these focus dimensions and types (e.g., compare Dik, 1997; Gussenhoven, 2008; Krifka & Musan, 2012). Thus, keeping in mind that the same terms for focus types may be understood differently between analyses and frameworks, we will explicitly remain within the description of focus by K&M, concentrating on the following focus dimensions and types of interest to this dissertation: pragmatic vs semantic uses of focus, broad (sentence) vs narrow (constituent or VP) focus, and non-contrastive new-information vs contrastive focus (see Krifka & Musan, 2012, pp. 10–21 for further focus types).

### 2.2.1 Semantic and pragmatic uses of focus

In the previous section, we have introduced the concept of CG and differentiated CG content and CG management. This distinction is crucial with regards to interpretational effects of (denotation) focus, as it helps differentiate “two quite different uses of focus” (Krifka & Musan, 2012, p. 9): *pragmatic uses of focus* and *semantic uses of focus*.<sup>4</sup>

Although we are explicitly interested in the former in this dissertation, an outline of how these two uses differ is crucial for a coherent framework of focus. Therefore, these two uses and their interpretation regarding alternatives are sketched out below, albeit with an emphasis on pragmatic uses of focus. It should also be noted that the differentiation of semantic and pragmatic uses of focus does not mean that these two interpretation types are always clearly separable, although the following prototypical cases might make it appear like there is a true dichotomy (see Krifka & Musan, 2012).

Tending to the semantic uses of focus first, such cases “relate to the factual information” itself (i.e., they have truth-conditional effects; Krifka & Musan, 2012, p. 9). As such, the semantic uses of focus are primarily dealing with CG content. The most well-known linguistic operations linked to semantic uses of focus are *focus-sensitive particles*, which depend on focus and are thus said to be associated with focus. An extensive subfield of IS itself, an elaboration on focus-sensitive particles is out of reach for this framework. Nevertheless, we will briefly consider one type of such operators and how its interaction with focus can be interpreted based on alternatives: exclusive particles. Consider the exclusive particle *only* in example (6):

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<sup>4</sup> Going back to the definition of focus provided in (4), it does not specify the sort of alternatives in play. So far, we have considered what Krifka and Musan (2012) call denotation focus, where the alternatives are related to the focus-bearing expression (i.e., the propositions in the focus alternative value). Alternatives may, however, also relate to the form of the expression in focus in what is called expression focus.

Although we are chiefly concerned with the former denotation focus here, it is important to highlight this differentiation here in order to provide a coherent framework of focus. Consider the following example, adapted from Krifka and Musan (2012, p. 8):

*Grandpa didn't [kick the BUCKET]<sub>FOC</sub>, he [passed aWAY]<sub>FOC</sub>.*

The denotations of both focused phrases in the example above are identical. What expression focus achieves here is contrast their connotations.

Expression focus is primarily realised in-situ but may not be restricted to constituents or phrases. Another important function of expression focus relates to pronunciation, where the alternatives at play may, for example, relate to stress assignment at the syllable level, as illustrated in the following example adapted from Krifka and Musan (2012, p. 8):

**A:** *They live in BERlin*  
**B:** *They live in [BerLIN]<sub>FOC</sub>!*

(6) *John only introduced Mary to Sue.*

(Adapted from Krifka & Musan, 2012, p. 14).

*Exclusive particles* like *only* indicate that the ordinary semantic value is the sole denotation that is true among the propositions in the focus alternative value set. For example, if focus in (6) is realised on *Mary*, the association of *only* with this focus indicates that any other alternative proposition {[John introduced X to Sue]} must be wrong. The same pattern applies if focus is realised on *Sue*, *introduced*, or the complete VP. However, *only* in (6) may not associate with *John*, as focus-sensitive operators must be in a position in which they can have scope over the respective focus (see Krifka & Musan, 2012). To convey such an interpretation, *only* would have to be placed differently, as in *Only John introduced Mary to Sue*.

With the alternatives-based definition of focus in (4) applying to semantic uses of focus, such as focus association with exclusive particles as presented above, we now turn to the focus interpretation of interest in this dissertation: pragmatic uses of focus. Pragmatic uses “relate to the public communicative goals of the participants” and are thus associated with information packaging proper and CG management (Krifka & Musan, 2012, p. 9). Possibly the most well known, although probably not universal, pragmatic use of focus is question-answer congruence, as illustrated in example (5) repeated here (see Krifka & Musan, 2012):

(5) **Q:** *What does Mary want?*

**A:** *Mary wants [CAke]<sub>FOC</sub>.*

*Question-answer congruence* as the “classical pragmatic use of focus” (Krifka & Musan, 2012, p. 9), going back to the ‘aboutness analysis’ of the psychological predicate in Hermann Paul’s *Prinzipien der Sprachgeschichte* (1880/ 1995), is a stereotypical case of CG management, in which the question adds information about the expected immediate continuation of communication to CG, while the answer fulfils this goal by focusing the corresponding element as well as relating it to context.<sup>5</sup> Following Reich (2002, p. 73), we can define question-answer congruence with respect to focus as follows: “If A is a direct/congruent answer to [a *wh*-question] Q, then every constituent in A that corresponds to a *wh*-phrase in Q is focused (i.e., F-marked)”. As we have shown previously, focus marking

<sup>5</sup> Krifka and Musan (2012, p. 10) suggest that question-answer congruence arises from the fact, “that it allows for the accommodation of the meaning of questions that are not overtly expressed”. As such, focus may aid the addressee in accommodating such implicit questions (i.e., accommodation of CG management), which may themselves structure discourse. A focus bearing statement like *Once upon a time, there was [a PRINcess]<sub>FOC</sub>* could thus lead the addressee to accommodate a question in the form of *What was there?*.

on the element corresponding to the *wh*-phrase in the question is fully explainable within our definition of focus based on alternatives and AS, where the focus semantic value of the answer must be a superset of the question set.

Crucially, questions in question-answer congruence need not be open, as in (5). Alternative definitions of focus persistently single out the ‘newness’ of focus (see Krifka & Musan, 2012 and references therein). While this may be the case in examples like (5), question-answer congruence also pertains to *closed questions* like (7), where the focus alternatives are overtly presented in the question itself, and the information in focus is clearly not ‘new’. Instead, what is ‘new’ is the “information that [*cake*] satisfies the description [*Mary wants x*]” (Krifka & Musan, 2012, p. 17).

- (7) Q: *What does Mary want, crisps or cake?*  
A: *Mary wants [CAke]<sub>FOC</sub>.*

Pragmatic uses of focus are not restricted to question-answer congruence either, with other pragmatic functions including confirmations, delimitation, and the highlighting of parallel interpretations. Of importance here is the pragmatic use of focus in *corrections*. To use focus to correct information as in (8), the focus semantic value must bear a proposition that has been entered to CG just before the utterance of (8B), here indicated in (8A). “What this expresses is that the ordinary [semantic value] of the sentence [(8B)] is the only one among the alternatives that holds” (Krifka & Musan, 2012, p. 11). As the ordinary semantic value of (8B) is not the same as the one in (8A), a corrective focus interpretation arises.

- (8) A: *Mary stole the cookie.*  
B: *(No,) [PEter]<sub>FOC</sub> stole the cookie!.*

(Adapted from Krifka & Musan, 2012, p. 11).

## 2.2.2 Broad vs narrow focus

While the common means of focus realisation in the languages of the world are presented in greater detail in sections 2.2.4 and 2.2.5, we have considered focus in English to be primarily realised in-situ through main, nuclear pitch accent (i.e., a specific and contrasting pitch movement) so far. What we have not discussed yet is what is traditionally referred to as *focus ambiguity* or *focus projection*, which can be understood as a consequence of “the under-specification of the grammar-IS mapping” (Zimmermann & Onea, 2011, pp. 1658–1659; also see Gussenhoven, 1999; Selkirk, 1984, 1995). Consider example (9) below for illustration:

- (9) **Q1:** *What did Peter buy?*  
**Q2:** *What did Peter do?*  
**Q3:** *What happened?*  
**A:** *[Peter [bought [a book about [BATS]<sub>FOC</sub>]].*

(Adapted from Zimmermann & Onea, 2011, p. 1659).

In (9A), (nuclear) pitch accent falls on the object DP. Crucially, this focus realisation in English can be interpreted to ‘respond’ to questions (9Q1-Q3), all at the same time. This means that either (i) only the object constituent is in focus, (ii) the VP is in focus, or (iii) the whole sentence is in focus, with all of these options affecting the generation of alternative propositions in the focus semantic value of (9A). In other terms, what is ambiguous here is the *size of focus* (see Büring, 2012). Which of these focus sizes is expressed in (9A) “is for the most part subject to contextual resolution” (Zimmermann & Onea, 2011, p. 1659), for example, through questions (9Q1-Q3).

As pointed out by K&M (2012), different sizes of focus as described above have been called *narrow* and *broad focus*. However, this terminology is still imprecise. The latter term has been applied to the whole-sentence focus reading required by contexts like (9Q3), as well as being taken to mean any focus beyond the constituent evoked by contexts like (9Q2) (see Zimmermann & Onea, 2011). Given this terminological confusion but maintaining the traditional terminology, we will restrict the term *broad focus* to instances of whole-sentence focus as elicited through (9Q3). *Narrow focus* is any other focus size (i.e., constituent-focus, V-focus, or VP-focus).<sup>6</sup> As we investigate broad and constituent focus only, we will equate narrow focus to constituent focus (i.e., in response to 9Q1) in the remainder of this work.

### 2.2.3 Contrastive focus, exhaustive focus, and alternative set size

Last to be presented here, yet of crucial importance regarding the notion of focus, are K&M’s focus types of *contrastive focus*, *exhaustive focus*, and *alternative set size*. These three focus types relate in one way or another to contrast between the selected focus denotation and other available alternatives (see section 2.5 for a more detailed approach to the notion of contrast). Halliday (1967), for example,

<sup>6</sup> A disambiguation of narrow focus to this end is proposed by Zimmermann (2016) in the form of *predicate focus*. Predicate focus encompasses focus on lexical verbal predicates, whether it is the verb itself or the VP.

distinguished contrastive focus from focus in question-answer pairs and informative focus. Similarly, Chafe (1976) suggested that contrastiveness is a special status that is to be differentiated from givenness, indicating whether a denotation is present in CG (see section 2.4 for a more detailed approach to the notion of givenness). In general, “there is a general tendency [...] to distinguish between two prominent subtypes of focus, namely information focus and contrastive focus” (Zimmermann & Onea, 2011, p. 1663; also see Cowles, 2013).

Notwithstanding the commonality of the distinction between contrastive and new-information focus, there are divergent approaches in the literature regarding what is to be classified as contrastive and (non-contrastive) information focus. It is also debated whether this differentiation relates to purely pragmatic factors or is a semantic distinction at its core, and whether it relates to distinct reflexes cross-linguistically (for an overview on this debate, see Zimmermann & Onea, 2011, pp. 1662–1665). Although we will not elaborate on these issues here, we will be representing the differentiation between contrastive and new-information foci below by first sketching out these (pragmatic) focus types as understood by K&M (2012). Diverting from the framework of K&M to some degree, however, we will revisit and ‘revise’ the concept of contrast in section 2.5, in which the approach advocated by Neeleman and Vermeulen (2013) is introduced.

According to K&M (2012, p. 21), contrastive focus is restricted to focus that “presupposes that the common ground content contains a proposition with which the current utterance can be contrasted, or that such a proposition can be accommodated”. In this understanding, they argue that contrastive focus should be reserved for genuinely contrastive purposes, such as corrective or additive cases, exemplified in (8), repeated here for clarity, and (10), respectively.

- (8) **A:** *Mary stole the cookie.*  
**B:** *(No,) [PEter]<sub>FOC</sub> stole the cookie!.*

(Adapted from Krifka & Musan, 2012, p. 11).

- (10) **A:** *John wants coffee.*  
**B:** *[MAry]<sub>CONTRASTIVE FOC</sub> wants coffee, too.*

(Adapted from Krifka & Musan, 2012, p. 21).

If focus is realised through pitch accent as indicated in (8) and (10), the utterances in (B) are contrasted with the propositions in CG content introduced in (A). As previously described for the corrective function of pragmatic focus, the propositions in (A) can also be accommodated in order to be contrasted. What

distinguishes the understanding of contrastive focus by K&M outlined above from other approaches such as the one by Neeleman and Vermeulen (2013) is that K&M do not consider answers to closed questions to bear contrastive focus. To illustrate this analysis, consider examples (11) and (12) below.

- (11) **Q:** *What do you want to drink?*  
**A:** *I want [TEA]<sub>FOC</sub>.*
- (12) **Q:** *What do you want to drink, tea or coffee?*  
**A:** *I want [TEA]<sub>FOC</sub>.*

(Adapted from Krifka & Musan, 2012, p. 21).

The classical function of question-answer congruence within the pragmatic use of focus necessitates focus in a congruent answer to be realised so that the focus semantic value of (A) is a superset of the question set in (Q). K&M argue that what differs between the open question-answer pair in (11) and the closed question-answer pair in (12) is the size of the alternative set, which is unrestricted in the former and limited to the minimum of two in the latter.<sup>7</sup> While the alternative set is also restricted in contrastive-focus bearing corrections and additive cases like those presented above, K&M argues that, contrary to Chafe (1976) and Neeleman and Vermeulen (2013), answers to closed questions are no more contrastive than answers to open questions. Instead, they suggest that the distinction of focus between (11) and (12), where required, could be termed *closed* vs *open focus* instead.

Another focus type proposed by K&M related to contrastiveness in the broader sense, which is the contrast between the focus denotation and other alternatives, is *exhaustive focus*. In their understanding, exhaustive focus evokes an interpretation in such a way that the ordinary semantic value of the utterance bearing exhaustive focus is the only true “or [the] logically strongest denotation” amongst the alternatives (Krifka & Musan, 2012, p. 21). One of the most prominent cases of exhaustive—or identificational in her terminology (see footnote 15)—focus is described by É. Kiss (É. Kiss, 1998; also see Szabolcsi, 1981) in Hungarian, where

<sup>7</sup> Krifka and Musan (2012, p. 20) do not specify which “alternative set” within AS is restricted in these cases. It cannot be the the focus semantic value, as this set is unconstrained (Rooth, 1985). In fact, this question touches upon an issue of unrestricted AS as presented previously and by K&M: it does not consider contextually available alternatives which may restrict the unrestricted focus semantic value (see Krifka, 2006; Zimmermann & Onea, 2011).

In response to this issue, Rooth (1992, 1996) suggest a context variable C. Following Zimmermann and Onea’s (2011, p. 1657) simplification of this “constrained version” of AS, a focus operator “introduces a presupposition requiring the value of C to be a subset of the (unconstrained) [focus semantic value]”. Thus, we must assume that the alternative set size referred to by K&M (2012) is the context variable C in constrained AS.

exhaustive focus is assumed to be realised through movement of the element to non-canonical, preverbal positions (see chapter 2.2.5). To illustrate exhaustive focus in an example more approachable to most readers, consider (13):

(13) *It's [JOHN and BILL]<sub>FOC</sub> who stole a cookie.*

(Adapted from Krifka & Musan, 2012, p. 21).

K&M suggest “that [*it*-]cleft constructions in English trigger [exhaustive focus] as well” (2012, p. 21). An example of such a construction, (13) indicates that no proposition other than the ordinary semantic value’s denotation holds. Thus, (13) negates alternative propositions like *It's John and Mary who stole a cookie* or *It's Albert and Ella who stole a cookie*.

#### 2.2.4 Realisation of focus

Turning to a condensed overview of the primary reflexes of focus in the world’s languages, it should again be highlighted that focus as a device or notion of IS is to be differentiated from its encoding. Following Zimmermann and Onea (2011) and adapting the terminology suggested by Büring (2007, 2010), we call the grammatical encoding of focus its *realisation*. While the notion of IS and focus can be understood to be universal, the types of formal means involved in focus realisation and the extent of focus realisation in the first place are language-dependent and may include phonological, syntactic, lexical, or morphological processes, as well as any combination of the above (see Zimmermann & Onea, 2011).

An important point regarding focus realisation raised by Zimmermann and Onea and others is that it is not expected that “languages [...] have focus marking devices that would yield a strict one-to-one mapping between focus and its grammatical reali[s]ation” (2011, p. 1658; also, see Büring, 2010; Cowles, 2013; Hedberg & Sosa, 2007). In other words, focus is assumed to be formally underspecified in that a tool of focus realisation like pitch accent (i) may be ambiguous between focus interpretations, (ii) the same focus interpretation may be realised using multiple means, or (iii) a tool of focus realisation may indicate factors other than focus or IS in general. Amongst other evidence (see Zimmermann & Onea, 2011 and references therein), we have seen so far that focus in English, realised “first and foremost [...] by pitch accent”, is ambiguous regarding the distinction between broad and narrow focus and thus in need of contextual resolution (Büring, 2010, p. 188). It is also important to note that the misconception of strict one-to-one mapping between IS notions and their realisations is not restricted to focus. For example, Féry (2007, p. 179), in her work *Information Structural Notions*



and the Fallacy of Invariant Correlates, reviews multiple aspects of IS realisation, displaying that, in fact, no notion of IS can “be associated with an invariant grammatical property”. Although we will repeatedly refer to Féry’s counterexamples in the following sections, it is vital to keep in mind that a given pattern of focus realisation may not be strictly restricted to (one interpretation of) focus and vice-versa. Having made this vital remark, let us consider the primary ways how languages of the world realise focus, particularly following the overviews of Zimmermann and Onea (2011) and Büring (2010), with the latter including extensive examples in numerous languages and a more refined classification especially regarding prosodic focus realisation which we will not consider here.

Regarding *prosodic means of focus realisation*, we have seen English examples of focus bearing prominence in the form of pitch accent, a strong pattern commonly associated with focus in intonational languages (Zimmermann & Onea, 2011) and previously considered as the basis for definitions of focus in general (among many others, see Reinhart, 1981, 1995; Rooth, 1985; Selkirk, 1995, 2002).<sup>8</sup> There are, however, other prosodic tools involved in focus realisation cross-linguistically. As described by Kanerva (1990; see Downing et al., 2004), the Bantu language of Chîchewa, specifically its Nkotakota dialect, realises focus through phonological phrase boundary placement to the right of focus, with remaining constituents in the VP parsed into distinct phonological phrases (Downing et al., 2004, p. 169). Narrow focus realisation in Chîchewa thus requires insertion of such a boundary if none is present by default (Büring, 2010). This pattern is illustrated in (14), where phrase boundaries are “indicated by penultimate lengthening (u » uu, é » éé) and tone lowering on the final syllable of the immediately preceding word (á » a)” (Zimmermann & Onea, 2011, p. 1660).

(14) a. BROAD FOCUS

(Anaményá nyumbá ndí mwáála)  
 s/he.hit house with stone  
 ‘S/he hit the house with a stone.’

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<sup>8</sup> A lingering question is “whether languages with pitch accents necessarily use them for [...] foci, or whether there are exceptions” (Féry, 2007, p. 174). Crucially, instances of second occurrence focus (SOF) in English are often considered as such evidence, with SOF assumed to be deaccented rather than being assigned pitch accent. There is, however, also evidence that SOF is not completely deaccented.

Beaver et al. (2007) show that SOF in English may involve other phonological means such as duration and intensity, while Féry and Ishihara (2009) argue that (prenuclear) SOF is, in fact, associated with pitch accents, albeit weaker than first occurrence focus but still stronger than non-focus. Nevertheless, and based on other examples not represented here, Féry (2007, p. 176) states that focus realisation through pitch accent in such languages “is [the] preferred option but it is not obligatory. It is only present if the phonological structure of the sentence allows it”.

b. OBJECT FOCUS

**Q:** *What did he hit with a stone?*

**A:** (*Anaményá nyuúmba*) (*ndí mwáála*)  
s/he.hit house with stone

c. VERB FOCUS

**Q:** *What did he do to the house with the stone?*

**A:** (*Anaméenya*) (*nyuúmba*) (*ndí mwáála*)  
s/he.hit house with stone

(Kanerva, 1990; adapted from Zimmermann & Onea, 2011, p. 1660).

It may also be that a language realises focus prosodically through a combination of tools. For example, focus realisation in Japanese involves three prosodic aspects: (i) the focused constituent carries increased tonal pitch akin to English, (ii) focus requires an intermediate (i.e., phonological) phrase boundary to its left, and (iii) all intermediate phrase boundaries to the right of focus are deleted (see Büring, 2010).

Besides the various ways of prosodical focus realisation, languages may also employ *morphological means of focus realisation*, making them what Büring (2010) calls particle languages. Although there are numerous languages realising focus morphologically to some extent, such as Wolof (see Kihm, 1999; Robert, 2000), Chickasaw (see Gordon, 2007), and Yukaghir (see Matic, 2015), we follow Zimmermann and Onea (2011) and Büring (2010) in presenting the Chadic language of Gúrúntúm as an example here (see Hartmann & Zimmermann, 2009; Zimmermann, 2011). For illustration, consider the question-answer pairs in (15).

(15) a. **Q:** *Á kwá bà wúm kwálingá-lá-ì?*

FM who PROG chew colanut-DEF

‘WHO is chewing the colanut?’

**A:** *Á fúrmáyò bà wúm kwálingá-lá.*

FM fulani PROG chew colanut

‘THE FULANI is chewing the colanut.’

b. **Q:** *Á káã màì tí bà wúmì?*

FM what REL 3SG PROG chew

‘WHAT is he chewing?’

**A:** *Tí bà wúm-á kwálingá-lá*

3SG PROG chew-FOC colanut

‘He is chewing COLANUT.’

(Adapted from Hartmann & Zimmermann, 2009, p. 1342).

As indicated in (15), focus in Gúrúntúm is generally realised by use of a focus marker *a* or *á*, which precedes the constituent to be focused. There are, however, open issues regarding the focus marker in Gúrúntúm, including but not limited to the facts that (i) the focus marker follows the verb in verb and VP focus, and (ii) that VP focus does not bear the focus marker if no overt object is available (see Büring, 2010). Zimmermann and Onea take these issues in Gúrúntúm to be “another argument for the non-existence of a strict one-to-one mapping between focus and focus reali[s]ation” (2011, p. 1660).

Besides prosodic means of focus realisation, languages that apply *syntactic re-ordering* in focus realisation are of central interest regarding the present dissertation. Zimmermann and Onea (2011) argue that languages like Hungarian, Hausa, and Nl̩̀e?kepmxcin realise focus at a designated position—what we will call the focus position. This, in turn, may require focus movement or clefting, if the constituent to be focused is not at the focus position by default (i.e., canonically). In other terms, focus in focus position languages must be moved through syntactic reordering if it does not align with the focus position in-situ (see Zimmermann & Onea, 2011). On a stricter approach to focus positions, however, Büring (2010, p. 198 and references therein) argues that languages like Hausa, Hungarian, Georgian, and Turkish, which are claimed to have focus positions, actually have “an information structurally ‘loaded’ construction”. For him, to qualify as a strict focus position language in the sense presented above, a language may not have an alternative pattern of focus realisation other than focus at the focus position, and this focus position may not be re-interpretable as an edge effect (i.e., in broad terms, an effect of prosodic focus realisation). In short, focus in a strict focus position language is always realised at the focus position. Given this definition, Büring (2010) argues that none of the languages reviewed by him, including Turkish, can be understood as a strict position language, although further research is needed.<sup>9</sup> This differentiation by Büring is compatible with the approach by Zimmermann and Onea (2011) if we consider what they call the focus position to be a focally loaded construction requiring syntactic reordering.

To illustrate the role of syntactic reordering in focus realisation, albeit in an extensively simplified fashion, we will consider the widely cited case of Hungarian, commonly believed to have an (immediately) preverbal focus position (see É. Kiss, 1998, 2010). Consider example (16).

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<sup>9</sup> Zimmermann and Onea (2011) do clearly show that focus is not restricted to the focus position, specifically regarding Hungarian. Given the terminological confusion regarding focus and IS mentioned so far and hereafter, however, we believe that it is important to emphasize that none of the languages treated here are strict position languages as defined by Büring (2010).

## Chapter 2. IS, information packaging, and common ground

- (16) a. *Péter*<sub>TOP</sub> [*a padlón*]<sub>FOC</sub> *aludt*.  
Peter on floor slept  
'Peter slept on the FLOOR.'

(Adapted from Zimmermann & Onea, 2011, p. 1661).

- b. *A padlón*<sub>TOP</sub> [*Péter*]<sub>FOC</sub> *aludt*.  
on floor Peter slept  
'As for the floor, PETER slept there.'

(Adapted from Szabolcsi, 1981, p. 143).

In Hungarian, the left-periphery of the verb contains the “optionally filled structural position functioning as [the] focus slot”, as well as the preceding topic position at the left edge (É. Kiss, p. 65). If we consider Hungarian to have a canonical word order of VSO following Skopeteas and Fanselow (2010, p. 174), example (16) illustrates that focus in Hungarian, in informal terms, causes syntactic reordering to the effect that the focused constituent appears to the left of the verb (i.e., to the immediately preverbal position).<sup>10</sup> As mentioned above, however, focus position induced syntactic reordering is only one of multiple possible means of focus realisation. Languages may employ a mix of means of focus realisation (Zimmermann & Onea, 2011). Remaining with Hungarian as a source of examples, focus undergoing movement to the immediately preverbal focus position is also marked through pitch accent (Szendroi, 2003).<sup>11</sup> Particularly for Hungarian, focus may occur in other positions than the immediately preverbal one, as is the case with multiple focus constructions as indicated in (17), where one constituent, *Mary*, undergoes focus movement, while the other *Peter* receives focus interpretation in-situ. In such cases of in-situ focus, focus realisation in Hungarian also involves prosody in the form of pitch accent. As will be shown in the following section, focus in structures like (16) is also not restricted to the focus position, further underlying that Hungarian is not a strict position language à la Büring (2010) and that there is no strict one-to-one mapping of focus and focus position.

- (17) Q: *Ki kit csókolt meg?*  
who whom kissed PRT  
'WHO kissed WHOM?'

<sup>10</sup> The sentence initial position in Hungarian is the dedicated topic position (É. Kiss, 1998, 2010).

<sup>11</sup> There is, in fact, some debate not reported here as to whether syntactic reordering in association with focus in Hungarian is triggered by the requirement of focus to receive main pitch stress (see Szendroi, 2003).

A: [Mari]<sub>FOC</sub> csókolta meg [Pétert]<sub>FOC</sub>.  
 Mary kissed PRT Peter

'MARY kissed PETER.'

(Adapted from Zimmermann & Onea, 2011, p. 1661).

Finally, there is an observational tendency in numerous languages for subject focus to be additionally marked compared to object focus (see Skopeteas & Fanselow, 2010 and references therein). Skopeteas and Fanselow (2010, pp. 170–171) phrase this as the implicative relation of the asymmetry of focused arguments: “[I]f a non-canonical structure occurs with focus on non-subjects, it is expected to occur with focus on subjects too”. While we will not delve further into possible explanations based on grammar that might account for this pattern, and the relation of this asymmetry to word order is of main interest to Turkish, it should be noted that this asymmetry of focused arguments also extends beyond syntactic reordering and word order. Consider example (18) from Fɔn, a language with a canonical word order of SVO and a focus marker *wè* (see Fiedler et al., 2010).<sup>12</sup>

(18) a. SUBJECT FOCUS

**Q:** *Who ate the beans?*

**A:** nyònú ɔ́ wè d̀̀̀ àyìkún  
 woman DEF FM eat bean

'THE WOMAN ate the beans.'

b. OBJECT FOCUS

**Q:** *What did the woman eat?*

**A:** é d̀̀̀ àyìkún  
 3SG eat bean

'She ate BEANS.'

**A':** àyìkún (wè) nyònú ɔ́ d̀̀̀  
 bean (FM) woman DEF eat

'The woman ate BEANS.'

(Adapted from Fiedler et al., 2010, pp. 237, 245).

In (18), subject focus in (18a) is realised in canonical order requiring the presence of the focus marker *wè*. Non-subject (i.e., object) focus in (18b), on the other

<sup>12</sup> For clarification, Fiedler et al. (2010, p. 239) point out that the non-canonical structure in (18a-A') is not necessarily interpreted contrastively.

hand, might be realised in canonical (18a-A), as well as non-canonical order (18a-A'). If in canonical order, non-subject focus in F<sub>0n</sub> is realised without the focus marker, with this structure also being the one applied for all-new/broad focus. If non-canonical, non-subject focus may optionally be accompanied by the focus marker. While this particular example also argues in favour of the subject vs non-subject focus hierarchy (i.e., argument hierarchy), it provides evidence for the generalisation as formulated by Zimmermann and Onea (2011), in which subject focus is more marked than non-subject focus, meaning that subject focus is often realised differently from what is observed with broad foci.

### 2.2.5 Focus realisation and contrastive focus

Regarding contrastive focus in particular, Zimmermann and Onea (2011, p. 1665) argue that there is a general tendency of “contrastive foci [to be] frequently flagged by means of special grammatical markings that occur in addition to regular focus marking”.<sup>13</sup> This tendency should be understood such that contrastive focus is marked in addition to ‘pure’ focus realisation, a pattern that surfaces in multiple cases, of which a selection is presented here following the argumentation of Zimmermann and Onea.

Regarding the prosodic realisation of focus, new-information and contrastive foci in intonation languages like English are both marked by pitch accent. There are reasons to assume that pitch accent (or duration and intensity) associated with contrastive focus to be different from pitch accent in new-information focus realisations, whether categorically or gradually (e.g., see Bolinger, 1961; Breen et al., 2010; Katz & Selkirk, 2011; Sityaev & House, 2003). For example, Katz and Selkirk (2011) argue that contrastively focused elements in English are realised with longer duration, higher relative intensity, and larger f<sub>0</sub> movement compared to new-information foci. Another strong example for the distinction of these focus types in their realisation raised by Zimmermann and Onea (2011) is morphological in nature. The West Chadic language of Bole realises focus syntactically at the right edge of the verbal domain, where non-subject constituents are in-situ. However, focus in Bole is also realised by morphological means in the form of a particle *yé*. This particle is optional for non-subjects. If the particle is realised with right-aligned non-subjects, it is associated with a contrastive focus interpretation (Zimmermann, 2011). This pattern is illustrated in (19).

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<sup>13</sup> Zimmermann and Onea (2011 and citations therein) argue that there are grounds to doubt a strong semantic distinction of new-information and contrastive focus (see section 2.5). They base this doubt on the fact that there is often no strict mapping/differentiation between means of realisation and focus, let alone between realisations and new-information and contrastive focus types.

(19) Q: What did Lengi do?

A: Léngì kàpp-ák (yé) mòrdó  
Lengi plant-PERF.F PRT millet

- yé: 'Lengi planted MIL\let.'

+ yé: 'It was MIL\let that Langi planted.'

(Zimmermann, 2011; adapted from Zimmermann & Onea, 2011, p. 1665).

Regarding syntactic means of focus realisation, operations such as clefting are often associated with contrastive focus. In the Gùrùntùm example in (15) repeated here, we argued that focus is realised morphologically employing a focus marker *a*. Non-subjects can additionally be realised in relative constructions, as illustrated in (20), where they are further interpreted with “an extra amount of contrast or emphasis” (Zimmermann, 2011, p. 1169).

(15) a. Q: *Á kwá bà wúm kwálingála-i?*  
FM who PROG chew colanut-DEF

'WHO is chewing the colanut?'

A: *Á fúrmáyò bà wúm kwálingála.*  
FM fulani PROG chew colanut

'THE FULANI is chewing the colanut.'

b. Q: *Á kǎǎ màì tí bà wúmì?*  
FM what REL 3SG PROG chew

'WHAT is he chewing?'

A: *Tí bà wúm-á kwálingála*  
3SG PROG chew-FOC colanut

'He is chewing COLANUT.'

(Adapted from Hartmann & Zimmermann, 2009, p. 1342).

(20) Q: *Á kǎǎ màì tí náa wáli?*  
FM what REL 3SG catch farm

'WHAT did he catch at the farm?'

A: *Á fúl màì tí náa wáli.*  
FM cow REL 3SG catch farm

'It was A COW that he caught at the farm.'

(Adapted from Zimmermann, 2011, p. 1169).

In section 2.2.3, we mentioned that *it*-cleft constructions in English are assumed to be associated with exhaustive focus. As K&M (2012, p. 21) briefly state, “it appears that cleft constructions in English trigger [exhaustive focus interpretation].” However, in the examples above, we used *it*-clefts for translations of contrastive foci in various languages, limiting its interpretation regarding focus (also see Winkler, 2013 for this understanding). By not limiting English *it*-clefts to exhaustive focus but instead applying it to contrastive focus in general, we follow Zimmermann and Onea (2011, p. 1666), who present evidence indicating that an exhaustiveness effect in English *it*-clefts is not associated with focus of the clefted information but arises “from independent factors”.<sup>14</sup> As such, we take English *it*-clefts as a representation of contrastive focus realisation through syntactic means akin to *Gürüntüm*.

Similarly to the general observational tendency of subject focus to be marked in comparison to non-subject focus in many languages, Skopeteas and Fanselow (2010, p. 170) also postulate an implicative relation regarding contrastiveness: “If a non-canonical structure occurs with the non-[contrastive/exhaustive] instances of focus, it is expected to occur with [contrastive/exhaustive] instances of focus”.<sup>15</sup> Considering that non-contrastive new-information focus in English is realised prosodically and in-situ, while contrastive focus may involve *it*-clefts, the tendency by Skopeteas and Fanselow applies to English. This pattern also applies to exhaustive focus in Hungarian, being the most widely cited language regarding syntactic reordering in relation to contrastivity and exhaustivity.

Previously, it was mentioned that syntactic means of focus realisation in Hungarian posit an immediately preverbal focus position with focus inducing syntactic reordering. However, we have also illustrated on the basis of multiple focus constructions that not all foci in Hungarian occur at the focus position. Disentangling the role of the Hungarian focus position, É. Kiss (1998) proposed that ex-situ focus realised at the focus position through syntactic reordering and main pitch accent (i.e., structural focus) and in-situ focus realised outside of the focus

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<sup>14</sup> Zimmermann and Onea (2011) assume the same non-association with focus for existential presuppositions also often assumed to be involved in English *it*-clefts.

<sup>15</sup> It should be clarified that Skopeteas and Fanselow (2010) refer to the identificational and non-identificational focus types, following the terminology of É. Kiss (1998). In particular, they consider identificational focus to involve a quantificational operation ranging from the exclusion of some alternatives (i.e., contrastive focus) to the exclusion of all relevant alternatives (i.e., exhaustive focus) (Skopeteas & Fanselow, 2010). As É. Kiss (1998) states, identificational focus is subject to cross-linguistic parametric variation, being a composite of the features [ $\pm$  contrastive] and [ $\pm$  exhaustive] of which one or both have to be set positive. In Hungarian, [ $\pm$  contrastive] is assumed not to be specified, while [+ exhaustive] is set. Although the distinction of new-information and identificational focus has some foothold in the literature (e.g., Skopeteas & Fanselow, 2010), we will use contrastive and exhaustive focus where fit to reduce the number of terms used.



position through pitch accent only (i.e., prosodic focus), are directly related to the focus types of exhaustive focus and new-information focus, respectively.<sup>16</sup> Consider the question-answer pairs in (21) for illustration.

- (21) Q: [Kiket]<sub>FOC</sub> hívtál meg ma estére?  
 who-PL-ACC invited-you PRT today evening-for  
 ‘Who did you invite for tonight?’
- A: [PÉTERT és PÁLT]<sub>FOC</sub> (hívtam meg).  
 ‘It is Peter and Paul (that I invited).’
- A’: Meg hívtam [PÉTERT és PÁLT]<sub>FOC</sub>.  
 ‘I invited Peter and Paul.’

(Adapted from É. Kiss, 2010, p. 68).

Based on (21), we can understand how exhaustive and new-information foci in Hungarian are realised and interpreted: Exhaustive focus in (21A) indicates that no other alternative posits a true proposition. As such, uttering (21A) would be inappropriate if the speaker invited people other than *Peter* and *Paul*. Conversely, new-information focus in (21A’) does not entail any exhaustive interpretation or contrast, not excluding any alternative. Thus, there might be other people that the speaker invited. Both new-information and exhaustive foci are realised through main pitch accent, while exhaustive foci also involve syntactic reordering. Thus, Hungarian, like English and Gürüntüm, employs addition marking of exhaustive focus compared to non-contrastive focus.

## 2.3 The notion of topic

Going back to the general concept of IS, we have specifically looked at the central role of focus so far. However, the distinction of alternatives-based focus and non-focused background elements (see Kılıçaslan, 2004) is not the only dichotomy in IS, with other dimensions including the *topic-comment* and *given-new* distinctions. Although we are not directly concerned with *topichood* in this dissertation, a coherent framework of IS requires that we cover this aspect briefly in what follows, while givenness is treated in section 2.4. For this purpose, we will continue to follow the work of K&M, who define *topic* (also called aboutness topic to distinguish the default notion from contrastive topics) as provided in (22):

<sup>16</sup> Similarly to the case of exhaustive focus in English *it*-clefts, the distinction of in-situ, prosodic new-information focus and ex-situ, structural exhaustive focus in Hungarian and its semantic basis has also been debated (e.g., see Onea & Beaver, 2009; Szendroi, 2003; Wedgwood, 2005; contra É. Kiss, 2010). For this overview, we will not consider this debate further.

(22) **Definition of topic:**

The topic constituent identifies the entity or set of entities under which the information expressed in the comment constituent should be stored in the common ground content.

(Adapted from Krifka & Musan, 2012, p. 28).

The definition of topic in (22) assumes that “information in human communication and memory is organised in such a way that it can be said to be ‘about something’” (Krifka & Musan, 2012, p. 27; contra Büring, 2016). K&M suggest the prominent theory of information and communication based on CG by Reinhart (1981) to satisfy this requirement. In this approach, which is metaphorically understood as a file card system, information is contributed to CG as associated with entities (i.e., information is associated with particular file cards with specific headers). Consider example (23) to illustrate this file card approach to topic and comment. Although (23a,b) make the same proposition [*Jacqueline Kennedy and Aristotle Onassis got married*], they convey different information (i.e., comments) added to different file cards selected by their headers (i.e., topics). This differentiation, then, is at the core of the IS device of topic as defined in (22).

- (23)        [*Aristotle Onassis*]<sub>TOP</sub> [*married Jacqueline Kennedy*]<sub>COM</sub>.  
              [*Jacqueline Kennedy*]<sub>TOP</sub> [*married Aristotle Onassis*]<sub>COM</sub>.

(Adapted from Krifka & Musan, 2012, p. 27).

Although the terms of *topic* and *comment* introduced by Hockett (1958/ 1967; see Krifka & Musan, 2012) are widespread today, terminological and conceptual confusion akin to the one regarding the concept of focus also persists regarding topichood. For example, what K&M understand as topic under (22) was called *subject* (Chafe, 1976), *link* (Vallduví, 1990/1993; Vallduví & Engdahl, 1996), or *theme* in the Prague School (see Krifka & Musan, 2012, p. 28). As suggested by K&M, we will strictly avoid these terms as not to conflate the notions of topichood and givenness—a particular issue with the term *theme*—or running in danger of confusing topic as an IS device with subject as a strictly grammatical relation. Especially the former distinction is critical, as topics do not have to express ‘old’ or given information but may instead introduce new entries and directly use them as topic denotations, as shown in example (24).

- (24)    [*A good friend of mine*]<sub>TOP</sub> [*married Britney Spears last year*]<sub>COM</sub>.

(Adapted from Krifka & Musan, 2012, p. 28).

Similarly to the distinction of topic and givenness, the topic-comment dichotomy should not be confused with the notion of focus or its complement of background, based on examples like (25). Focus interpretation may occur on parts of the comment and topics may also bear focus, as is the case with contrastive topics sketched out next.

(25) **Q:** *Tell me something about Onassis. When did he marry Jacqueline Kennedy?*

**A:** [*He*]<sub>TOP</sub> [*married her in 1968*]<sub>FOC</sub><sub>COM</sub>.

(Adapted from Krifka & Musan, 2012, p. 28).

It should be noted that there are further aspects of topic glossed over here, such as overt topic-lessthetic statements, multiple topic structures, topics on a set of entities, and the distinction of sentence and discourse topics (see Krifka & Musan, 2012; Neeleman & Vermeulen, 2013). Nevertheless, we now turn to a particular use of topic in the form of *contrastive topics* which are realised “with a rising accent” (Krifka & Musan, 2012, p. 30).

According to K&M, contrastive topics are not devices of information-packaging similar to contrastive focus. Instead, contrastive topics are combinations of (aboutness) topic and focus, where topic indicates the file card header the comment’s information is to be stored under, and focus induces alternatives to the topic. Consider example (26):

(26) **Q:** *What do your siblings do?*

**A:** [*My [SISter]<sub>FOC</sub>*]<sub>TOP</sub> [*[studies MEDicine]<sub>FOC</sub>*]<sub>COM</sub>,  
and [*my [BROther]<sub>FOC</sub>*]<sub>TOP</sub> [*is [working on a FREIGHT ship]<sub>FOC</sub>*]<sub>COM</sub>.

(Adapted from Krifka & Musan, 2012, p. 30; comment indices added).

In (26A), the contrastiveness of the topic in the first clause indicates the presence of the alternative topic introduced in the second clause (i.e., *brother*), leading to the interpretation that the respective clauses alone are not providing all information required by the question and CG management. Similar to what we have seen for focus, the use of contrastive topic in this fashion may also indicate that a more general question is to be accommodated by the addressee. This pattern is illustrated in example (27), where the contrastive topic in (27A), indicated through the focus in the topic, points to a more general question *Who was where?* which is to be added to CG management, driving the subsequent exchange. In particular, the speaker of (27A) implies alternatives to the topic that may be of interest in the following exchange.

(27) Q: *Where were you (at the time of the murder)?*

A:  $[[I]_{\text{FOC}}]_{\text{TOP}} [was [at HOME]_{\text{FOC}}]_{\text{COM}}$ .

(Adapted from Krifka & Musan, 2012, p. 30).

Although it is the prototypical use of contrastive topics “to indicate a strategy of incremental answering in the [CG] management” as presented above, not all contrastive topics are used in this way (Krifka & Musan, 2012, p. 30). In (28), for example, the contrastive topic is only to be interpreted in such a way that the provided assertion in (28A) is not satisfactory in its own right. Rather than commenting on the intended topic *my sister* introduced in (28Q), (28A) introduces *my brother* as a contrastive topic (i.e., including a focus indicating alternatives to the topic) and commenting on it. The information that he speaks Portuguese is to be added to the filecard of *my brother* and focus on this information indicates the alternative that he does not.

(28) Q: *Does your sister speak Portuguese?*

A:  $[My [BROther]_{\text{FOC}}]_{\text{TOP}} [[DOES]_{\text{FOC}}]_{\text{COM}}$ .

(Adapted from Krifka & Musan, 2012, p. 31).

### 2.3.1 Realisation of topic

Like the means of focus realisation, the ways languages encode topic—what we will call topic realisation in parallel with focus—have also attracted much interest. There are, however, broadly divergent descriptions based on the fact that the concept of topic, even more so than focus, has been understood and applied in various ways. Particularly the differentiation of aboutness and contrastive topic as proposed by K&M and outlined above is often not explicitly made or even discouraged, rendering analyses of topic realisation to be investigations of contrastive topic (e.g., see Büring, 2007, 2016).<sup>17</sup> While we will not delve into these divergent approaches to topic realisation in more detail, given that we are not primarily interested in the notion of topic in the first place, it can nevertheless be said that the notion of topic is associated with prosodic, syntactic, and morphological means of realisation, as well as any combination of these. Below, we will briefly and selectively illustrate these patterns.

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<sup>17</sup> Büring (2016) describes that the notion of (aboutness) topic, what he calls thematic topic, to be profoundly problematic. Arguing against the a priori assumption that knowledge can be organised in such a way that it can be said to be *about* something, he argues that aboutness topics do not display language-independent properties in the first place on which the notion can be built upon, suggesting refraining from the notion of aboutness/thematic topic altogether.

Generally, topics in languages like English are marked prosodically with pitch accents, or intonationally through separate intonation phrases (Krifka & Musan, 2012, p. 35). Potentially the most well-known prosodic realisation of (contrastive) topic then is what Jackendoff (also see Bolinger, 1958, 1961) calls the fall-rise B-accent, which is held in contrast to a falling A-accent assumed to indicate focus. The association of topic, or contrastive topic in particular (see Büring, 2003), with a fall-rise or rising accent (L+H\*/L\*H), has been described in languages like German, English, Russian, and Arabic (see Kügler & Calhoun, 2020 and references therein). Similarly to what we have seen in connection to focus realisations, however, such strict one-to-one mappings may not always hold (see Féry, 2007). For English, Hedberg and Sosa (2007) showed that A and B-accents are, in fact, not categorically associated with focus or topic, although there is undoubtedly a statistical correlation. Coming to a similar conclusion, Frascarelli and Hinterhölzl (2007) analysed Italian and German corpus speech data, differentiating (i) shifting topics (i.e., new aboutness topics here), (ii) contrastive topics, and (iii) familiar topics in the form of given, discourse-linked constituents, which are typically realised unstressed and in pronominal form for topic continuity (i.e., non-new aboutness topics here). Their analysis suggests that these topic types as discourse roles are systematically associated with syntactic and prosodic patterns, albeit in different language-dependent ways.

Although topics may be realised prosodically and/or intonationally, they may additionally be associated with syntactic means, realised in the prominent clause-initial position (see Krifka & Musan, 2012). Leaving aside the differentiation of aboutness and contrastive topics and simplifying extensively, “[t]he initial position is [...] associated with topics”, necessitating movement of constituents to this positions for topic realisation if they are not sentence-initial to begin with (Kügler & Calhoun, 2020, p. 466). Consider example (29) indicating this pattern commonly referred to as *topicalisation*.

- (29) a. [*This book*]<sub>TOP</sub>, I really like.  
 b. As for [*this book*]<sub>TOP</sub>, I really like it.  
 c. [*This book*]<sub>TOP</sub>, I really like it.

(Adapted from Miyagawa, 2017, p. 1; topic indices added).

While there are more detailed analyses regarding topicalisation not elaborated on here (e.g., see Neeleman & van de Koot, 2016), the absence of a strict one-to-one mapping between IS notions in general and their means of realisation also applies here. While there is a tendency for topics to occur in initial positions, Féry (2007, p. 169) argues that this pattern can be explained on functional

grounds rather than a strict realisation pattern: “since [the topic] is the element about which the remainder of the sentence makes a comment, it certainly is reasonable to introduce it right at the beginning of the sentence”. Furthermore, ‘initiality’ may not be necessary for topic realisation, as illustrated in the Japanese example in (30), although topics might occur by default sentence-initially if the in-situ topic constituent is already in that position. In general, topicalisation is a mere preference regarding IS and the optimisation of communication arising from independent properties.

- (30) *Daremo-ga [dezaato-wa]<sub>TOP</sub> aisu-o tabeta.*  
everyone-NOM dessert-TM ice.cream-ACC ate  
‘As for dessert, everyone ate ice cream.’

(Adapted from Féry, 2007, p. 169; phrase markings removed).

To cap off this short overview of topic realisation patterns here, some languages are assumed to realise topic through specific markers, similar to what we have described regarding focus realisation. Much interest has been paid to Japanese, where the particle *wa* is generally regarded as the topic marker of the language (see Heycock, 2008; Vermeulen, 2013 for overviews). Consider (31) as an example.

- (31) **Q:** *Taro-nituite nanika osiete-kudasai.*  
Taro-about something tell-give  
‘Tell me something about Taro.’  
**A:** *[Taro-wa]<sub>TOP</sub> kinoo ano boosi-o katta.*  
Taro-TM yesterday that hat-ACC bought  
‘Taro bought that hat yesterday.’

(Adapted from Vermeulen, 2013, p. 198).

Although example (31) appears to show that *wa* indicates (aboutness) topics, there is considerable debate and uncertainty about the question of whether *wa* can, indeed, be called a topic marker or not (Tomioka, 2016; for the argumentation presented below, see Vermeulen, 2013). While we will not elaborate on this scientific debate here, it highlights the lack of a strict one-to-one mapping of realisation and IS notions again. First and foremost, the particle *wa* is not interpreted uniformly and may be understood as an aboutness topic, a contrastive topic, and a frame setter in different structures. Crucially, *wa* may also be used in negative sentences, devoid of a topic understanding. Furthermore, there is some interaction of prosodic realisations with the *wa*-marker, in which contrastive topic uses

are typically realised with focus prosody (i.e., focal pitch accent), while aboutness topic uses are not. Lastly, as shown in (30), there is variability regarding the sentence-initially of *wa*-marked topics, underlining that topicalisation may not be a necessity for focus realisation.

## 2.4 The notions of givenness in IS

As the last but certainly not less important notion of K&M's framework, *givenness* plays an essential role in IS (2012). Chafe (1976), for example, proposed givenness as one of the statuses relating to information packaging, with the vital role of givenness also highlighted by Halliday (1967), amongst many others. However, similar to our sketch of the notion of topic, the approach to givenness presented here is by no means intended to be complete but is instead restricted to the understanding and arguments by K&M in connection to information packaging and CG to provide a sound theoretical foundation for our experimental investigations (2012; for a cohesive overview on the role of givenness in IS, see Rochemont, 2016). Given this caveat, consider the definition of givenness in (32).

(32) **Definition of givenness:**

A feature  $X$  of an expression  $\alpha$  is a givenness feature if  $X$  indicates whether the denotation of  $\alpha$  is present in the common ground or not, and/or indicates the degree to which it is present (its *saliency*) in the immediate common ground.

(Adapted from Krifka & Musan, 2012, p. 22).

Notably, the definition of givenness in (32) allows for *degrees of givenness*. Thus, although we have previously posited a distinction of given and new, more states need to be distinguished, an assumption already tended to by Chafe (1976) and elaborated on in the subsequent literature (e.g., Chafe, 1987; Gundel et al., 1993; Lambrecht, 1994; Prince, 1992). This assumption of givenness as a continuum or scalar notion is intuitionally phrased by K&M (2012, p. 22) as follows:

A discourse referent can be completely new and non-identifiable for the hearer if there is no representation of it in his memory. But it may also be the case that there is a representation of it in his memory that is just not activated at the moment because the discourse referent has not been mentioned for a long time. And if the discourse referent has been mentioned in the linguistic context of an utterance, this might have happened in the sentence right before, or the antecedent might have occurred [sic!] several sentences earlier.

## Chapter 2. IS, information packaging, and common ground

Under the definition of givenness in (32), K&M distinguish two forms or phenomena of givenness based on their formalisation, namely *anaphoric expressions* and what we will call *grammatically encoded givenness*. Anaphoric expressions are lexically specified for the givenness feature, such as definite and indefinite articles, personal pronouns, clitics, and demonstratives (Krifka & Musan, 2012). An example for English would be that the given definite NP in (33b) and the given pronoun in (33c) co-refer to the same entity introduced by the indefinite NP *a suitcase*. In contrast, the second indefinite NP in (33a), which is not positively set for the feature of givenness, cannot be understood to refer to the same entity introduced previously.

- (33) a. \* *There was [a suitcase]<sub>1</sub> on the street. John carried [a suitcase]<sub>1</sub> inside.*  
b. *There was [a suitcase]<sub>1</sub> on the street. John carried [the suitcase]<sub>1</sub> inside.*  
c. *There was [a suitcase]<sub>1</sub> on the street. John carried it<sub>1</sub> inside.*

(Adapted from Krifka & Musan, 2012, p. 24).

The previously mentioned understanding of givenness as a continuum also comes into effect in (33), where it can be argued that givenness in (33b) and (33c) differ. Without delving into much detail here, the anaphoric expressions in (33) are part of a givenness hierarchy, where the “denotations in the immediate common ground are ranked concerning their givenness status such that simpler anaphoric expressions [(e.g., pronouns)] are used to refer to more salient denotations” (Krifka & Musan, 2012, p. 23; see Gundel et al., 1993 for an explicit postulation of the givenness hierarchy of English anaphoric expressions). However, rather than the anaphoric expression of givenness, grammatically encoded givenness is of primary interest to this dissertation. While we will elaborate on these formal tools of indicating givenness in the following sub-section, consider example (34) by K&M and their analysis below (2012, p. 24):

- (34) a. *Ten years after John inherited an old farm, he SOLD [the shed]<sub>Given</sub>.*  
b. *Bill went to Greenland, and Mary did \_ too.*  
c. *Bill showed the boy a girl.*  
d. \* *Bill showed a boy the girl.*  
e. *Bill showed the girl to a boy.*

Three means of grammatically encoding givenness are possible in English: deaccentuation, deletion, and syntactic reordering. The first one of which could be present in (34a) if the given NP is, in fact, deaccentuated. In this case, *the shed* must be understood to be given and coreferential with the entity indicated by



*an old farm*. If, however, the shed is not deaccentuated, it cannot be understood to be this entity, but instead, it would be something else (i.e., a shed), such as a part that came with the farm. Deletion, or more specifically VP ellipsis, is indicated in (34b). As the VP *went to Greenland* is given in the first clause, it may not be realised, as in the second phrase. Lastly, the examples (34c-d) are double object constructions. Note that the given object, indicated by a direct article, precedes the non-given object, and failure to adhere to this pattern is infelicitous as in (34d). Especially this later given before non-given pattern will be explored in the next chapter.<sup>18</sup>

In understanding givenness as drawn out above, K&M argue that it is a notion independent of focus (contra Schwarzschild, 1999). Therefore, neither can focus be eliminated from givenness nor can givenness be conclusively eliminated from focus. In addition to the arguments against equating focus with ‘newness’ presented earlier, consider example (35) where a given anaphoric expression in the form of a pronoun, additionally inflected for agreement—a further form of grammatically encoded givenness—is in focus.

(35) *Mary only saw [HIM]<sub>(Given)/FOC</sub>.*

(Adapted from Krifka & Musan, 2012, p. 27; givenness subscript added).

Assuming grammatically encoded givenness and alternatives-inducing focus to be independent notions of IS in the sense of CG development and information packaging then, the question arises of what happens when a given element, which we assume to be deaccentuated, is focused, requiring focal accent. Consider, again, example (35): the pronoun is accentuated, as would be expected for focus. K&M argue that in such cases, “focus accentuation overrides deaccentuation of given constituents” (2012, p. 25). The interaction of focus accentuation and givenness deaccentuation becomes more evident when dealing with more extensive phrases or constituents described by K&M, such as (36).

(36) **Q:** *I know that John stole a cookie. What did he do then?*

**A:** *He [reTURNED [the cookie]<sub>Given</sub> ]<sub>FOC</sub>.*

(Adapted from Krifka & Musan, 2012, p. 25).

<sup>18</sup> We are deliberately avoiding terms like *given-before-new* or *given-new* dichotomy, following the arguments presented by Schwarzschild (1999) and upheld by K&M (2012). The definition in (32) considers givenness as a feature, which is either set or not (or placed within the continuum). ‘Newness’ or ‘new’, on the other hand, cannot be defined in such a manner.

Within the VP in (36B), focus would be usually realised through pitch accent (i.e., nuclear stress) on the most embedded element or argument, the object. However, this object NP is set for givenness and thus deaccented, causing the verb, being the head, to be marked for focus through focal pitch accent. In conclusion, we follow K&M in regarding focus and givenness as separate notions of IS with their individual reflexes, which may apply simultaneously or override each other, as is the case when focus realisation through accentuation overrules the realisation of givenness through deaccentuation.

### 2.4.1 Realisation of givenness

We have identified three means involved in the realisation of grammatically encoded givenness: deaccenting, deletion, and word order. Turning to deaccentuation first, which is possibly the most well-known association with givenness, it has been argued that a given phrase is deaccentuated or prosodically non-prominent (e.g., see the Destress-Given constraint postulated by Féry & Samek-Lodovici, 2006). Crucially, this one-directional implication (givenness → deaccent) is also understood and phrased inversely. K&M (2012, p. 34), for example, state that “[i]n English and German, [deaccentuation] signals givenness” (deaccent → givenness). However, as explicitly stressed by Féry (2007; Kügler, 2018, among others; also see Rochemont, 2016), the association between givenness and deaccentuation must not be taken strictly: givenness is not obligatorily associated with deaccentuation nor must deaccented elements express givenness. Briefly exemplified in (35), we have seen that accenting associated with focus may override (anaphoric expression) givenness, while co-occurrence of two adjacent accents may also lead to deaccentuation, independent of givenness. In summary, similar to all realisation mechanisms encountered so far, givenness and deaccentuation do not form a strict one-to-one mapping, although they are indeed correlated.

As the most extensive version of reduction, deletion is also associated with givenness in that given information may be deleted (Krifka & Musan, 2012, p. 24). Consider example (37) for illustration.

- (37) a. *Anna promised to play the piano but she DIDN'T \_.*  
b. *Someone's playing the piano but I don't WHO \_.*  
c. *First he played a solo with one hand and then with TWO \_.*  
d. *MANNY plays the PIANO and ANNA \_ the FLUTE.*  
e. *MANNY plays the piano and ANNA \_ TOO.*  
f. *Manny PLAYS \_ and Anna TUNES the piano.*

- g. *They play the PIANO better than they DO \_ the FLUTE.*  
 h. *ANNA played much faster than could have MANNY \_.*

(Adapted from Winkler, 2016, pp. 4, 5).

On more conceptual grounds, the question of how the phenomenon of ellipsis (i.e., omission of linguistic material, structure, and/or sound) relates to the process of (PF-)deletion is intricate and will not be elaborated on here. Nevertheless, givenness—mainly as defined in (32)—is clearly involved in (37) (for a formal overview on the role of IS in ellipsis, see Winkler, 2016). Regarding IS, however, it is not givenness alone that plays a role in elliptical constructions. For example, in comparison to (37a-c), what is called *givenness marking ellipses*, (37d-h) also requires that “the remnants [...] occur in a contrastive relationship with their correlates” (Winkler, 2016, p. 5). In other words, the omitted material and the remaining material are contrastively related. Thus, ellipsis (and deletion) is not solely associated with givenness. Furthermore, considering the examples provided above, not all given information must be omitted. Therefore, there is no strict one-to-one mapping between givenness and deletion/omission.

Lastly, a well-known cross-linguistic principle with regards to word order is that given information precedes new (i.e., non-given) information (e.g., see Clark & Clark, 1977; Clark & Haviland, 1977; Siewierska, 1993). To satisfy this principle, the realisation of givenness can involve certain syntactic mechanisms, such as scrambling, passivisation, or a combination of both, depending on the language in question and its properties. Drawing from the extensive cross-linguistic analysis of such givenness realisation mechanisms by Skopeteas and Fanselow (2009), consider examples (38) and (39) from Georgian and Dutch, both being languages with a canonical SOV structure.<sup>19</sup>

(38) **Scene 1:** *‘There is a box on the table...’*

**Scene 2:** ... *qut-s k’ac-i a-gd-eb-s.*  
 box-DAT man-NOM NV-(IO3)throw-THM-PRS.SA.3SG

*‘...a man is throwing the box.’*

(‘agent = SUBJ/non-first; condition given patient’)

(Adapted from Skopeteas & Fanselow, 2009, p. 4).

<sup>19</sup> In the experimental cross-linguistic study by Skopeteas and Fanselow (2009), the participants’ task was to describe two sequential pictures (i.e., scenes). These picture sets were designed in such a way, that they belonged to one of two conditions: (i) *given agent* sequences, where the target (i.e., second scene) description involved a given agent but non-given patient, and (ii) *given patient* sequences, where the target description involved a given patient and non-given agent.

(39) **Scene 1:** ‘*There is a small table on a staircase...*’

**Scene 2:** ... *eh, de tafel wordt door een meisje van de trap geduwd.*

‘...the table is pushed from the staircase by a girl.’

(‘decoded as ‘agent = non-SUBJ/non-first; condition given patient’)

(Adapted from Skopeteas & Fanselow, 2009, p. 19).

In the Georgian example in (38), we see an example of the *object fronting strategy* to satisfy an instance of given patient before non-given agent (i.e., what is satisfied is the given before non-given order), leading to non-canonical word order. In the Dutch example in (39), however, we see the *passivisation strategy* to satisfy another given patient before non-given agent instance. Based on such examples and elicitations in many other languages, Skopeteas and Fanselow (2009) show how givenness is associated with word order and syntactic operations. However, this does not mean that there is a strict mapping between the object fronting or passivisation strategies and givenness. In fact, Skopeteas and Fanselow (2009, p. 25) found that in all languages of their sample, these strategies are optional: “our results corroborate the view that scrambling and passivisation are not only optional from a purely syntactic point of view but also in terms of the expression of information structure”. Furthermore, languages may not realise given before non-given at all. This *canonical word order strategy* was observed in Greek, where—based on the properties of the language—neither passivisation nor object fronting is available in items that would preferably require syntactic operations, such as the ones presented in (38) and (39).

## 2.5 The notion of contrast

So far, we have strictly adhered to the framework of K&M (2012) in definitions and reasoning. However, we have also mentioned that the aspect of contrastiveness, which has been interpreted variously in the literature (see Repp, 2016; Rochemont, 2016 for overviews), is to be ‘revised’. We believe that reasons for this diversion from K&M’s framework are provided by a (preliminary) analysis by Samek-Lodovici (2018), who directly compared the understanding of contrastiveness and focus by K&M with an alternative one proposed by Neeleman and Vermeulen (N&V; 2013). By comparing various focus-eliciting conversational exchanges in (British) English, including open and closed question-answer pairs, Samek-Lodovici found that givenness à la N&V, in interaction with the understanding of focus as inducing alternatives based on AS, best captures the focus phenomena in question. Based on this work by Samek-Lodovici, we will

briefly outline the understanding of contrast(iveness) and focus by N&V below, and present Samek-Lodovici's comparison of approaches regarding the two exchange types of relevance to this dissertation (i.e., corrective statements and open & closed question-answer pairs).<sup>20</sup>

Contrary to the understanding of the IS notion of focus and the focus type of contrastive focus by K&M presented in sections 2.2 and 2.2.3, and following similar approaches by Vallduví and Vilkuna (1998) and Molnár (2002), amongst others, N&V (2013, p. 5) argue that contrast is a discourse notion distinct from focus (and topic). As such, N&V see contrast as a separate semantic component or primitive related to IS, with its own mapping rules acting between syntax and IS. Put informally, contrast à la N&V, when paired with focus, entails that at least one proposition in the focus semantic value of the structure that bears contrastive focus, generated independently by focus, is negated, while the focus aspect of contrastive focus also indicates which propositions hold (see Gussenhoven, 2008 for a similar definition of corrective focus). As such, contrast is quantificational in nature in the approach by N&V. To illustrate this, consider the contrastive focus in example (40). In (40B), the focus aspect of the contrastive focus on *cake* creates a focus semantic value {[Mary wants cake], [Mary wants soda], [Mary wants fruit], ...}, indicating that the proposition and ordinary semantic value [Mary wants cake] to hold. Simultaneously, however, contrast expresses that there is at least one element in the focus semantic value that does not hold (i.e., that is negated), or in other words, there is at least one thing that Mary does not want. In this case, this must be at least *fruit* or, more specifically, the focus semantic alternative of [Mary wants fruit].

- (40) **A:** *Mary wants fruit.*  
**B:** *(No,) Mary wants [CAke]<sub>contrastive FOC</sub>.*

This approach to contrast is distinct from the understanding of contrast in contrastive focus by K&M, where the latter entails that the CG content contains at least one alternative proposition other than the ordinary semantic value that can be contrasted or that such an alternative proposition can be accommodated (2012; see section 2.2). While the distinction of contrast between these definitions may appear to be a quibble regarding corrective statements like (40), we will see in section 2.5.1 that the definitions by K&M and N&V make divergent predictions in other exchange types.

<sup>20</sup> To limit the extent of this framework, we will concentrate on contrast(iveness) in interaction with the notion of focus here, as done by Samek-Lodovici (2018). It should, however, be clarified that the approach by Neeleman and Vermeulen (2013) also extends to (contrastive) topics. Readers interested in the relation of contrast à la N&V with regards to topics are kindly asked to consider N&V's paper.

In its function as understood by N&V, contrast is not a pragmatic effect but rather contributes its negation as a purely semantic component to the utterance (contra Zimmermann & Onea, 2011, p. 1664). Although no contrast and thus no negation is present in new-information focus, N&V (2013) acknowledge that such forms of focus also have a pragmatic type of contrast in that they appear to reject alternatives, albeit to a weaker extent (also, see Krifka, 2008). They propose this ‘pragmatic contrast’ to be based on Gricean reasoning, where the hearer of an answer to an open question “infers that the answer to [the] *wh*-question he or she asked will be complete” (Neeleman & Vermeulen, 2013, p. 9). Importantly, however, the negation in contrast is semantic in nature and cannot be cancelled, whereas the Gricean implicature is cancellable. In other terms, the distinction is whether the negation of at least one alternative can be cancelled through, for example, continuation sentences. Such semantic negation in contrastive focus cannot be cancelled (i.e., the continuation sentence is infelicitous), while negation based on Gricean Reasoning can be cancelled (i.e., the continuation sentence is felicitous). This pattern and the test of cancellability following N&V will be demonstrated in the following section with regard to the analysis by Samek-Lodovici (2018).

Focus as a notion of IS, on the other hand, is understood by N&V within the framework of AS described in section 2.2. Thus, focus in their analysis, akin to K&M (2012), induces alternative propositions. Ultimately, N&V describe their analysis to be a four-way differentiation of focus, topic, and contrast, as illustrated in (41). At the same time, the framework by K&M does not consider contrastiveness as a distinct notion, treating contrastive focus as a type of focus (and treating contrastive topic as a combination of focus and topic), as illustrated in (42) (adapted from Neeleman & Vermeulen, 2013, p. 25).

(41)

	Topic	Focus
	aboutness topic [topic]	new-information focus [focus]
Contrast	contrastive topic [topic, contrast]	contrastive focus [focus, contrast]

(42)

	<b>Topic</b>	
	aboutness topic [topic]	
<b>Focus</b>	contrastive topic [topic, contrast]	new information / contrastive focus [focus]

### 2.5.1 Definitions of contrast, corrections, and question-answer pairs

As mentioned previously, the analysis by Samek-Lodovici (2018) compared multiple exchange types regarding whether they elicit/contain contrastive foci in order to compare the predictions of the divergent understandings of contrast by K&M (2012) and N&V (2013).<sup>21</sup> The (British) English exchange types investigated by Samek-Lodovici consist of various confirmative and additive structures, and most importantly for the present dissertation, corrective statements or corrections, and open/closed question-answer pairs. Concentrating on corrections and question-answer pairs, as will be done in what follows, is of interest in its own right, as these exchange types cover cases where both theories (i) agree that there is no contrast (open question-answer pairs), (ii) that there is contrast (corrections), and (iii) cases where the approaches make divergent predictions (closed question-answer pairs).

To determine whether the exchange types mentioned above elicit contrast, Samek-Lodovici (2018, p. 68) use the ability to front (i.e., topicalisation), an ability commonly assumed to be associated with contrast in English and other languages (see Winkler, 2013, p. 85; also see section 2.3.1).<sup>22</sup> Additionally, the non-cancellability of contrast described by N&V is used, specifically with regards to the debated case of closed question-answer pairs.

Turning first to exchanges both theories of contrast agree upon, consider the correction and open question-answer pair examples in (43) and (44):

<sup>21</sup> Samek-Lodovici (2018) specifically considers the framework by Krifka (2008). As this paper by Krifka is largely contained in the chapter by Krifka and Musan (2012), we will be considering the latter here, as we have done so far.

<sup>22</sup> For simplicity, we will use the term fronting here, following Samek-Lodovici (2018). It is to be noted though, that N&V (2013) formally elaborate on this behaviour on the basis of Dutch, connecting their analysis of contrast as a quantifier with A'-movement (also see Neeleman & van de Koot, 2016).

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- (43) **A:** *John read The Extended Phenotype.*  
**B:** *(No, you're wrong.) He read [The Selfish Gene]<sub>contrastive FOC</sub>.*  
**B':** *(No, you're wrong.) [The Selfish Gene]<sub>contrastive FOC</sub> he read.  
[The Extended Phenotype]<sub>contrastive FOC</sub> he only bought.*

(Adapted from Neeleman & Vermeulen, 2013, pp. 8-9).

- (44) **A:** *What did John read?*  
**B:** *He read [The Selfish Gene]<sub>new-information FOC</sub>.*  
**B':** *# [The Selfish Gene]<sub>new-information FOC</sub> he read.*

(Adapted from Neeleman & Vermeulen, 2013, p. 9).

As mentioned previously, corrections such as in (43) are agreed upon by K&M and N&V to bear contrastive focus. For K&M, (43A) introduces the proposition [John read The Extended Phenotype] to CG. Being also within the focus semantic value and different from the ordinary semantic values in (43B,B'), this proposition serves as contrast. For N&V, the focus component in the contrast-bearing corrective focus in (43B,B') indicates the proposition and ordinary semantic value of [John read The Extended Phenotype] to hold amongst the focus semantic values {[John read The Extended Phenotype], [John read Harry Potter], [John read The Selfish Gene], ...}. The contrast component of the contrastive foci in (43B,B') semantically entails that at least one alternative was not read by John, with the alternative *The Extended Phenotype* being at least one of these negated alternatives. We see this specifically in (43B'), where the focus component of the contrastive focus in the continuation *He only bought The Extended Phenotype* indicating *The Extended Phenotype* as at least one alternative that holds for *John bought X*. The ability but not necessity to front the contrastive focus in (43B') confirms the understandings of K&M and N&V that corrections involve contrast. Open question-answer pairs like (44), however, assuming that they occur out of the blue (i.e., there is no restricting context), elicit non-contrastive new-information focus according to K&M and N&V. This is confirmed by the inability of fronting in (44B') (see Samek-Lodovici, 2018, p. 68).

While corrective exchanges and open question-answer pairs are treated the same way regarding contrast by K&M and N&V, these approaches to contrast make divergent predictions in closed question-answer pairs. Consider example (45) for illustration.



- (45) **A:** *What did John read this summer? The Bible or the Quran?*  
**B:** *He read [The Bible]<sub>contrastive FOC</sub>.*  
**B':** *[The Bible]<sub>contrastive FOC</sub>, he read.*  
**B'':** *[The BIBLE]<sub>contrastive FOC</sub>, he read.*  
*# He read everything he could lay his hands on, QURAN included.*

(Adapted from Samek-Lodovici, 2018, p. 70).

According to K&M (2012), example (45) does not involve contrastive focus.<sup>23</sup> As propositions of questions do not enter the CG, the CG in (45) is empty and cannot share a proposition with the answer's focus semantic value, assuming no previous discourse populated common ground (see Samek-Lodovici, 2018). For N&V, on the other hand, the closed question in (45) does involve contrast. In (45B,B'), contrast on the focused object (semantically) negates at least one alternative, with the focus semantic value [He read the Quran] being at least one of the negated alternatives. Again, there are two sources of evidence for contrast in (45) and thus in favour of N&V: (i) the ability to front (45B') that is restricted in English to contrastive foci, and (ii) the non-cancellability of the negated alternative *the Quran* by the continuation sentence (i.e., the infelicitousness of the continuation sentence), as would be expected when the proposition *the Bible* is in contrastive focus (45B''). In other words, because the alternative *the Quran* must be at least one of the alternatives that were not read by John this summer, the continuation sentence in (45B'') is infelicitous, as the same alternative cannot hold for *John read x this summer* and *John did not read x this summer*.

Previously, we have introduced the prediction by N&V that the negation of alternatives should be based on Gricean Reasoning is cancellable, while semantic contrast negation should not be. Following N&V and Samek-Lodovici, we can test this prediction in examples (45) and (46) using continuation sentences, the latter of which not involving contrast. As predicted, contrast in the closed question case in (45B'') does not allow cancellation, while the Gricean implicature in the non-contrast case in (46B) is, indeed, cancellable (i.e., the continuation sentence is felicitous).

- (46) **A:** *What did John read this summer?*  
**B:** *He read [The BIBLE]<sub>new-information FOC</sub>.*  
*He read everything he could lay his hands on, QURAN included.*

<sup>23</sup> As a reminder, Krifka and Musan (2012) propose the terms closed and open focus for the cases of closed and open question-answer pairs respectively.

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**B'**: # [The Bible]<sub>new-information FOC</sub>, he read.

**B''**: # [The BIBLE]<sub>new-information FOC</sub>, he read. # He read everything he could lay his hands on, QURAN included.

(Example follows Samek-Lodovici, 2018, p. 63).

In summary, Samek-Lodovici (2018, p. 72) takes exchanges like the ones presented above and the remaining exchanges analysed by him not represented here, as (preliminary) evidence that the understanding of contrast à la N&V as a semantic negation component in interaction with focus as understood in AS “are sufficient to model focali[s]ation elicited by open and closed questions, as well as corrective, confirmative, and additive conversational exchanges”. There are, however, certain caveats raised by Samek-Lodovici regarding this conclusion. One of which is the fact that the exchanges covered do not cover all aspects of contrast. Exhaustive focus, treated by K&M as a separate focus type (see section 2.2.3) and involved in identificational focus (see section 2.2.5), for example, remains elusive. It could be asked whether exhaustiveness is another (semantic) primitive, or whether it could be integrated into N&V’s contrast component with an exhaustive operator, for example. Most interestingly regarding the present dissertation, it remains questionable whether the semantic contrast primitive, similar to other IS notions, is cross-linguistically valid. Primarily the test of ability to front appears not to be universal in this sense (see Samek-Lodovici, 2018, p. 74). If we assume, following the N&V and the analysis drawn out above, that corrections and closed question-answer pairs involve contrast while open pairs do not, the experimental investigations presented in the following sections will add to this assumption by showing that fronting in Turkish does not differentiate contrastive and non-contrastive new-information focus.

## Chapter 3

# Production of syntactically variable focus in Turkish: An elicitation experiment

### 3.1 Introduction

In the framework of information Structure (IS) and its central notions presented in chapter 2, we have seen that the languages of the world employ different means of IS—and particularly focus—realisation, spanning phonological, syntactic, and morphological means, as well as any combination of these encoding mechanisms. Due to its extensive word order variability, one language that has attracted much attention and scientific debate regarding IS and focus realisation is Turkish. As an agglutinative, head-final language with an overt case-marking system, Turkish allows for “the major case marked constituents of a clause to appear in all possible orders in a sentence in the preverbal as well as postverbal positions”, licensing all major word order configurations in transitive structures (among others, see Cevat, 1931; Erguvanlı, 1984; Erkü, 1983; Kural, 1997; Özsoy, 2019, p. 2). The sentences provided in (47) underline this pattern for accusative marked definite direct object NPs and zero-marked nominative subject NPs.

- (47) a. *Yazar makale-yi bitir-di.*  
author article-ACC finish-PAST  
'The author finished the article.' **SOV**
- b. *Makale-yi yazar bitir-di.* **OSV**
- c. *Makale-yi bitir-di yazar.* **OVS**
- d. *Yazar bitir-di makale-yi.* **SVO**
- e. *Bitir-di yazar makale-yi.* **VSO**
- f. *Bitir-di makale-yi yazar.* **VOS**

(Adapted from Özsoy, 2019, p. 2).

The word order variability illustrated in (47) must not be considered as unconditional though. The various configurations in Turkish have “different discourse interpretational effects”, not captured straightforwardly by the English translation (Gürer, 2020, p. 14). In a more assertive approach, Şener argues word order in Turkish to be determined by IS (Şener, 2010, 2019). While we will consider the role of word order in Turkish IS and specifically focus realisation in greater detail in the following subsection, one prevailing point of disagreement in the literature revolves around the assumption of a focus position in Turkish.

Given the interplay of word order and IS in the language, research on focus and its realisation in Turkish has proposed various degrees to which focus involves syntactic means. Different views in the literature cover (i) assumptions of Turkish as a strict focus position language à la Büring (2010), with focused elements necessarily occurring in the immediately preverbal position (e.g., see Hoffman, 1995; Şener, 2010, 2019), (ii) interpretations of the immediately preverbal position as a focally loaded position, with new-information focus necessarily occurring there (e.g., see Erguvanlı, 1984; İşsever, 2000, 2003; Kennelly, 1999; Kılıçaslan, 2004; Kural, 1997), and (iii) the abandonment of syntactic means in focus realisation in favour of purely phonological focus realisation (e.g., see Göksel & Özsoy, 2000; Özge & Bozşahin, 2010). Notwithstanding the resulting body of literature, a consensus on the question of syntactic focus realisation in Turkish could not be reached so far. It should also be noted that none of the approaches listed above assumes focus in Turkish to be solely realised through syntax. In fact, it is unequivocally agreed upon that IS and focus realisation in Turkish involve phonology/intonation, with an overview provided in section 3.3.

The present study aims to contribute experimental data to the debate of (syntactic) focus realisation in Turkish by eliciting speech controlled for focus while providing participants freedom to configure word order of the focus-bearing structures as they see fit. To determine the role of the supposed immediately preverbal focus position in Turkish, we employ an experimental design that allows for manipulation of focus size (broad, sentence focus vs narrow focus), focus target (subject vs object focus), and focus type (new-information focus vs contrastive focus) through in-situ and scrambled *wh*-questions. In other words, we are interested in whether either focus size, focus target, or focus type is associated with the proposed immediately preverbal focus position necessitating syntactic reordering processes (e.g., fronting). Additionally, we present an acoustic analysis of fundamental frequency ( $f_0$ ) and intensity in the elicited, syntactically variable speech regarding focus size, focus target, focus type, question type (i.e., comparing contrastive focus elicited by closed *wh*-questions and corrective exchanges),

and question order (i.e., comparing answers to in-situ *wh*-questions with answers to scrambled *wh*-questions).

### 3.1.1 Syntactic realisation of IS and focus in Turkish

Earlier, we have illustrated that Turkish allows for extensive word order variability in transitive, simple structures (i.e., consisting of no dependent clauses), which we concentrate on in this dissertation. This variability is understood to be related to discourse-pragmatic effects. It is widely agreed upon that Turkish is underlyingly an (S)OV language (among others, see Erguvanlı, 1984; Kornfilt, 1997; Kural, 1997), and as such, any word order configuration other than SOV would be non-canonical and linked to IS.

Since the early seminal work of Erguvanlı (1984), which remains highly influential in research on IS realisation and word order in Turkish, non-canonical configurations have been associated with specific IS-functional positions (e.g., see Erkü, 1983; Hoffman, 1995; Kornfilt, 1997). As her paramount finding, Erguvanlı demonstrated the discourse-pragmatic effects of word order in Turkish, concluding that “defining the constituent positions in a sentence in terms of their semantic and pragmatic properties explains the reason for [the] various word-orders in the language” (1984, p. 118). Specifically, she differentiated three IS components and their respective positions in Turkish: topic, focus, and background. Adapted from Erguvanlı, these functional positions linearised in (48) are assumed to underlie the Turkish word order, where X is “any material that may occur between the sentence-initial topic position and the immediately preverbal focus position” (1984, p. 171). These functional positions’ IS properties are assumed to be associated with *all* word order variations in Turkish, with all structures in (47), given a licensing context, adhering to (48). The concept of the immediately preverbal focus position in Turkish, in particular, is founded on these functional positions.

(48) Topic – X – Focus – Verb – Background

(Adapted from Erguvanlı, 1984, p. 118).

While more recent work continues this traditional mapping assumption, especially regarding the immediately preverbal focus position (Kurt & Dinçtopal Deniz, 2020; see also Şener, 2010, 2019), it has been highlighted that the mapping in (48) does, in fact, not cover all word order configurations in Turkish (e.g., see Göksel & Özsoy, 2000; Kılıçaslan, 2004). As stated by Kılıçaslan (2004, p. 719), such “a mapping [...] could be an appropriate formulation of a statistical tendency but not that of a structural necessity”. In his extensive analysis, Kılıçaslan

specifically argues that Turkish does not employ syntactic means of focus realization as suggested in (48). While it is true that the postverbal position(s) may only be occupied by backgrounded elements, they may also occur in preverbal positions, negating a strict positional assumption (i.e., X in (48)). Similarly, given topics may occur sentence-initially or postverbally, while non-given topics may not appear postverbally. Thus, there is a statistical correlation between the immediately preverbal position and focus in Turkish, but focus may also occur in any position other than the postverbal position. To quote, Kılıçaslan argues that “focus marking never triggers a syntactic operation” in Turkish, with the statistical tendency at the immediately preverbal position stemming from the displacement of background elements to the periphery (2004, p. 759). Therefore, Turkish cannot be considered a strict focus position language.<sup>24</sup> The possibility for focus in Turkish to occur anywhere preverbally was also described by Göksel and Özsoy (2000) in what they call the *focus field*, to which we will turn next.

A crucial parallelism regarding the word order variability in Turkish observed by Göksel and Özsoy (2000) is the similar behaviour of Turkish focus and *wh*-phrases. As such, focus and *wh*-phrases can occur in any position of simple transitive structures, except for postverbal positions. This variability is demonstrated in (49) for *wh*-phrases and (50) for foci, with small capitals indicating primary stress.

- (49) a. *Ali-ye yemeğ-i KİM pişir-di?*  
 Ali-DAT food-ACC who cook-PAST-3SG  
 ‘WHO cooked the food for Ali?’  
 b. *KİM Ali-ye yemeğ-i pişir-di?*  
 c. \* *Ali-ye yemeğ-i pişir-di KİM?*

(Adapted from Göksel & Özsoy, 2000, pp. 219–220).

- (50) a. *Ali-ye yemeğ-i [BEN]<sub>FOC</sub> pişir-di-m.*  
 Ali-DAT food-ACC who cook-PAST-1SG  
 ‘I cooked the food for Ali.’  
 b. *[BEN]<sub>FOC</sub> Ali-ye yemeğ-i pişir-di-m.*

<sup>24</sup> For clarity, it should be noted that proponents of the immediately preverbal or verb-adjacent focus position in Turkish did acknowledge non-verb-adjacent focus structures. Şener (2019), for example, attributes such non-verb-adjacent foci to speaker variation, where contrastive foci may be non-verb-adjacent but need to be marked by a sharp fall in postverbal intonation (i.e., postfocal deaccentuation). Nevertheless, for the (strict) syntactic hypothesis to hold, analyses like Şener’s (2019, p. 106) are limited “to the variant of Turkish that requires adjacency of focus to [the verb].”

c. \* *Ali-ye yemeğ-i pişir-di-m* [BEN]<sub>FOC</sub>.

(Adapted from Göksel & Özsoy, 2000, pp. 219–220).

Unlike languages in which *wh*-phrases necessarily undergo overt movement (i.e., *wh*-fronting in English), Turkish is a *wh*-in-situ language, where the *wh*-phrase's position parallels the canonical SOV order (see 8b; Özsoy, 2009). However, like the declarative sentences in (50), there is variability. Through *wh*-movement, exemplified in (49a), Turkish *wh*-phrases can also be realised ex-situ, although banned from postverbal positions (49c), as *wh*-phrases are inherently focused and not backgrounded. Thus, positional patterns in Turkish foci (50) also apply to *wh*-phrases, with triggers for *wh*-movement being similarly discourse-pragmatic in nature (Özsoy, 1996). Based on examples like (49) and (50)—the latter also applies to nonpronominal cases—Göksel and Özsoy (2000, p. 219) propose what they call the Turkish *focus field*, being “the area which hosts the elements denoting non-recoverable information, [covering] all preverbal positions (and the verbal complex)”. The focused structure is the leftmost element in the focus field.

The focus field is based on Göksel and Özsoy's interpretations of focus and *wh*-phrases as indicators of non-recoverable information, or put more simply, they regard focus and *wh*-phrases as indicators of new information. However, this is an inadequate definition for focus in particular, as we have illustrated in chapter 2. Focus may be realised on given information, as is the case with answers to closed *wh*-questions. Nevertheless, the focus field assumption covers focus and *wh*-phrase positions in Turkish correctly, with neither being licensed in postverbal positions. Therefore, we will maintain the concept of the focus field for the positions where focus and *wh*-phrases may be licensed in Turkish. However, it should be strictly noted that the recoverability of focus, or its givenness as defined by Krifka and Musan (2012), is not sufficient as the underlying reason for the focus field.

With Turkish not being a strict focus position language, the question arises whether syntactic variability of focus within the focus field possibly indicates an IS-loaded position. Previously, we have noted that Kılıçaslan (2004) argues against syntactic strategies of IS realisation in Turkish, while backgrounded elements and given topics may involve movement to the peripheries of the sentence. What we have left aside is his description of contrastive focus possibly involving movement to the left periphery, as focus is banned postverbally in general. The idea that the immediately preverbal focus position in Turkish, or more specifically, the occurrence of focus outside of this position but within the focus field,

is associated with focus type akin to what we have seen in Hungarian, has been prominently advocated by İşsever (2000, 2003, 2006). İşsever's (2003) approach to word order and IS, integrates intonation and syntax, applying the tripartite division of the IS notions focus, topic and link (i.e., background as the complement of focus for our purposes). He proposes the modified mapping skeleton in (51), incorporating positional restrictions within the focus field regarding focus type. Focus in (51) is the only obligatory item with parentheses marking nonobligatoriness.<sup>25</sup> The superscript *n* indicates the possibility of respective positions to host multiple elements.

(51) (topic<sup>n</sup>) – only identificational foci – (DA<sup>n</sup>) – all foci – (verb) – (DA<sup>n</sup>)

(Adapted from İşsever, 2003, p. 1028).

According to İşsever (2003), the syntactic variability of focus within the focus field arises from focus type, and different focus positions are not entirely interchangeable.<sup>26</sup> Contrastive focus, as exemplified in (52) with sentential stress indicated in capitals, can be realised anywhere in the focus field. New-information focus, on the other hand, is necessarily verb-adjacent, as shown in (53), meaning that any non-verb-adjacent focus must be contrastive.

(52) a. Q: *Ali ne-yi Ayşe'ye ver-di?*  
 Ali-NOM what-ACC Ayşe-DAT give-PAST-3SG

*Kitab-ı mı kalem-i mi?*  
 book-ACC QP pen-ACC QP

'What did Ali give to Ayşe? The book or the pen?'

A1: *Ali [KİTAB-I]<sub>FOC</sub> Ayşe'ye ver-di.*  
 Ali-NOM book-ACC Ayşe-DAT give-PAST-3SG

'Ali gave the book to Ayşe.' CONTRASTIVE FOCUS

<sup>25</sup> As we have shown in chapter 2, the 'realisation' of given information may include prosodic reduction (i.e., detressing) or complete elimination of given information. Similarly, in an answer to a Turkish question like *Adam neyi atıyor?* 'What is the man throwing?', focus corresponding to the direct object *Topu* 'The ball' is the only compulsory element in a well-formed answer, deleting all given information that is not focused.

<sup>26</sup> İşsever (2003) uses the focus type term of p(resentation)-focus for what we call new-information focus. Furthermore, he defines p- and c(ontrastive)-focus based on accessibility from context, which is more similar to our understanding of givenness. However, the examples of İşsever include corrective exchanges and answers to closed constituent questions, which we both consider triggering contrastive focus as defined by Neeleman and Vermeulen (2013; see chapter 2).



**A2:** *Ali*<sub>1</sub>     *Ayşe'ye*<sub>2</sub>     [*t*<sub>1</sub> *KİTAB-I t*<sub>2</sub>]<sub>FOC</sub> *ver-di*.  
 Ali-NOM Ayşe-DAT     book-ACC     give-PAST-3SG  
 'Ali gave the book to Ayşe.'     CONTRASTIVE FOCUS

b. **Q:** *Kim kitab-ı Ayşe'ye ver-di?*  
 who book-ACC Ayşe-DAT give-PAST-3SG  
*Ali mi Ahmet mi?*  
 Ali-NOM QP Ahmet-NOM QP  
 'Who did give the book to Ayşe? Ali or Ahmet?'

**A:** [*ALI*]<sub>FOC</sub> *kitab-ı Ayşe'ye ver-di*.  
 Ali-NOM book-ACC Ayşe-DAT give-PAST-3SG  
 'Ali gave the book to Ayşe.'     CONTRASTIVE FOCUS

(Adapted from İşsever, 2003, pp. 1034–1036).

(53) a. **Q:** *Fatma'yı kim arı-yor?*  
 Fatma-ACC who look.for-IMPF-3SG  
 'Who is looking for Fatma?'

**A1:** *Fatma'yı [ALI]<sub>FOC</sub> arı-yor*.  
 Fatma-ACC Ali     look.for-IMPF-3SG  
 'Ali is looking for Fatma.'     NEW-INFORMATION FOCUS

**A2:** # [*ALI*]<sub>FOC</sub> *Fatma'yı arı-yor*.  
 Ali     Fatma-ACC look.for-IMPF-3SG  
 'Ali is looking for Fatma.'     # NEW-INFORMATION FOCUS<sup>27</sup>

(Adapted from İşsever, 2003, pp. 1034).

Although the assumption that the positional variability of focus in Turkish within the focus field to be driven by focus type, as proposed by İşsever (2003), appears conclusive at first glance, critical investigations have provided evidence against this analysis. Arguing against any syntactic IS realisation in Turkish, assuming the focus, in particular, to be solely realised in prosody/intonation, Özge and Bozşahin (2010) question the contrastiveness of İşsever's (2003) non-verb-adjacent contrastive foci. The question thereby is not whether focus types are distinguished in Turkish. Instead, they argue against focus type "requir[ing] two distinct focusing strategies" in Turkish (Özge & Bozşahin, 2010, p. 158). Özge and Bozşahin propose that focus types in Turkish differ contextually and prosodically rather than semantically. While non-verb-adjacent foci in contrastive contexts are

<sup>27</sup> # marks infelicitous sentences in the given context.

contrastive in type, Özge and Bozşahin show that such ‘out-of-position foci’ can also be new-information focus in neutral contexts, eliminating İşsever’s central syntactic restriction. However, they suggest that focus types can be reflected in prosodic/intonational focus realisation, which we will turn to next, specifically in the form of contextual narrowness and post-focal deaccenting.

### 3.1.2 Prosodic realisation of focus in Turkish

As mentioned briefly at the beginning of this chapter, the debate regarding the role of syntactic means in Turkish does not mean that word order was ever considered to be the sole focus encoding mechanism. Going back to the early work by Erguvanlı (1984), (narrow) focus in Turkish has been associated with focal stress (i.e., main intonational prominence), which is to be distinguished from but may coincide with nuclear stress, or what Erguvanlı called emphatic and unmarked stress respectively (see footnote 30 on the understanding of ‘stress’ in Turkish). Similarly, Göksel and Özsoy (2000) differentiate immediately preverbal sentential (i.e., nuclear) and shiftable focal stress, which may or may not coincide, as will be illustrated below. Lastly, Özge and Bozşahin (2010) postulate the H\*L- pitch accent as the sole encoding of focus in Turkish.<sup>28</sup> As to how nuclear and focal stress/accent affect the prosodic properties of Turkish, we will refer to the study by Kamali (2014), who illustrates in multiple pitch tracks, how broad and narrow focus in SOV structures are realised in prosody, systematically combining several recent studies investigating broad (Güneş, 2013, 2015; see Kamali, 2011) and narrow focus (Gürer, 2014, 2015, 2020; see Özge & Bozşahin, 2010) realisations in Turkish.<sup>29</sup> While (additional) studies, particularly dealing with shifting narrow focus and focus types, are also presented in section 3.3.1, we will illustrate Kamali’s findings within pitch tracks selected from the current experiment next.

Considering the debate surrounding the supposed focus position in Turkish presented above, the immediately preverbal nuclear position is special from a prosodic/intonational perspective in Turkish in that it “carries main prominence in broad focus” (Kamali, 2014, p. 192; also see Erguvanlı, 1984; Erkü, 1983; Göksel

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<sup>28</sup> The intonational description utilized here follows Özge and Boşahin (2010, p. 140), with two differentiated tonal targets: H(igh) and L(ow). Tones associated with the respective stressed syllables are indicated by an appended asterisk \* (e.g., H\*). Intermediate phrase boundaries are indicated by an appended hyphen (e.g., L-), while intonational phrase boundaries are indicated by an appended percent % (e.g., H%).

<sup>29</sup> Kamali (2014) also investigates interrogative intonation, which we will not elaborate on further here.

& Özsoy, 2000).<sup>30</sup> As such, if an utterance is made out of the blue (i.e., the speaker intends accommodation of the question *What happened?* with no prior context), the immediately preverbal nuclear object in canonical SOV order receives prominence in ‘neutral intonation’, allowing the projection to broad, sentence-focus (see Kamali, 2014; contra this extensive generalisation see Özge U., 2012). Illustrated in figure 3.1, neutral broad focus intonation at the nucleus (object *elbise* ‘dress’) differs from the prenucleus (subject *kadın* ‘woman’) in that it does not involve phrase-final rise. The nucleus is also higher in pitch than the postnuclear verb *deniyor* ‘try-IMP-3SG’. It is this latter “fall after the stressed syllable of the nucleus into the postverbal low domain [that] seems to be how prominence [of the nucleus] is marked phonetically” (Kamali, 2014, p. 192).<sup>31</sup>

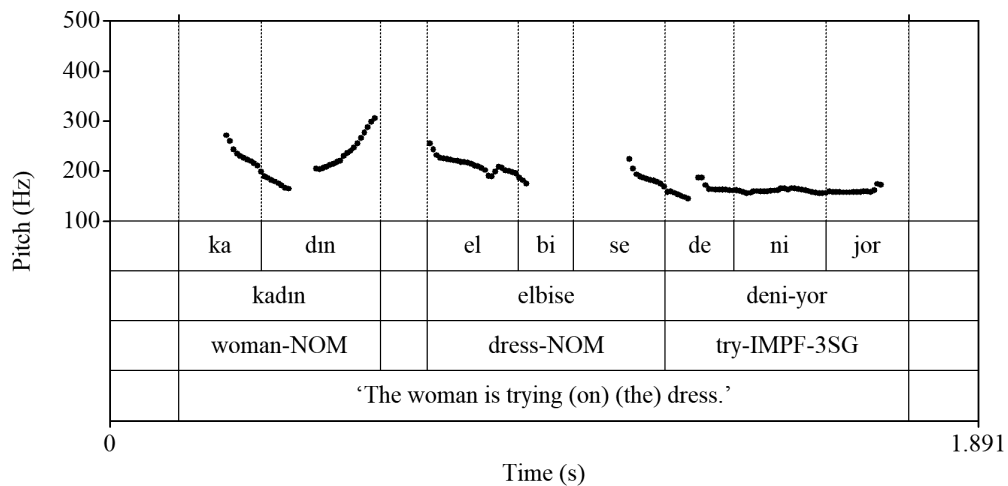


FIGURE 3.1: Untrimmed pitch track of **broad focus** trial t006 by participant S434 (female).

<sup>30</sup> We follow Kamali (2014) in referring to main prominence here, rather than nuclear or focal stress as done by Erguvanlı (1984), and Göksel and Özsoy (2000), amongst others. This decision is based on the scientific debate surrounding the question of whether Turkish is a stress-accent language like English (i.e., languages that use pitch, duration, and loudness to accent syllables), or whether it is a pitch-accent language, only relying on pitch. In fact, the term ‘stress’ in Turkish appears to be applied interchangeably by authors, often not specifying which acoustic correlates are assumed to be involved. While the acoustic analysis by Levi (2005) indicates that pitch (i.e., its acoustic correlate of  $f_0$ ) is the most reliable cue for accentuation in Turkish, leading her to categorise Turkish as a pitch-accent language, she also found that intensity and duration display effects in Turkish accentuation. This open question notwithstanding, we look at pitch only in Kamali’s analysis, while duration and intensity are considered in experimental investigations on focus realisation in Turkish as is presented later in this section.

<sup>31</sup> The phrase-final rise in the sentence-initial prenucleus coincides the prosodic realisation of topic, which Özge and Bozşahin (2010, pp. 159–164) identify as involving a L\*H- pitch accent (Erguvanlı, 1984; İşsever, 2003 described topics to be realised with rising pitch). Thus, it could be argued that the sentence-initial topic position in Turkish is an intonational requirement rather than a syntactic strategy, as suggested by İşsever (2003). Similarly, focus realised with H\*L- pitch accent cannot occur postverbally, as “constituents bearing H-pitch [are barred] from occurring in the posthead position within a VP” (Özsoy, 2019, p. 21).

If narrow focus is realised at the immediately preverbal position, focal and nuclear prominence coincide. As argued by Göksel and Özsoy (2000), ambiguity between neutral (i.e., broad focus) and narrow focal readings of the sentence arises in these circumstances. This is illustrated for narrow object focus in the pitch track comparisons by Kamali (2014, p. 195).

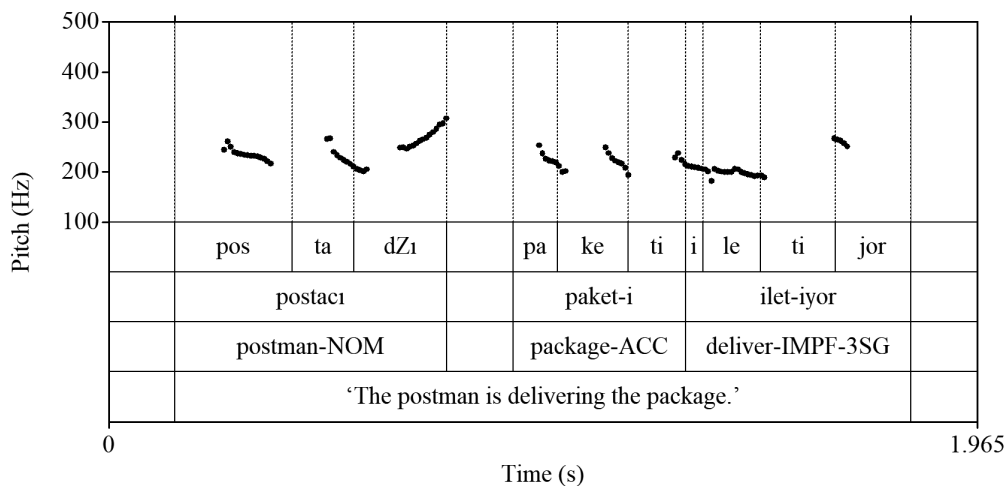


FIGURE 3.2: Untrimmed pitch track of SOV narrow **object focus** trial t007 (OSV question, new-information focus) by participant K703 (female).

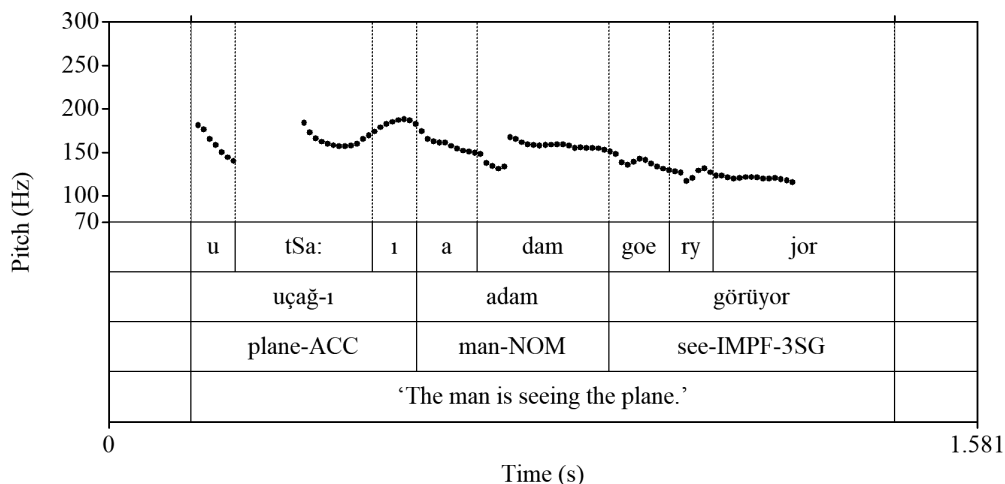


FIGURE 3.3: Untrimmed pitch track of OSV narrow **subject focus** in trial t002 (OSV question, contrastive focus) by participant H959 (male).

She presents data indicating that broad focus and immediately preverbal object focus pitch tracks look and sound “very much [a]like”. A similar conclusion can be made if we consider figure 3.2. In this SOV object focus pitch track, the

same rise at the stressed syllable of the prenucleus also observed in broadly focused figure 3.1 is present, while in both, no such rise is present at the nucleus itself (the spike in the verb's final syllable in figure 3.2 is due to creaky voice). Furthermore, pitch in both is reduced at the postnucleus. Interestingly, the same pattern is present in figure 3.3, depicting the pitch track of an immediately preverbal narrow subject focus, an observation not made by Kamali as she only considered canonical SOV structures.

If narrow focus is realised at any position within the focus field other than the immediately preverbal one (i.e., what we will call peripheral focus), pitch is lowered after the focused element (i.e., postfocal deaccentuation). As such, Kamali (2014) argues that it is not focal prominence per-se prosodically realising peripheral narrow focus. In particular, the H\*L- pitch accent often associated with focus is not restricted to IS, also occurring with lexically accented words.<sup>32</sup> Thus, she argues that post-focal deaccentuation is “the most prominent intonational signal of focus in Turkish”, present if (narrow) focus in SOV order is realised before the object (i.e., falling pitch after the stressed syllable of the narrow focus towards the right). Although not to the extent of the pitch tracks presented by Kamali (2014), deaccentuation of postfocal elements is present in both peripheral narrow subject focus (figure 3.4) and peripheral narrow object focus (figure 3.5) presented here.<sup>33</sup>

Another aspect described by Kamali with regards to peripheral narrow SOV subject focus, in particular, is that the sentence-initial word, which is the focused subject in this case, differs from sentence-initial subjects in broad focus, in that it does not display an (evident) phrase-final rise, as is to be expected with prenuclei. We observe the same pattern in figure 3.4, but for peripheral, sentence-initial object focus, as illustrated in figure 3.5, the object is realised with phrase-final rise.

It should be noted that post-focal deaccentuation is also at the core of the focus type distinction by Özge and Bozşahin (2010). As mentioned earlier, Özge and Bozşahin refute the syntactic strategy of focus type realisation in Turkish postulated by İşsever (2003), arguing that the distinction of new-information and

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<sup>32</sup> By default, the last syllable in Turkish receives stress, whether in roots or morphologically complex structures (e.g., *kitap* ‘book’, *kitap-lık* ‘bookcase’, *gel-di-niz* ‘you came’). There are, however, certain cases of lexical non-final stress (e.g., *fakat* ‘but’, *Ánkara* ‘Ankara’) as well as a number of stress-blocking affixes (e.g., *gél-me-di-niz* ‘You did not come’) that interact with the stress assignment in Turkish (also see Inkelas & Orgun, 2003; examples adapted from Kabak & Vogel, 2001).

<sup>33</sup> The rising tone at the end of the verb in the peripheral narrow object focus trial is not of interest here. This is a phenomenon in our data, sporadically occurring mainly with female speakers, possibly being an instance of high rising terminal incorporated by our young participants into Turkish.

contrastive focus, or p- and c-focus, is to be made on phonological basis regarding contextual ‘narrowness’. Contrastive focus is contextually more narrow/restricted, necessarily involving post-focal deaccenting as described above, blocking projection in contrastive focus. New-information focus, on the other hand, can project to include the verb in the focus phrase.

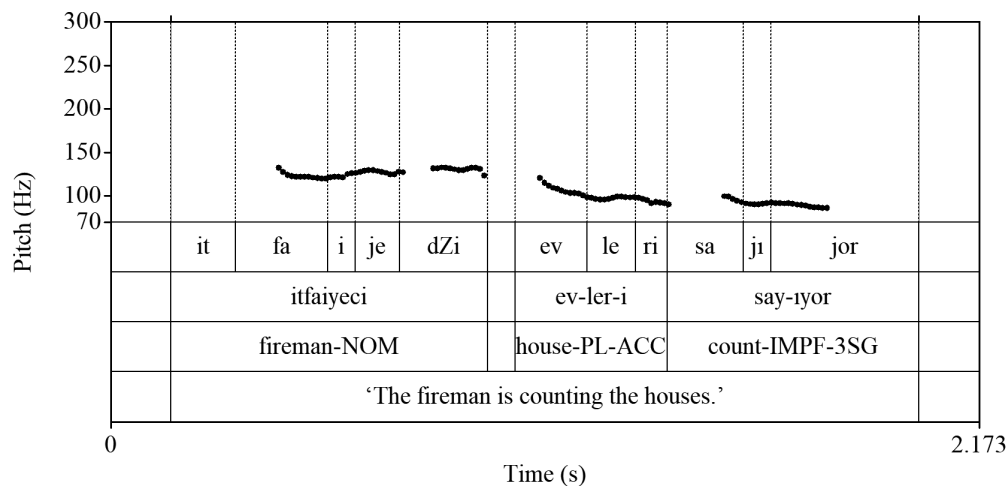


FIGURE 3.4: Pitch track of SOV narrow **subject focus** trial t010 (OSV question, new-information focus) by participant G625 (male).

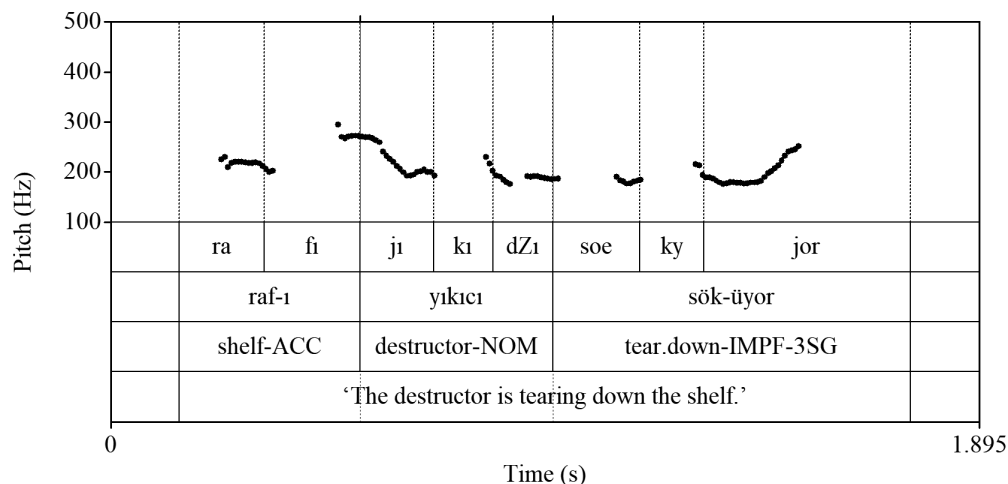


FIGURE 3.5: Untrimmed pitch track of OSV narrow **object focus** in trial t034 (OSV question, contrastive focus) by participant Q804 (female).

### 3.1.3 Experimental investigations of acoustic correlates of focus in Turkish

Given the overview provided above regarding the effects of focus realisation on prosody in Turkish, the predictions arise that no statistically significant (and perceivable) acoustic differences in  $f_0$  should be observed between (i) broad and immediately preverbal focus, all coinciding with default nuclear stress, and between (ii) narrow focus types (i.e., comparing new-information and contrastive focus in immediately preverbal and peripheral positions respectively), all involving post-focal deaccentuation. It is these predictions that a small number of studies have investigated. Notably, we will look at studies investigating the acoustic correlations of narrow and broad focus in Turkish.

İpek (2011) investigated prosodic focus realisation in  $f_0$ , intensity, and duration within four elicited canonical SOV sentences consisting of three words provided in (54). Trigger *wh*-questions, which are not reported, targeted sentence-initial subject focus, medial object focus, and final verb focus realisations, with a neutral reading of each constituent obtained as a baseline. In the elicitation experiment, an examiner read these *wh*-questions to six native speakers of Turkish. Target sentences, which participants were familiarised with beforehand, were then presented on a computer screen, with the task being to read these aloud.

- (54) a. *Tuna baba-m-ı döv-müştü.*  
 Tuna-NOM father-POSS.1SG-ACC beat-IND.PAST-3SG  
 'Tuna beat my dad.'
- b. *Lale duvar-ı boyadı.*  
 Lale-NOM wall-ACC paint-IND.PAST-3SG  
 'Lale painted the wall.'
- c. *Döne dede-m-i kov-muştu.*  
 Döne-NOM grandfather-POSS.1SG-ACC send.away-IND.PAST-3SG  
 'Döne sent away my grandpa.'
- d. *Mine burun-u-nu yıkadı.*  
 Mine-NOM nose-POSS.3SG-ACC wash-IND.PAST-3SG  
 'Mine washed her nose.'

(Adapted from İpek, 2011, p. 140 with interlinear glosses added).

In the recorded answers, İpek calculated mean  $f_0$ , mean intensity and mean duration at each syllable of all words. If we consider the neutral reading baseline as broad focus akin to the approach by Kamali (2014) presented in the previous section (see Gürer, 2020 for this approach to İpek's results), no differences in acoustic measures were observed between medial narrow object focus and broad

focus. Initial subject focus compared to broad focus displayed longer duration, while final focused verbs showed a greater magnitude for intensity when compared to broad focus. Furthermore, no differences were found for medial narrow object foci in the postfocal domain, while initial narrow subject foci displayed lower postfocal  $f_0$  and intensity than broad focus (i.e., postfocal deaccentuation). Lastly, prefocal  $f_0$  pitch range expansion was observed for final verb focus structures compared to broadly focused counterparts. However, as an issue raised by Gürer (2020), it is unknown whether the elicited focus-bearing answers contained new-information or contrastive focus, as the triggering questions are not provided. Furthermore, it is unclear in which configuration trigger questions were provided.

İpek (2011) also conducted a perception experiment based on the collected focus-bearing sentences collected. In this second experiment, ten native speakers of Turkish were auditorily presented with the recordings and asked to determine the emphasized word or indicate if they could not perceive any emphasis. Based on their results, illustrated in table 3.1, they found that their conditions significantly affect identifiability. The initial narrow subject focus was detected the most reliably, followed by narrow verb focus. Narrow SOV object focus was only identified in 56.25% of the cases, most often confused with broad focus as would be expected by Kamali (2014).

TABLE 3.1: Confusion matrix of focus condition perception [%].  
Correctly identified cases are marked by boldface.

heard as (x) original (y)	Broad focus	SOV SUBJ <sub>F</sub>	SOV OBJ <sub>F</sub>	SOV VERB <sub>F</sub>
<b>Broad focus</b>	<b>45</b>	11.25	31.87	11.87
<b>SOV SUBJ<sub>F</sub></b>	16.25	<b>75.63</b>	5	3.12
<b>SOV OBJ<sub>F</sub></b>	21.87	18.75	<b>56.25</b>	3.12
<b>SOV VERB<sub>F</sub></b>	26.87	5.63	7.5	<b>60</b>

(Adapted from İpek, 2011, p. 143).

In another similar study, İvoşeviç and Bekâr (2015) investigated acoustic effects of focus in Turkish by comparing canonical SOV broadly focused answers (55a) to immediately preverbal narrow new-information (55b, 55d) and contrastive focus-bearing answers (55c, 55e) to questions. Narrow object foci were embedded in SOV sentences (55b, 55c), while subject foci appeared in OSV structures (55d, 55e). In addition, İvoşeviç & Bekâr elicited contrastive foci through



corrective exchanges (see sections 2.2.3 and 2.5). Applying an experimental procedure similar to İpek (2011), an examiner read trigger *wh*-questions to 21 native speakers of Turkish, who replied by reading target sentences.

## (55) a. BROAD FOCUS

**Q:** *Gezi nasıl geçti?*

'How was the trip?'

**A:** [*Gizem* [*yılan-ı* [*gör-dü.*]<sub>FOC</sub> ]<sub>FOC</sub> ]<sub>FOC</sub>  
Gizem-NOM snake-ACC see-PAST-3SG

'Gizem saw the snake.'

## b. NEW-INFORMATION OBJECT FOCUS

**Q:** *Gizem'in gözünden hiçbir şey kaçmaz. Bu sefer neyi görmüştü?*

'Nothing escapes Gizem. What did she see this time?'

**A:** *Gizem* [*yılan-ı*]<sub>FOC</sub> *gör-dü.*  
Gizem-NOM snake-ACC see-PAST-3SG

'Gizem saw the snake.'

## c. CONTRASTIVE OBJECT FOCUS

**Q:** *Bu ormanda çok sevimli bir sincap var. Gizem onu gördü mü?*

'There is a very cute squirrel in this forest. Did Gizem see it?'

**A:** *Gizem* [*yılan-ı*]<sub>FOC</sub> *gör-dü.*  
Gizem-NOM snake-ACC see-PAST-3SG

'Gizem saw the snake.'

## d. NEW-INFORMATION SUBJECT FOCUS

**Q:** *O patika yolunda hep bir yılan güneşleniyor.*

*Onu çocuklar da gördüler mi?*

'There is always a snake sunbathing on that pathway.  
Did children see it?'

**A:** *Yılan-ı* [*Gizem*]<sub>FOC</sub> *gör-dü.*  
snake-ACC Gizem see-PAST-3SG

'Gizem saw the snake.'

e. CONTRASTIVE SUBJECT FOCUS

Q: *Yılanı Burak mı gördü?*

'Did Burak see the snake?'

A: *Yılan-ı* [Gizem]<sub>FOC</sub> *gör-dü.*  
snake-ACC Gizem see-PAST-3SG

'Gizem saw the snake.'

(Adapted from İvoşeviç & Bekâr, 2015, pp. 21–22).

In their analysis of recorded focus-bearing answers, İvoşeviç and Bekâr concentrated on the immediately preverbal focused element, investigating  $f_0$  (extrema, range, and mean at the accented syllable), intensity (maximum and mean of the focused word, as well as mean sentence intensity), and duration (of the focused word, its accented syllable, as well as further measurements within the accented syllable). They did not find consistent differences in  $f_0$  or intensity between any of their focus conditions, with the only viable acoustic parameter being duration between broad and information object foci: The duration of object information foci in canonical SOV order was significantly higher than the duration of the object in canonical broad focus. It should, however, be noted that by concentrating on the focused word itself, İvoşeviç and Pınar Bekâr excluded potential postfocal deaccentuation in  $f_0$ , that could potentially differentiate immediately preverbal narrow and broad focus. Also, İvoşeviç and Bekâr (2015) elicited narrow focus in OSV order by equally ordered questions. However, it is unclear whether this is a requirement.

Lastly, Gürer (2014, 2015, 2020) aimed to confirm the requirement of postfocal deaccentuation following contrastive foci proposed by Özge and Bozşahin (2010), as well as generally investigating pitch and duration in Turkish focus and its effects on non-focused elements. In her second experiment, Gürer compared SOV sentences, differentiated in narrow new-information focus (given – new-information focus – given), narrow contrastive focus (given – contrastive focus – given), and all-non-given broad focus conditions. Narrow new-information focus sentences were elicited using *wh*-questions with prior context (56b), while broadly focused sentences provided additional information to a previously presented context (56a). In addition, contrastive question-answer pairs formed corrective exchanges, not including expressions of denial to prevent confounding effects on intonation (56c).

(56) a. BROAD FOCUS

**A:** *Haberlerde ne var?*

'What is on the news?'

**B:** *Memurlara zam geliyor.*

'There is an increase for the wages of the officers.'

**A:** *Başka?*

'What else?'

**B:** *Romanyalılar uranyuma yöneliyorlar.*

'The Rumanians tend towards uranium.'

b. NEW-INFORMATION NARROW SOV OBJECT FOCUS

**A:** *Ümraniyeliler çevre düzenlemesi yapıyorlar.*

*İlçeyi çiçeklerle donattılar. Solmuş çiçekleri çıkarıp yeni çiçek dikiyorlar. Papatyaları yenilediler.*

'The people of Ümraniye make environment planning.

They decorate the town with flowers. They take out the wilted flowers and plant new flowers. They renewed the daisies.'

**B:** *Ümraniyeliler başka neyi yeniliyorlar?*

'What else do the people of Ümraniye renew?'

**A:** *Ümraniyeliler manolyaları yeniliyorlar.*

'The people of Ümraniye renew the magnolias.'

c. CONTRASTIVE NARROW SOV OBJECT FOCUS

**A:** *Bazı sebzelerde GDO'lu tohum kullanıldığı ortaya çıkmış.*

*Sağlık bakanlığı duruma el koymuş ve sebzelerin yetiştirenler tarafından imha edilmesine karar vermiş. Alanyalılar börülce yoluyorlar.*

'It was found out that genetically modified seeds were used in some vegetables.

The ministry of health took the issue in hand and decided that the growers would annihilate the vegetables. The people of Alanya pull up peas.'

**B:** *Alanyalılar barbunya yoluyorlar.*

'The people of Alanya pull up kidney beans.'

(Adapted from Gürer, 2020, pp. 285–286).

Eight native speakers of Turkish rehearsed and reenacted the dialogues provided in written form, consisting of contextual statements or questions and focus-carrying target sentences. The experimenter did not participate in the dialogues, with the participants reading and reenacting in groups of two, with dialogues split in such a way that each participant read the trigger as well as target sections of the dialogues. A total of six target sentences were embedded in different trigger contexts following the structure illustrated in (56) to elicit focus-bearing structures in the conditions of interest.

Using the recordings of target answers, Gürer (2020) obtained and analysed  $f_0$  (on accented syllables or between accented syllables and boundary tones) and duration measurements in the prenuclear (i.e., subject), nuclear (i.e., object), and postnuclear (i.e., verb) domains, the latter only regarding  $f_0$ . Critically, she did not find any differences between broad, contrastive, and new-information focus  $f_0$  or duration in prenuclear, nuclear, and postnuclear domains. As such, no differences emerged between focus types in narrow foci. Moreover, narrow foci did not differ from broad foci (as predicted by Kamali, 2014), with no clear evidence for postfocal deaccentuation between broad and verb-adjacent narrow foci.

### **3.1.4 The present study**

While the studies on prosodic focus realisation in Turkish presented above contribute to our understanding of how focus in Turkish is realised, they fail to represent the concept of focus in Turkish overall. Although debated, there is some evidence illustrated in section 3.2 against the assumption of a focus position in Turkish, both in terms of a strict focus position language and an understanding of the immediately preverbal position as an IS-loaded one associated with focus type. Thus, by studying immediately preverbal focus only, the prosodic studies on focus in Turkish provide an incomplete description of prosodic focus realisation in the language. Furthermore, while immediately preverbal narrow focus is non-distinguishable from neutral, broad focus, the question arises of how peripheral focus and focus type affects intonation in Turkish. Postfocal deaccentuation, for example, was shown by Kamali (2014) to only occur in SOV narrow subject focus when compared to broad focus. However, it is unclear whether the same applies to peripheral object focus if such structures are observed in the first place.

Given these restrictions of prosodic investigations in Turkish focus realisation and the disputed aspects regarding the role of syntax, such as focus type, the study presented in this chapter aims to provide experimental data to the field

covering these open issues. Using a paradigm based on question-answer congruence, we elicit speech consisting of focus-bearing answers controlled for focus size, focus type, focus target (i.e., narrow object vs narrow subject focus). To determine if and to what degree word order is affected by focus realisation in Turkish, we provide participants with the freedom to order their responses as they see fit. Given the similar behaviour of Turkish *wh*- and focus phrases described by Göksel and Özsoy (2000), we also incorporate the syntactic flexibility of *wh*-questions in Turkish to determine possible effects on (syntactic) focus realisations. While studies such as the one by İvoşeviç and Bekâr (2015) use OSV questions with OSV focus-bearing answers, it is unclear whether this is a requirement. Based on these aims then, we raise four research questions:

Our *first research question* relates to the realisation of focus size (i.e., broad, sentence focus and narrow, constituent focus; see Büring, 2010) in Turkish:

- (I) *Do realisations of broad foci in Turkish differ from narrow foci in word order, intensity, and/or f0?*

By triggering subject and object foci, we aim to investigate whether Turkish focus follows the observational tendency of argument hierarchy (i.e., subject focus is syntactically or morphologically more marked than non-subject focus in multiple languages; see chapter 2) and whether these different focus targets have different acoustic correlates. Thus, our *second research question* is as follows:

- (II) *Do realisations of subject foci in Turkish differ from realisations of object foci in word order, and do object and subject foci in Turkish differ acoustically in intensity and/or f0?*

In the previous sections, we have seen that one point of disagreement in Turkish focus research has been whether focus types are manifested in syntax and prosody, as predicted by İşsever (2003) and Kılıçaslan (2004), among others, or whether focus type is realised solely through prosody, as predicted by Özge and Bozşahin (2010). Thus, our *third research question* relates to focus types in focus realisation:

- (III) *Do realisations of new-information foci in Turkish differ from realisations of contrastive foci in word order, intensity and/or f0?*

Lastly, we investigated the role of *wh*-question configuration in our *fourth research question*, specifically regarding syntactic focus realisation:

- (IV) *Do focus realisations triggered by in-situ SOV wh-questions differ from those triggered by scrambled ex-situ OSV wh-questions in word order?*

With the ban on foci in postverbal positions largely agreed upon, we limit ourselves to verb-final *wh*-questions. Furthermore, *wh*-questions for broad foci, being answers to questions of the type ‘What happened?’, were excluded from this research question, as they only included one (obligatory) argument.

Besides these four research questions driven by open questions in the literature, we performed two exploratory analyses regarding (e.V) the acoustic effects of question order and (e.VI) question types. While Göksel and Özsoy (2000) demonstrated that *wh*-phrases and focus in Turkish are subject to the same syntactic restrictions (i.e., the focus field), acoustic effects have not been described in answers to in-situ SOV questions compared to ex-situ OSV questions. Given the nature of our data, we explore this aspect.

In chapter 2, we have illustrated that Krifka and Musan (2012) and Neeleman and Vermeulen (2013) agree that corrective exchanges trigger contrastive focus while disagreeing on whether closed questions trigger contrastive foci. Although we have argued that there is evidence for the understanding of contrast by Neeleman and Vermeulen that includes answers to closed questions, we performed an exploratory analysis regarding question type in contrastive foci to provide evidence for this assumption.

## 3.2 Experimental Study

### 3.2.1 Participants

A total of 25 native speakers of Turkish participated in the experiment. We defined a native speaker as someone who (i) grew up in a primarily Turkish-speaking family setting and (ii) attended primary and secondary education (i.e., compulsory basic education of eight years and high school education of four years) solely in Turkey.

Except for three Turkish exchange students who participated at the University of Potsdam, Germany, all participants were recruited and tested at MEF University İstanbul, Turkey. All participants were university students (23 Bachelor’s and two Master’s students), excluding Linguistics or Turkish Language and Literature students. The participants’ pool consisted of 13 women and 12 men with a mean age of 22.7 years (range 19.8-36.3; SD 3.6). Participants confirmed to have no diagnosed neurological, language, hearing, or psychological disorders affecting language. In addition, participants’ vision was confirmed to be normal or

corrected to normal.<sup>34</sup>

Written informed consent was obtained from participants before the study, and participants received 16€ of compensation. Ethical approval (Nr. 33/2019) for this study was obtained from the University of Potsdam's Ethics Committee.

### 3.2.2 Design & Materials

The materials consisted of eleven-second-long animations and simultaneously presented auditory *wh*-questions. The *wh*-questions were recorded by a female native speaker of Turkish and normalised using Audacity (version 2.3.2; Audacity Team, 2019). The animations created for this experiment were designed using the online platform VYOND (<https://www.vyond.com>). A total of 135 unique animation-question pairs were constructed, constituting 15 practice and 120 experimental trials, the latter set provided in this chapter's appendices.

Utilising question-answer congruence, *wh*-questions were assumed to trigger specific focus realisations. The accompanying animations allowed to provide unique antecedents to the *wh*-questions' constituents when using generic nouns, such as *the woman* or *the child*, eliminating the need for specific names or distinctive adjectives (e.g., *The man bought the book*; *The man bought the book*). All animations and questions depicted transitive actions, with questions consisting of a *wh*-phrase, an imperfective verb zero-marked for the third person, and a definite direct object overtly marked for the accusative case or a definite zero-marked nominative subject. Items consisted mainly, but not exclusively, of default, finally stressed words.

As illustrated in table 3.2, the animation-question pairs were assigned to five partially crossed factors: *focus size* (narrow, constituent focus vs broad, all-new focus), *focus target* (subject vs object focus), *focus type* (new-information vs contrastive focus), *wh*-question word order (in-situ SOV vs scrambled OSV questions), and (contrastive) question type (corrective answers vs answers to closed questions). Examples (57) to (60) with *wh*-questions, accompanied by their respective animations as indicated by frames, represent the 13 item types at the lowest level of our design. All questions are provided in this chapter's appendix.

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<sup>34</sup> To ensure that the final experiment's question answer pairs are well-formed and answers can be provided to all of them, further six eligible individuals participated in pilot runs at the University of Potsdam, German. As problematic items were adapted in-between pilot runs, the data of these pilot runs are not included in the analysis described in section 3.3.4.

Chapter 3. Production of syntactically variable focus in Turkish

TABLE 3.2: Experimental trial conditions.

F-Scope	F-Type	Q-Order	Q-Type	F-Target					
96	Narrow F.	72	Contrastive F.	12 SOV	24 Corrective Q.	12 each	SUBJ		
				12 OSV			OBJ		
			24	New-information F.	12 SOV	48 Closed Q.	24 each	SUBJ	
					12 OSV			OBJ	
		24	Broad F.	24	na.	12 SOV	24 Open Q.	12 each	SUBJ
						12 OSV			OBJ
24	24	na.	24	na.	24	na.	na.		

**Note.** Focus and question are abbreviated as F, and Q. Q-Order is split across the lowest level of F-Target (i.e., six questions were in in-situ SOV order, and six were in ex-situ OSV order).

(57) BROAD FOCUS TRIAL

*Animasyon-da ne ol-uyor?*  
 animation-LOC what-NOM happen-IMPF-3SG

‘What is happening in the animation?’

**Introductory part of animation:**



**Resolution part of animation:**





- (58) NARROW, NEW-INFORMATION OBJECT FOCUS TRIAL WITH  
OPEN, IN-SITU SOV WH-QUESTION

*Aşçı ne-yi dök-üyor?*  
chef-NOM what-ACC.DEF pour-IMPF-3SG

'What is the chef pouring (away)?'

**Introductory part of animation:**



**Resolution part of animation:**

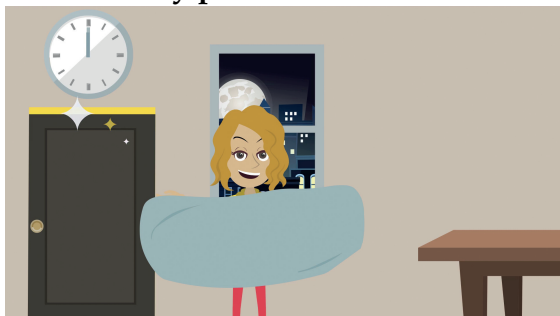


- (59) NARROW, CONTRASTIVE OBJECT FOCUS TRIAL WITH  
CORRECTIVE, EX-SITU OSV WH-QUESTION

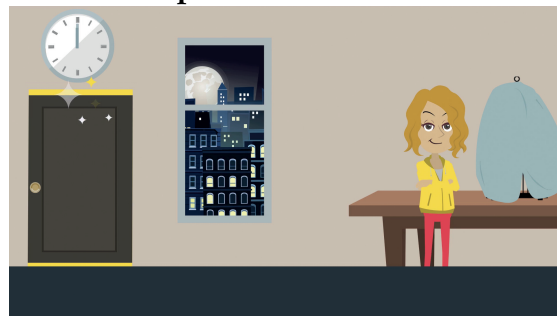
*Ne-yi kadın ört-üyor? Kapı-yı mı veya*  
what-ACC.DEF womanNOM cover-IMPF-3SG door-ACC.DEF QP or  
*cam-ı mı?*  
window-ACC.DEF QP

'What is the woman covering? The door or the window?'

**Introductory part of animation:**



**Resolution part of animation:**



(60) NARROW, CONTRASTIVE SUBJECT FOCUS TRIAL WITH  
CLOSED, EX-SITU OSV WH-QUESTION

Yunus-u kim çağır-ıyor? Araştırmacı mı veya bakıcı mı?  
dolphin-ACC.DEF who call-IMP-3SG scientist QP or carer QP

'Who is calling the dolphin? The scientist or the keeper?'

**Introductory part of animation:**



**Resolution part of animation:**



### 3.2.3 Procedure

As part of a longer testing session, experimental sessions lasted for 40-45 minutes and were administered individually in a quiet room. Trials were presented in fixed, pseudorandomised order, split into three blocks (i.e., 40 trials each with the same number of trials by condition). All factors with the number of the respective experimental trials are provided in table 3.2 above. Between each block, a break of at least 45 seconds was scheduled.

The applied experimental paradigm adapts and extends upon focus elicitation tasks, such as *Focus Cards*, *Anima* and *Contrast*, described in the *Questionnaire on Information Structure* (QUIS; Skopeteas et al., 2006). In line with our goal to gather more spontaneous data on focus realisations in Turkish, we used animations in place of pictures to indicate contexts and actions, facilitating the use of a greater variety of verbs in *wh*-questions.

In each trial, participants were presented one of the animations in full-screen mode on a 23-inch computer monitor at a distance of approximately 60 cm using Microsoft PowerPoint. A white fixation-cross on black background lasting for 750ms preceded each animation. Starting from 1000ms to a maximum of 5000ms post animation onset, the participants heard the accompanying prerecorded *wh*-question over a headset (Audio-Technica BPHS1). In this first part of the animation, the verb's action was represented together with the overtly expressed constituent (e.g., subject or object not substituted by a *wh*-phrase) and, if present, the focus alternatives provided in the question (i.e., in corrective and

closed *wh*-questions). After 6000ms post animation onset, an audio signal lasting for 40ms marked the point from which the animation provided the information needed to answer the *wh*-question. This latter part of the animation revealing the answer lasted for 4000ms. Lastly, a black screen was displayed for 250ms, rendering each stimulus presentation 11,000ms long. Between the end of an animation and the fixation-cross initiating the subsequent trial, the screen was cleared to a black background with a white square at the bottom right indicating the transition phase. The examiner paced the transitions between trials to enable comments and reminders to answer in three words.

The audio signal indicating the answer's reveal also marked the point after which participants were expected to answer the question (i.e., the animation depicted the expected answer, which participants were asked to verbalise). The participants' answers were recorded at a sample rate of 48 kHz at 16-bit depth in Tracktion T7 (version 7.2.1; Tracktion Corporation, 2016) over the headset's microphone (positioned approximately 2 cm from the left corner of the mouth) using an audio interface with an integrated microphone preamplifier (Behringer U-Phoria UMC22). To prevent participants from answering in focus DP or VP ellipsis, reducing given information (see section 2.4.1), they were asked to answer in exactly three words. There was no time constraint for the verbalisation of the answer, with participants encouraged to answer as quickly as possible.

#### 3.2.4 Data Analysis

Of the 3000 experimental recorded answers, 194 (6.22%) were excluded from the analysis. Exclusion criteria included (i) answers consisting of more than three words (27, 0.87%), (ii) technical problems (4, 0.13%), (iii) incomplete sentences (i.e., ellipsis of one constituent) (12, 0.38%), (iv) incorrect answers regarding condition (e.g., the participant did not pick an overtly provided alternative where they should have) (56, 1.79%), and (v) interruptions within the sentence, such as stutters, restarts, and filled pauses (66, 2.12%). Although correct with focus neverrealised postverbally, verb-medial answers were excluded, as they only occurred very infrequently (4, 0.13%). Lastly, one broad focus trial (question: *Animasyonda ne oluyor?* 'What is happening in the animation?'; target answer: *Adam bisikleti onarıyor* 'The man fixes the bicycle') was excluded, as participants consistently struggled with formulating a coherent three-word answer (25, 0.80%). The remaining 2806 eligible answers were analysed threefold in multiple models: syntactically, investigating the word orders obtained, and acoustically in f0 and intensity.

### Chapter 3. Production of syntactically variable focus in Turkish

To facilitate navigation through the multiple models, a model naming scheme is applied, indicating the basic structure of each model through four elements in its name (see table 3.3 for a summary of each model):

The first element in a model's name is a number indicating the dependent factor. Models beginning with the number 1 (e.g., model 1X) have *word order* as the dependent variable. Models beginning with the number 2 (e.g., 2X.S.i) have the dependent variable of *f0*, and models beginning with the number 3 (e.g., 3X.S.i) have *intensity* as their dependent variable.

The second element in a model's name is a letter indicating whether the respective model is specific to a focus dimension. Model names containing a lowercase *s* (e.g., 2s.S.i) involve *broadly focused and subject focus-bearing answers* only. Models with a lowercase *o* (e.g., 2o.S.i) involve *broadly focused and object focus-bearing answers*. Models involving *narrow foci* are indicated by *X* (e.g., 2X.S.i). Models may also be limited to *contrastive foci*, whether elicited through corrective or closed *wh*-questions, in which case they are indicated by *Y* (e.g., 2Y.S.i).

The third element in a model's name indicates whether a specific subset of answers regarding *word order* is considered. Models with a capital *S* (e.g., 2X.S.i) involve *SOV answers* only, while models with a capital *O* (e.g., 2X.O.i) involve *OSV answers*.

Lastly, the fourth element of a model's name is a roman numeral, indicating which extreme of the dependent variable, if applicable, is considered in the model. Models ending in *i* (e.g., 2s.S.i) have *maximum f0 or intensity measures* as the dependent variable, while models ending in *ii* (e.g., 2s.S.ii) have *minimum f0 or intensity measures* as the dependent variable.

Our factors of interest, namely *focus size* (narrow vs broad focus), *focus target* (object vs subject focus), and *focus type* (new-information vs contrastive focus), as well as any interaction of which significantly improving model fit, were considered as independent variables in separate models for SOV and OSV answers. With broad focus-bearing answers not specified for focus target, focus type, or question word order, focus size as an independent factor was modelled separately. Given our research questions, the factor of *wh-question word order* (in-situ SOV vs ex-situ OSV questions) was included in the syntactic models as an independent factor, while in the acoustic models, it was treated as an exploratory factor, only included where it significantly improved model fit. Analyses also

involved the independent factor of *question type* in contrastive focus-bearing answers only. As this factor is particular to the subset of contrastive focus-bearing answers, separate models were generated, comparing corrective answers with answers to closed *wh*-questions. *Item* and *participant* were introduced as random effects in all models with maximal parsimonious random slopes where they improved model fit.

For the syntactic analysis, answers were orthographically transcribed, additionally coding word order (canonical SOV and non-canonical OSV; i.e., the dependent variable). Given the binary nature of obtained word orders, mixed-effects analysis was conducted through logistic Generalized Linear Mixed-effects Models obtained using the *lme4* package (version 1.1.26; Bates et al., 2015) in *R* (version 4.0.3; R Core Team, 2020). Model comparison was performed using Analysis of Variance to obtain optimal model structures. Multiple comparisons for interaction terms were applied as Tukey contrasts using the *emmeans* package (version 1.5.4; Lenth, 2021). The obtained models 1X and 1Y were cross-validated through bootstrapping using the *boot* package (version 1.3.25; Canty & Ripley, 2020; Davison & Hinkley, 1997). Finally, goodness of fit measures were obtained using *Hmisc* package (version 4.4.2; Harrell & Dupont, 2020).

For prosodic analysis, *f0* and intensity measures were obtained. Maximum and minimum *f0* of the final or lexically stressed non-final accented syllables in subjects and objects, as well as the penultimate syllable in verbs, were calculated. Regarding intensity, maximum and minimum values were calculated for each constituent. To obtain these values, orthographic transcriptions of answers were annotated in *Praat* (version 6.1.47; Boersma & Weenink, 2021). The Montreal Forced Aligner (version 1.0.0; McAuliffe et al., 2017) was used with its pre-trained Turkish acoustic and grapheme-to-phoneme models to accelerate and standardise annotation. Phonemes were combined into syllables using a custom R script and checked manually. The resulting annotations were manually checked and incorrect boundaries were corrected, especially at sentence-initial and final positions. For *f0* measurements in accented syllables, the *Praat* script *ProsodyPro* for semiautomatic prosodic analyses (version 5.7.82; Xu, 2013) was used to incorporate an automatic trimming algorithm (Xu, 1999) to remove spikes and edge effects. Upon manual inspection of the recordings, a pitch range of 70-300 Hz for male speakers and 100-500 Hz for female speakers was used. Incorrect trackings due to creaky and breathy voice, frequent in sentence-final positions, were excluded by the script's trimming algorithm or by manual deletion of vocal cycles. Intensity measurements by constituent (i.e., max and min intensity in dB) were obtained using a custom *Praat* script based on the script by Kawahara (2010).

For between-participant comparison of the acoustic measures (i.e., f0 and intensity), obtained values were transformed by participant and trial. Intensity measures were centred by subtracting the respective trial’s overall mean intensity from that trial’s individual values, rendering them measures above or below the mean. Regarding f0 extrema, f0 measures were normalised using Pierrehumbert’s (1980, p. 49) formula below, with the minimum f0 at each trial’s sentence-final verb as a baseline—a procedure following Gürer (2020):

$$\text{transformed } f_0 = \frac{\text{measured } f_0 - \text{baseline } f_0}{\text{baseline } f_0}$$

Due to extensive variability, transformed f0 and intensity values were further trimmed, excluding values 3 SD from the mean for each constituent and word order (e.g., maximum f0 and intensity values at the subject in SOV answers 3 SD from the mean were excluded).

Preliminary modelling of transformed maximum and minimum f0 and intensity measures in GLMMs revealed heavy-tailed but otherwise Gaussian residual distributions. Therefore, we opted to use (parametric) Generalized Additive Models (GAMs) in place of GLMMs here. GAMs, using the *mgcv* R package (version 1.8.33; Wood, 2011; Wood et al., 2016), allow for simple implementation of scaled *t*-model distributions with identity link functions, resolving the issue of nonnormal residual distribution within the f0 and intensity data. GAM model comparisons were performed using the *compareML* function of the *itsadug* package (version 2.4; van Rij et al., 2020).

## 3.3 Results

### 3.3.1 Syntactic analysis

Observed word orders (canonical SOV and non-canonical OSV) by *focus size*, *focus target*, *focus type*, *question word order*, and *question type* are summarised in table 3.4. Broad foci were only realised in SOV word order. As for narrow foci, object focus triggered by in-situ SOV questions, regardless of focus or question type, is only realised in SOV order (apart from one case), while scrambled OSV questions trigger few OSV object focus realisations. For realisations of subject foci, this relation between question and answer word order is also observable. Most subject foci are realised in SOV structures when triggered by in-situ SOV questions, whereas OSV questions cause most subject foci to be realised in OSV word orders.

TABLE 3.3: Model scheme for syntactic and prosodic analyses.

Dependent factor	Data	Independent factors	Modelname
answer word order	all narrow focus answers	focus target / focus type / question word order	1X
answer word order	contrastive focus answers	focus target / question word order / question type	1Y
max. f0 by constituent	SOV narrow subject and broad focus answers	focus size	2s.S.i
min. f0 by constituent		focus size	2s.S.ii
max. f0 by constituent	SOV narrow object and broad focus answers	focus size	2o.S.i
min. f0 by constituent		focus size	2o.S.ii
max. f0 by constituent	all narrow SOV answers	focus target / focus type / (question word order)	2X.S.i
min. f0 by constituent	all narrow SOV answers	focus target / focus type / (question word order)	2X.S.ii
max. f0 by constituent	all narrow OSV answers	focus target / focus type / (question word order)	2X.O.i
min. f0 by constituent	all narrow OSV answers	focus target / focus type / (question word order)	2X.O.ii
max. f0 by constituent	all narrow, contrastive SOV answers	focus target / question type / (question word order)	2Y.S.i
min. f0 by constituent	all narrow, contrastive SOV answers	focus target / question type / (question word order)	2Y.S.ii
max. f0 by constituent	all narrow, contrastive OSV answers	focus target / question type / (question word order)	2Y.O.i
min. f0 by constituent	all narrow, contrastive OSV answers	focus target / question type / (question word order)	2Y.O.ii
max. intensity by constituent	SOV narrow subject and broad focus answers	focus size	3s.S.i
min. intensity by constituent		focus size	3s.S.ii
max. intensity by constituent	SOV narrow object and broad focus answers	focus size	3o.S.i
min. intensity by constituent		focus size	3o.S.ii
max. intensity by constituent	all narrow SOV answers	focus target / focus type / (question word order)	3X.S.i
min. intensity by constituent	all narrow SOV answers	focus target / focus type / (question word order)	3X.S.ii
max. intensity by constituent	all narrow OSV answers	focus target / focus type / (question word order)	3X.O.i
min. intensity by constituent	all narrow OSV answers	focus target / focus type / (question word order)	3X.O.ii
max. intensity by constituent	all narrow, contrastive SOV answers	focus target / question type / (question word order)	3Y.S.i
min. intensity by constituent	all narrow, contrastive SOV answers	focus target / question type / (question word order)	3Y.S.ii
max. intensity by constituent	all narrow, contrastive OSV answers	focus target / question type / (question word order)	3Y.O.i
min. intensity by constituent	all narrow, contrastive OSV answers	focus target / question type / (question word order)	3Y.O.ii

**Note.** Parentheses indicate exploratory independent factors, which were only included if they improved model fit.

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TABLE 3.4: Overview of word order counts observed by condition.

Focus size	F. type	F. target	Word order	Question type	SOV	OSV				
Broad	na.	na.	na.	na.	556 (25)	100%	0	(0)	0%	
Narrow	n.-info	OBJ	SOV	open Q.	143 (25) <sub>P</sub>	100%	0	(0)	0%	
	contr.			279 (25) <sub>P</sub>	99.6%	1	(1)	0.4%		
	contr.			140 (25) <sub>P</sub>	100%	0	(0)	0%		
Narrow	n.-info	OBJ	OSV	open Q.	126 (25) <sub>P</sub>	87.6%	18	(7)	12.4%	
	contr.			264 (25) <sub>P</sub>	94.6%	15	(5)	5.4%		
	contr.			133 (25) <sub>P</sub>	93.1%	10	(5)	6.9%		
Narrow	n.-info	SUBJ	SOV	open Q.	122 (25)	83.6%	24	(8) <sub>P</sub>	16.4%	
	contr.			230 (25)	79.6%	59	(16) <sub>P</sub>	20.4%		
	contr.			117 (25)	81.8%	26	(9) <sub>P</sub>	18.2%		
Narrow	n.-info	SUBJ	OSV	open Q.	63 (21)	43.7%	81	(22) <sub>P</sub>	56.3%	
	contr.			80 (21)	29.6%	190	(25) <sub>P</sub>	70.4%		
	contr.			48 (16)	37.2%	81	(25) <sub>P</sub>	62.8%		

**Note.** Parentheses indicate the number of unique participants per condition; Superscript ‘P’ = focus at immediately preverbal position; n.-info. = new-information focus; contr. = contrastive focus; F. = focus Q. = question.

As described in section 3.3.4, statistical analysis of the syntactic data presented above was carried out in two logistic mixed-effects regression models. The first syntactic model 1X was constructed on narrow foci only, as broad foci were solely realised in SOV answers, rendering it a singular predictor. The model carried the fixed effects of *focus target*, *focus type*, and *question word order*. As the only interaction leading to a significantly ( $\alpha = 0.05$ ) improved model, *focus target by focus type* was included. *Item* ( $N = 96$ ) and *participant* ( $N = 25$ ) were introduced as random effects, with random slopes by question order and focus target for the random intercepts of participant.

The output of syntactic model 1X is presented in table 3.5. A concordance statistic  $C$  of 0.96 and *Somers’ Dxy rank correlation* of 0.91 indicate a good model fit. In line with our inspection of the syntactic data, subject foci were realised significantly more often in OSV answers than object foci. Similarly, OSV questions triggered significantly more OSV answers than in-situ SOV questions. These effects and the output of model 1X, in general, were validated through bootstrapping, except the fixed effect of focus type, which did not prove significant in bootstrapped simulations (1,000 simulations, confidence level = 0.95).

Besides the failure to fall within the significance interval in bootstrapping, further evidence for focus type as a global fixed effect not affecting the probability of answers realised in OSV order is provided in the posthoc pairwise comparisons of means in the interaction of focus-target: focus-type using Tukey Contrasts. Summarised in table 3.6, we see in contrasts 2 and 5 that focus type does not affect word order when focus targets are matched. Furthermore, we see a



crossed pattern regarding the non-significant focus type trends in contrasts 2 and 5 as indicated by sign changes in the estimates. This is most likely the reason for the interaction significantly improving model fit. In summary, focus type does not significantly affect word order in our data, while focus target and question word order do.

TABLE 3.5: Fixed-effect estimates (top) and variance estimates (bottom) for the logistic mixed-effects regression model 1X on answer word orders in narrow focus realisations (N = 2250).

Random effects		Variance	SD		
item	(intercept)	0.5185	0.7201		
participant	(intercept)	2.4437	1.5632		
	focus-target.SUBJ	4.9040	2.2145		
	question-order.OSV	1.8897	1.3747		
Fixed effects		Estimate	SE	Wald z	P-value
(intercept)		-6.5864	0.6880	-9.573	< .001***
focus-target.SUBJ		3.6335	0.7373	4.928	< .001***
focus-type.contrastive		-0.9643	0.4889	-1.972	.049*
question-order.OSV		3.4898	0.4387	7.956	< .001***
focus-target.SUBJ: focus-type.contrastive		1.5056	0.5813	2.590	.010**

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); correlation matrices omitted; model optimizer = bobyqa.

TABLE 3.6: Multiple comparisons of means using Tukey contrasts in model 1X (dependent variable: answer word order) for the focus-target:focus-type interaction.

Contrasts	Estimate	SE	z value	p-value
(1) OBJ.new-info. / SUBJ.new-info.	-3.633	0.737	-4.928	< .001***
(2) OBJ.new-info. / OBJ.contrastive	0.964	0.489	1.972	.199
(3) OBJ.new-info. / SUBJ.contrastive	-4.175	0.706	-5.916	< .001***
(4) SUBJ.new-info. / OBJ.contrastive	4.598	0.700	6.570	< .001***
(5) SUBJ.new-info. / SUBJ.contrastive	-0.541	0.314	-1.724	.311
(6) OBJ.contrastive / SUBJ.contrastive	-5.139	0.667	-7.709	< .001***

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); new-info. = new-information focus; Significant fixed effects are marked in bold; Results are averaged over the levels of *question word order*; estimates provided at log odds ratio.

Regarding the independent factor of question type, differentiating contrastive focus in corrective answers and answers to closed *wh*-questions, the respective model 1Y was only constructed on narrow contrastive focus trials. In the 1Y

model's output provided in table 3.7, we see congruent results with model 1X: question word order and focus target significantly affect the answer's word order, with OSV questions having a higher probability of eliciting OSV answers and subject focus targets being more likely to be realised in OSV answers. Question type, on the other hand, does not affect word order. Like model 1X, a concordance statistic C of 0.96 and Somers' Dxy rank correlation of 0.92 indicate a good fit for model 1Y. Furthermore, all effects were validated in bootstrapping (1,000 simulations, confidence level = 0.95).

TABLE 3.7: Fixed-effect estimates (top) and variance estimates (bottom) for the logistic mixed-effects regression model 1Y on answer word orders in narrow contrastive focus realisations (N = 1673).

Random effects		Variance	SD		
item	(intercept)	0.6156	0.7846		
participant	(intercept)	0.6083	0.7799		
	focus-target.SUBJ	3.8463	1.9612		
	question-order.OSV	1.7239	1.313		
Fixed effects		Estimate	SE	Wald z	P-value
(intercept)		-7.2570	0.6420	-11.304	< .001***
focus-target.SUBJ		4.9399	0.6597	7.488	< .001***
question-order.OSV		3.5487	0.4771	7.438	< .001***
question-type.corrective		-0.2893	0.3067	-0.943	.346

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); correlation matrices omitted;

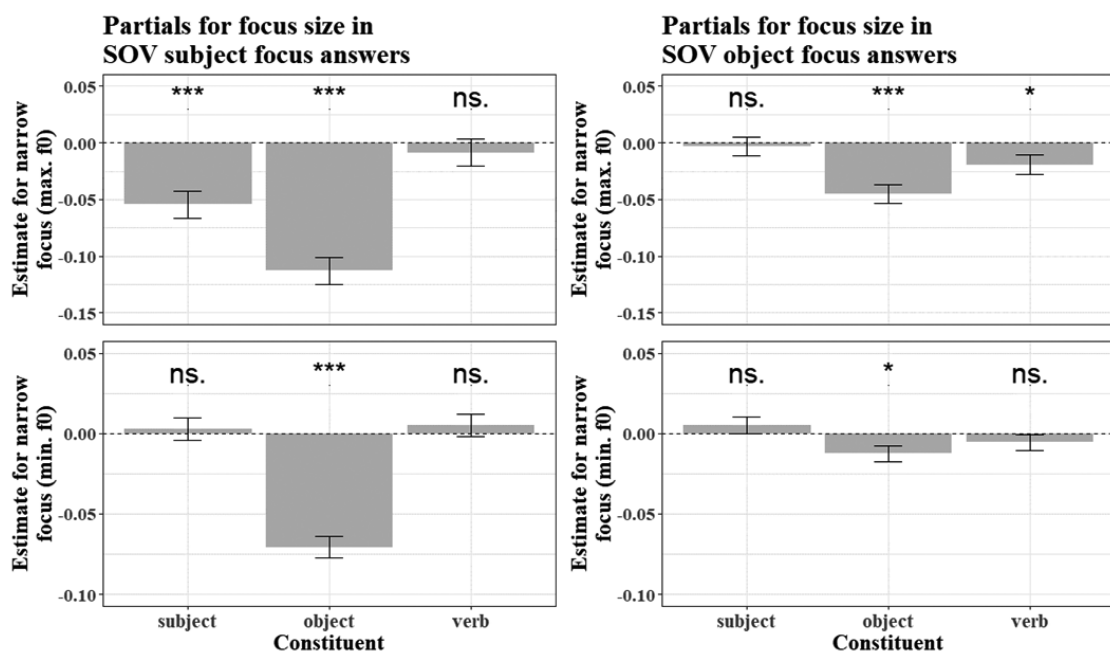
### 3.3.2 Prosodic results

#### Fundamental frequency

To recapitulate the  $f_0$  analysis presented here, we calculated maximum and minimum  $f_0$  at accented syllables in subjects, objects, and verbs, transforming these measurements using each answer's minimum  $f_0$  at the sentence-final verb as a baseline. The resulting transformed  $f_0$  measurements were trimmed, excluding values beyond 3 SD from the mean at each constituent. Described in further detail in section 3.3.4, the resulting  $f_0$  data were modelled in multiple GAM models to investigate our partially crossed factors of interest, particularly *focus size*, *focus target*, *focus type*, and *question type*, as well as the exploratory factor of *question word order*. In what follows, partial effects of these factors are presented, with full model outputs of all respective models provided in this chapter's appendix.

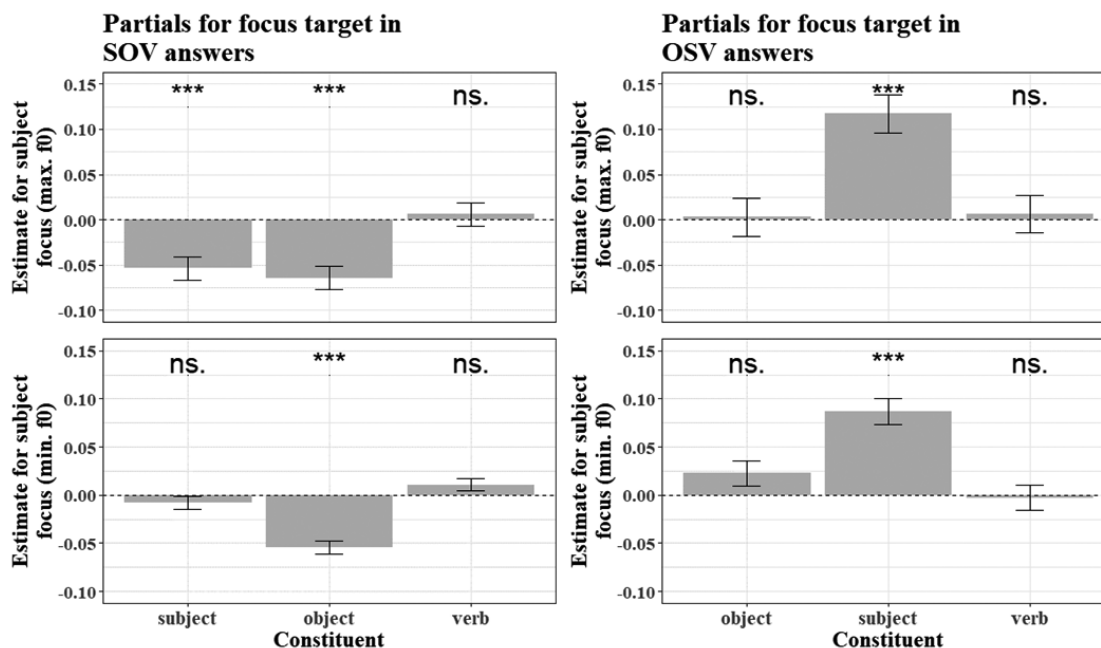
Firstly, consider figure 3.6 for visualisations of partial **focus size** effects across the respective models (i.e., 2s.S.i, 2s.S.ii, 2o.S.i, and 2o.S.ii) on transformed and trimmed maximum and minimum f0 values for narrow subject and object foci compared to broadly focused answers (i.e., the reference level). We see that narrow focus size, compared to broad focus, is realised with significantly lower maximum and minimum f0 at the immediately preverbal syntactic object in SOV orders, regardless of focus target (i.e., even when the object is narrowly focused, it is realised with lower maximum and minimum f0 when compared to broad focus). Specific to the comparison of narrow subject and broad focus, (focused) syntactic subjects are realised with lower maximum f0 compared to syntactic subjects in broad focus answers. As for narrow object focus, we see that verbs in answers bearing object foci are realised with lower maximum f0 compared to their counterparts in broad focus trials.

FIGURE 3.6: Parametric partial effects (i.e., partials) of focus size by constituent (estimates from the zero-reference = broad focus by constituent) on transformed and trimmed maximum f0 (upper row) and minimum f0 (lower row) in SOV narrow subject focus answers (left column) and SOV narrow object focus answers (right column).



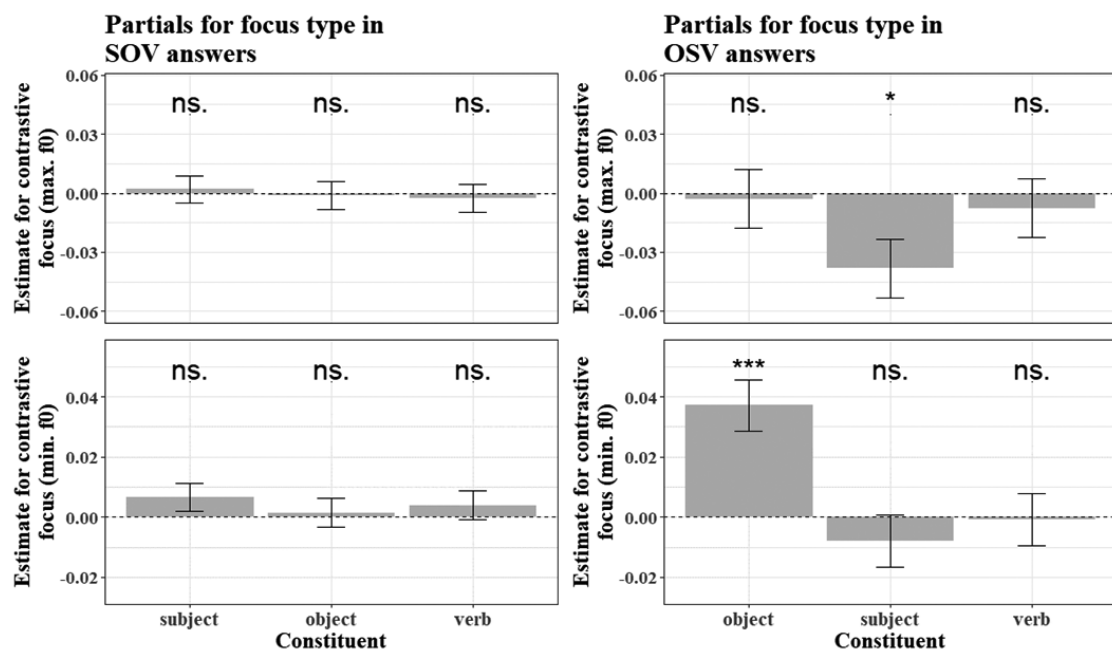
Turning to **focus target** on narrowly focused answers, comparing subject focus trials to reference object focus trials, partial effects for focus target by constituent across models (i.e., 2X.S.i, 2X.S.ii, 2X.O.i, and 2X.O.ii) are visualised in figure 3.7. In SOV answers, we see that subject focus is realised with significantly lower maximum and minimum f0 at the (postfocal) object when compared to object focus answers. Interestingly, we further see that maximum f0 of the focused syntactic subject is reduced in SOV answers compared to syntactic subjects in object focus answers. In contrast, OSV subject focus is realised with higher maximum and minimum f0 on the syntactic subject when compared to OSV object focus answers, with no other effects present.

FIGURE 3.7: Parametric partial effects (i.e., partials) of focus target by constituent (estimates from the zero-reference of object focus by constituent) on transformed and trimmed maximum f0 (upper row) and minimum f0 (lower row) in narrow SOV answers (left column) and narrow OSV answers (right column).



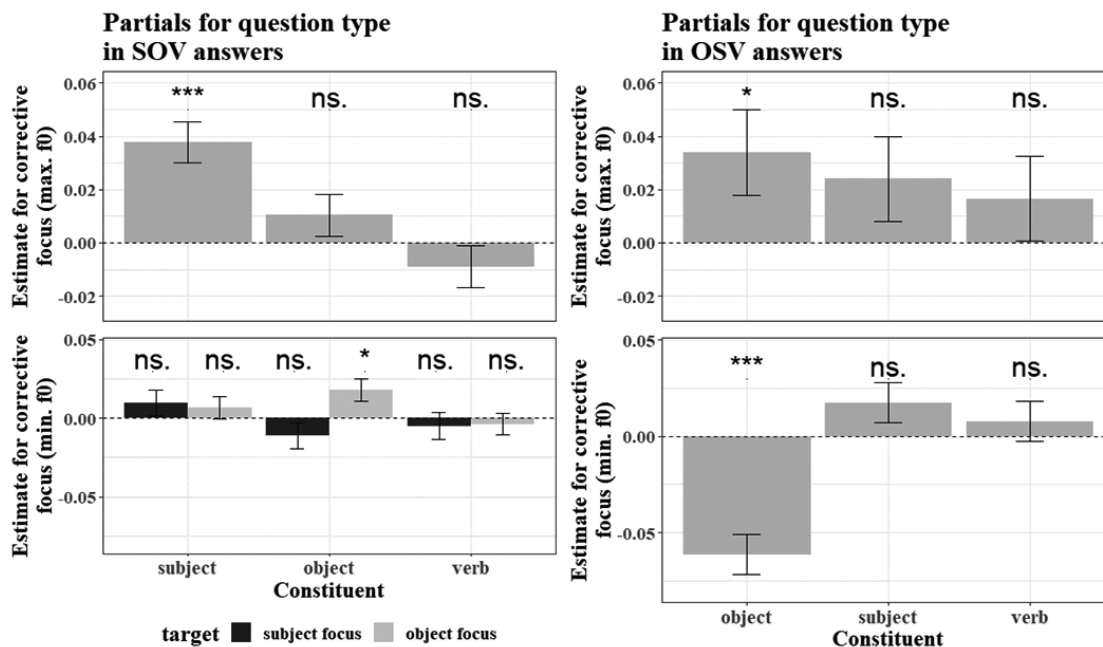
For **focus type** in narrow focus answers, comparing contrastive focus trials to reference new-information focus trials, no interactions with focus target are present across models (i.e., 2X.S.i, 2X.S.ii, 2X.O.i, and 2X.O.ii). As displayed in figure 3.8, no effects of focus type are observed in SOV answers. In OSV answers, the syntactic subject, regardless of whether it is focused or not, is realised with lower maximum f0 in contrastive answers when compared to new-information ones. At the same time, the syntactic object is realised with a higher minimum f0 in contrastive OSV answers.

FIGURE 3.8: Parametric partial effects (i.e., partials) of focus type by constituent (estimates from the zero-reference of new-information focus by constituent) on transformed and trimmed maximum f0 (upper row) and minimum f0 (lower row) in narrow SOV answers (left column) and narrow OSV answers (right column).



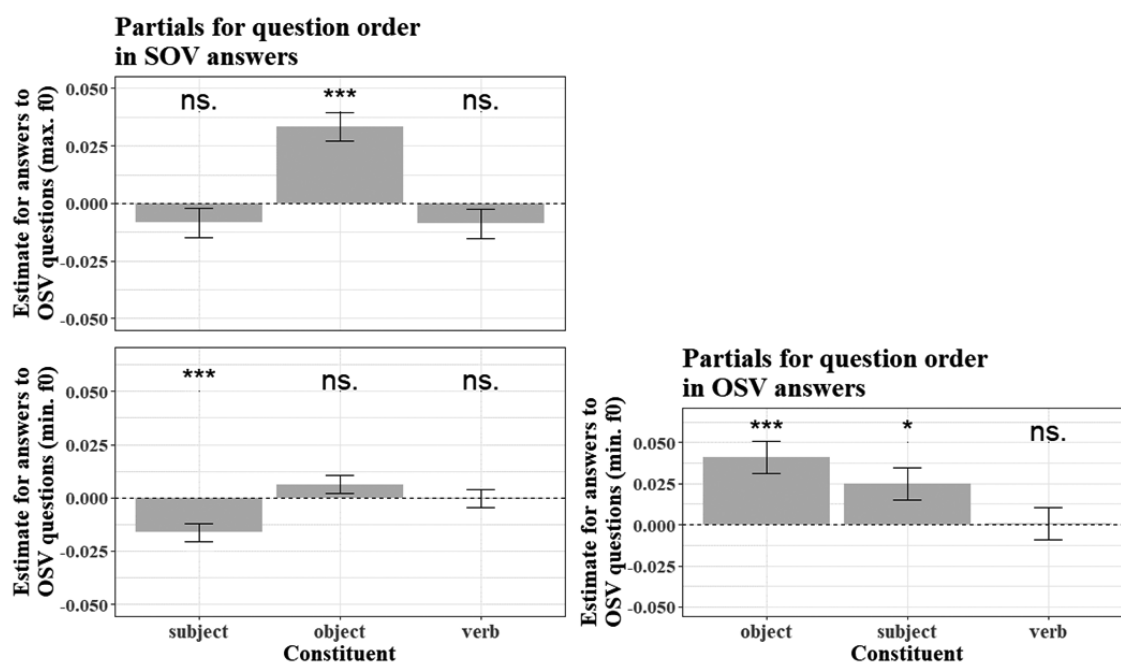
Given the theoretical differences regarding whether answers to closed *wh*-questions are to be considered cases of contrastive focus akin to corrective exchanges, partial effects of **question type** by constituent in contrastive focus answers are visualised in figure 3.9 (i.e., models 2Y.S.i, 2Y.S.ii, 2Y.O.i, and 2Y.O.ii). In particular, contrastive focus-bearing answers to corrective trials are compared to contrastive focus-bearing answers to closed *wh*-questions with the latter being the reference level. We can see that the sentence-initial constituent is realised with a higher maximum *f*<sub>0</sub> in corrective focus trials compared to new-information trials, regardless of answer word order or focus target. In OSV answers, the sentence-initial grammatical object is also realised with a lower minimum *f*<sub>0</sub>. As the only interaction with focus target, the only significant effect of question type on minimum *f*<sub>0</sub> in SOV answers is seen on the grammatical object if it is focused, with contrastively focused objects in SOV answers being realised with higher minimum *f*<sub>0</sub> when compared to new-information answers.

FIGURE 3.9: Parametric partial effects (i.e., partials) of question type by constituent (estimates from the zero-reference of answers to closed *wh*-questions by constituent) on transformed and trimmed maximum *f*<sub>0</sub> (upper row) and minimum *f*<sub>0</sub> (lower row) in narrow SOV answers (left column) and narrow OSV answers (right column).



Lastly, the independent exploratory effect of **question word order** significantly contributed to the narrow  $f_0$  models (i.e., 2X.S.i, 2X.S.ii, and 2X.O.ii) with the exception of maximum  $f_0$  in OSV answers (i.e., model 2X.O.i). Comparing narrow focus-bearing answers to OSV *wh*-questions to reference narrow focus-bearing answers to SOV *wh*-questions, partial estimates are illustrated in figure 3.10. Where it contributed to the model, question word order was not involved in interactions that significantly contribute to the models. In SOV answers to OSV questions, we see that maximum  $f_0$  at the syntactic object is increased, while minimum  $f_0$  at the subject is decreased compared to SOV answers to SOV questions. As for OSV answers, we see that minimum  $f_0$  of the syntactic object and subject is increased when triggered by OSV questions compared to counterparts triggered by SOV questions.

FIGURE 3.10: Exploratory parametric partial effects (i.e., partials) of question word order by constituent (estimates from the zero-reference of answers to SOV *wh*-questions by constituent) on transformed and trimmed maximum  $f_0$  (upper row) and minimum  $f_0$  (lower row) in narrow SOV answers (left column) and narrow OSV answers (right column).



To summarize our most crucial findings regarding  $f_0$ , significant and systematic effects were observed for the focus dimensions of focus size and focus target, while focus type only displayed fragmented  $f_0$  effects:

**Focus size** – Comparing SOV narrow subject foci and SOV narrow object foci to SOV broad foci, we have seen that the object constituent in both narrow focus conditions (i.e., the postfocal object in subject focus and the

narrowly focused object in object focus trials) is realised with lower maximum and minimum f0 compared to the focus-projecting object constituent in broad focus. For SOV subject foci, we have further seen that the maximum f0 of the focused, sentence-initial subject is lower when compared to the subject in SOV broad foci. We have also observed that the postfocal verb in SOV object foci displayed lower maximum f0 compared to verbs in SOV broad foci.

**Focus target** – When SOV subject foci are compared to SOV object foci, we have seen that the maximum f0 of the subject's stressed syllable is lower when it is focused compared to when it is not. As for the object, both f0 extrema are lower when it is not focused compared to when it is focused, with no effects on the verb. When OSV subject foci are compared to OSV object foci, the only observed f0 effect is on the subject, which displayed higher f0 extrema when focused compared to when it is not focused.

**Focus type** – Effects of focus type on f0 were only observed between OSV contrastive foci and OSV new-information foci, where the object is realised with a higher minimum f0 and the subject is realised with a lower maximum f0 for contrastive foci.

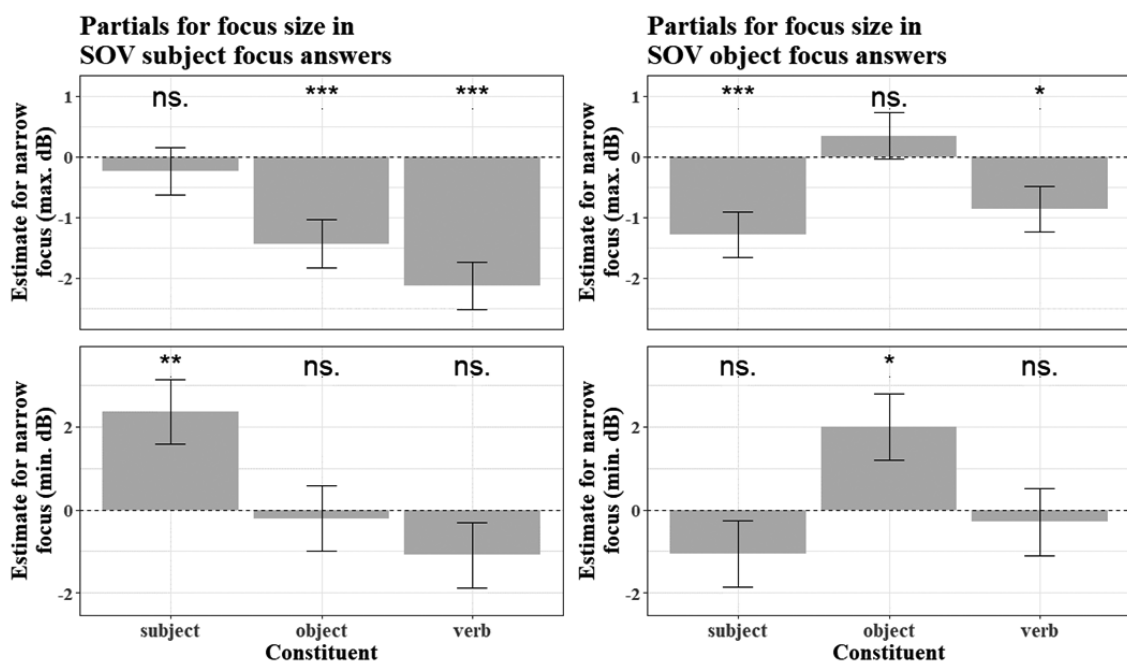
### Intensity

To analyse the possible effects of our independent factors of interest on intensity, we calculated maximum and minimum intensity measures with the constituent as the domain for subjects, objects, and verbs. Next, intensity measurements were further normalised by subtracting the respective answer's mean intensity from each extremum. As we have also done with f0 values, the resulting normalised intensity measurements were further trimmed, excluding values beyond 3 SD from the mean at each constituent. Following the f0 analysis presented above, the cleaned intensity data were modelled in multiple GAM models to investigate our partially crossed factors of interest *focus size*, *focus target*, *focus type*, and *question type*, and the exploratory factor of *question word order*. In the following paragraphs, partial effects of these factors are presented, with full model summaries provided in this chapter's appendix.



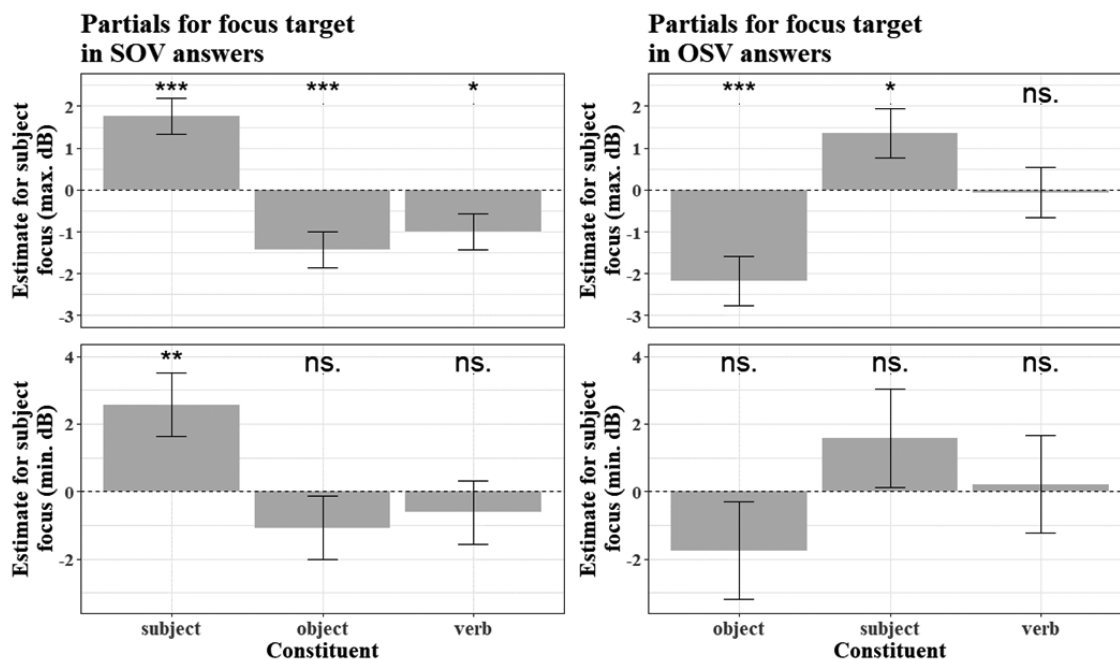
Partial effect estimates for **focus size** by constituent, comparing SOV subject and object focus answers to broadly focused answers (i.e., models 3s.S.i, 3s.S.ii, 3o.S.i, and 3o.S.ii), are provided in figure 3.11. Therein, clear patterns emerge: (i) compared to broad focus answers (i.e., the reference level), non-focused constituents in narrowly focused answers are realised with significantly reduced maximum intensity regardless of focus target, and (ii) the focused constituent in narrow focus is realised with significantly higher minimum intensity. These observations, especially the reduction of maximum intensity for non-focused constituents, appear not to be related to the positional relations with regards to the focused element, such as postfocal reduction. However, particularly in SOV object focus answers, the sentence-initial and prefocal grammatical subject and the sentence-final and postfocal verb are both realised with significantly lower maximum intensity.

FIGURE 3.11: Parametric partial effects (i.e., partials) of focus size by constituent (estimates from the zero-reference of broad focus by constituent) on centred and centred maximum intensity (upper row) and minimum intensity (lower row) in SOV narrow subject focus answers (left column) and SOV narrow object focus answers (right column).



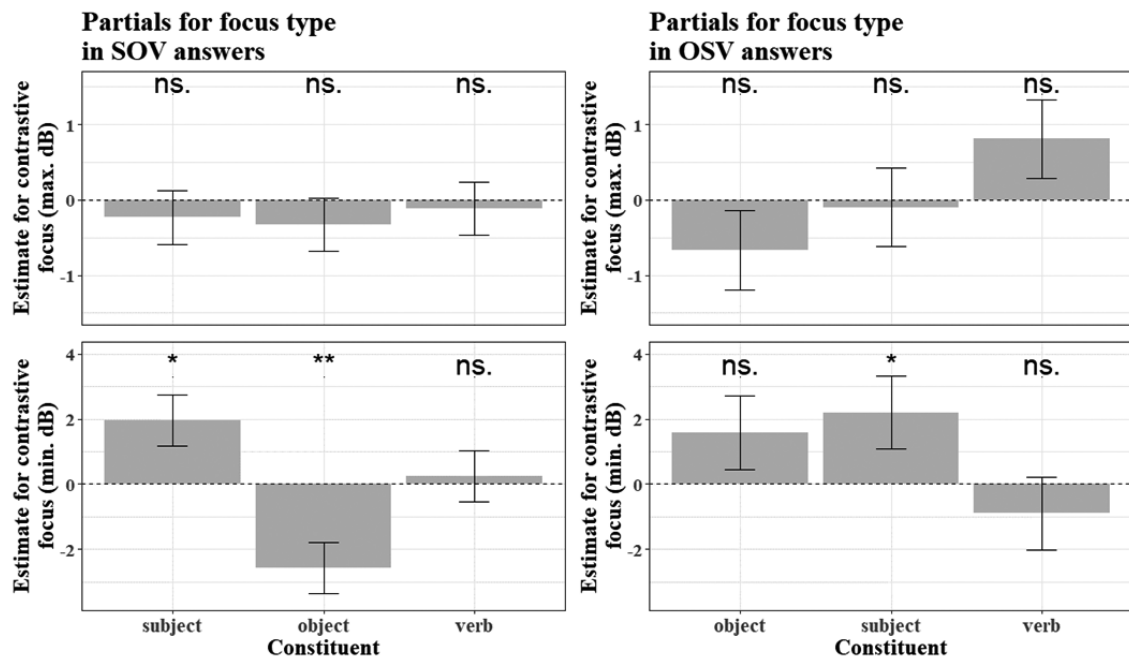
Regarding the independent factor of **focus target**, partial effects by constituent in SOV and OSV answers are illustrated in figure 3.12 (i.e., models 3X.S.i, 3X.S.ii, 3X.O.i, and 3X.O.ii). First and foremost, we see that the syntactic subject in subject focus answers is realised with higher maximum intensity and minimum intensity when compared to syntactic subjects in object focus answers (i.e., the reference level; the trend of minimum intensity increase in OSV answers does not reach statistical significance). We further see that the syntactic object in subject focus answers, regardless of answer word order, is realised with lower maximum intensity. Furthermore, the verb in SOV answers is realised with significantly lower maximum intensity when the syntactic subject is focused, compared to cases where the object is in focus.

FIGURE 3.12: Parametric partial effects (i.e., partials) of focus target by constituent (estimates from the zero-reference of object focus by constituent) on transformed and centred maximum intensity (upper row) and minimum intensity (lower row) in narrow SOV answers (left column) and narrow OSV answers (right column).



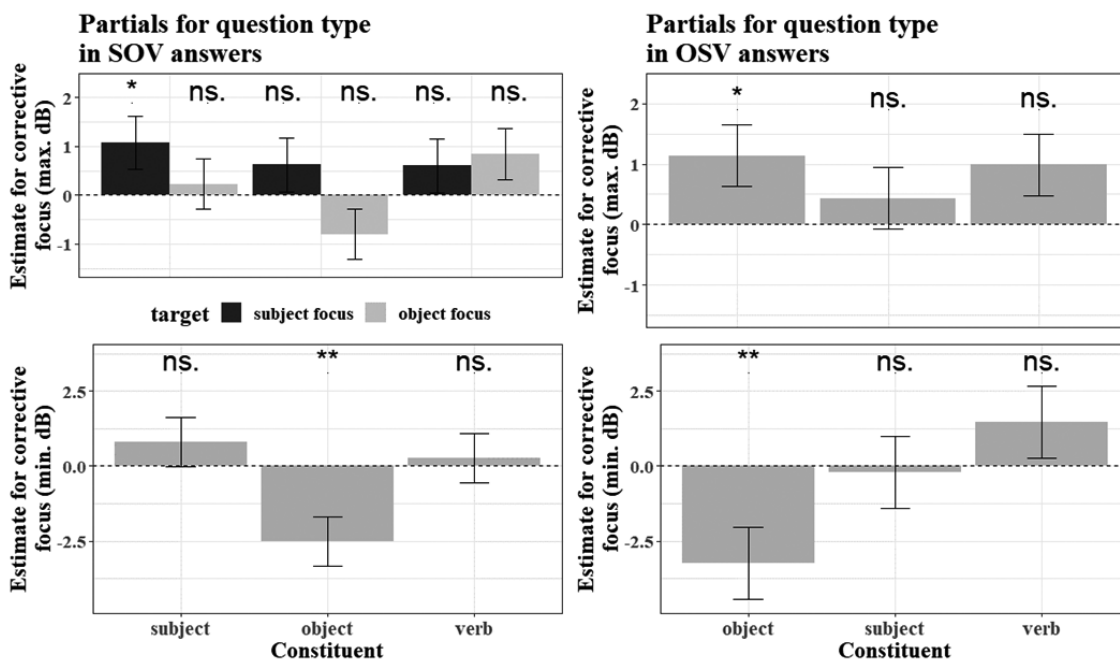
As visualised in figure 3.13 (i.e., models 3X.S.i, 3X.S.ii, 3X.O.i, and 3X.O.ii), significant effects of **focus type** by constituent are only observed in minimum intensity measures. The syntactic subject in contrastive SOV and OSV answers is realised with higher minimum intensity compared to new-information answers (i.e., the reference level), regardless of focus target. In SOV answers, the object is further realised with significantly lower minimum intensity in contrastive focus trials.

FIGURE 3.13: Parametric partial effects (i.e., partials) of focus type by constituent (estimates from the zero-reference of new-information focus by constituent) on transformed and centred maximum intensity (upper row) and minimum intensity (lower row) in narrow SOV answers (left column) and narrow OSV answers (right column).



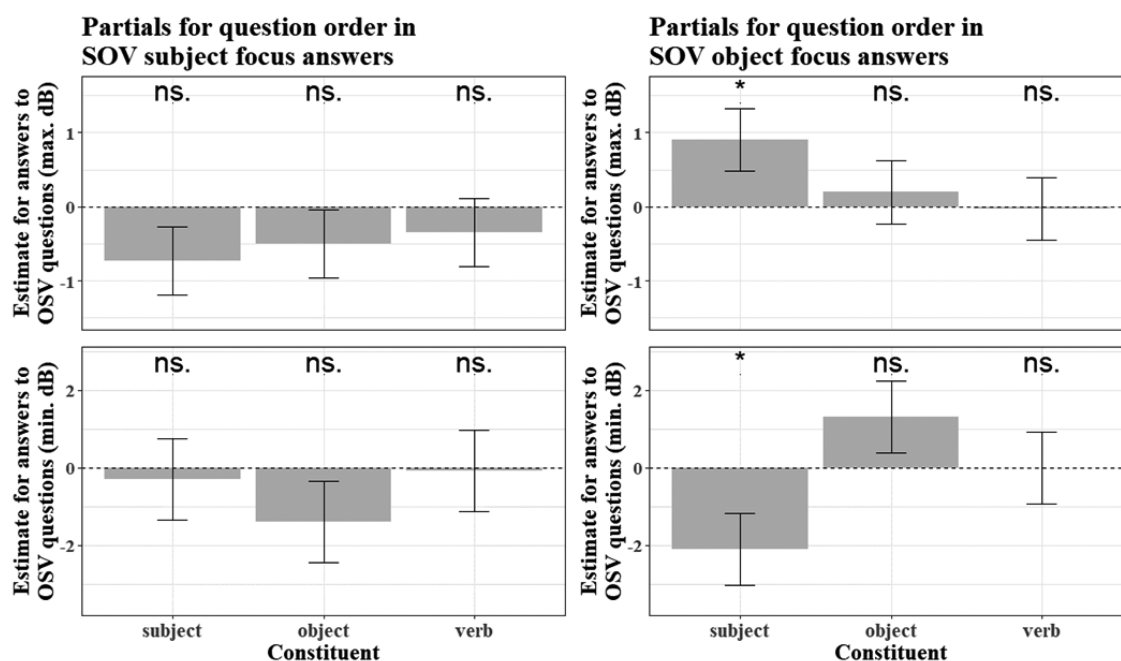
Regarding the factor of **question type** by constituent in our intensity models (i.e., 3Y.S.i, 3Y.S.ii, 3Y.O.i, and 3Y.O.ii), maximum intensity in SOV answers displayed an interaction between focus target and question type not present elsewhere. Partial effects plotted in figure 3.14 indicate that the sentence-initial constituents in corrective (subject focus) SOV and (all) OSV answers are realised with significantly higher maximum intensity compared to their new-information counterparts. In minimum intensity, we see no such positional effect, with sentence-initial (i.e., OSV) and sentence-medial (i.e., SOV) contrastive syntactic objects realised with lower minimum intensity than syntactic objects new-information answers.

FIGURE 3.14: Parametric partial effects (i.e., partials) of question type by constituent (estimates from the zero-reference of answers to closed *wh*-questions by constituent) on transformed and centred maximum intensity (upper row) and minimum intensity (lower row) in narrow SOV answers (left column) and narrow OSV answers (right column).



Lastly, the exploratory factor of **question word order** by constituent (i.e., models 3X.S.i, 3X.S.ii, 3X.O.i, 3X.O.ii), comparing answers to OSV *wh*-questions with answers to SOV *wh*-questions (i.e., the reference level), only contributed to models on SOV answers, interacting with focus target in both. Therefore, the partial effects of question word order in figure 3.15 are represented separately for subject and object focused answers. While no significant effect of question word order is present for SOV subject focus answers, the sentence-initial syntactic subject in SOV object focus answers is realised with significantly higher maximum intensity and lower minimum intensity when triggered by OSV questions compared to corresponding answers triggered by SOV questions.

FIGURE 3.15: Exploratory parametric partial effects (i.e., partials) of question word order by constituent (estimates from the zero-reference of answers to SOV *wh*-questions by constituent) on transformed and centred maximum intensity (upper row) and minimum intensity (lower row) in subject focus SOV answers (left column) and object focus SOV answers (right column).



Summarizing our most crucial findings regarding intensity, significant and systematic effects were observed for the focus dimensions of focus size and focus target. However, much like our f0 results, the dimension of focus type only displayed fragmented intensity effects:

**Focus size** – Comparing SOV narrow subject and SOV narrow object foci to SOV broad foci, we have seen that the narrowly focused constituent is realised with lower minimum intensity when compared to the same constituent in broad focus, regardless of whether it is the sentence-initial focused subject or the immediately preverbal focused object. Similarly, the

sentence-final verb in narrow foci is realised with lower maximum intensity when compared to the verb in broad focus, irrespective of focus target. In the case of SOV narrow object focus, the prefocal and sentence-initial subject constituent is additionally realised with lower maximum intensity compared to broad focus. The same pattern applies to the postfocal and immediately preverbal object constituent in SOV narrow subject focus, which is realised with lower maximum intensity compared to broad foci.

**Focus target** – Comparing SOV subject and SOV object foci, we have seen that the sentence-initial focused subject is realised with higher intensity than its non-focused counterpart in both extrema, while the postfocal object, as well as the postfocal and sentence-final verb in SOV subject foci, are both realised with lower maximum intensity when compared to SOV object foci. As for OSV subject and OSV object foci, we have seen that the prefocal object in OSV subject foci is realised with lower maximum intensity, while the focused and immediately preverbal subject exhibit higher maximum intensity compared to OSV object foci. In contrast to SOV narrow focus targets, OSV subject and object foci did not differ on the verb.

**Focus type** – Similar to our  $f_0$  results, inconsistent effects were observed regarding the realisation of focus type in Turkish when intensity is concerned. Comparing SOV contrastive foci to SOV new-information foci, we have seen that the sentence-initial subject is realised with higher minimum intensity in contrastive foci, while the immediately preverbal object also exhibits lower minimum intensity. In the comparison of OSV contrastive and OSV new-information foci, the only effect on intensity was observed at the immediately preverbal subject, which is realised with lower minimum intensity in contrastive foci when compared to new-information ones.

## 3.4 Discussion

### 3.4.1 The role of focus size in Turkish focus realisations (I)

With the results in word order,  $f_0$ , and intensity regarding focus size summarised in table 3.8, we have seen that broad focus in Turkish is only realised in canonical SOV order, while narrow focus is variable within the pre-verbal position, never occurring postverbally. This (syntactic) observation is in line with the focus field assumption by Göksel and Özsoy (2000), and the understanding that only neutral, default intonation in canonical (i.e., SOV) word order can project to broad,

sentence focus (see Kamali, 2014). Similarly, İşsever states that “only default focus can be permitted to project the focus features; i.e. only default focus can give rise to a sentence-focus reading” (2006, p. 427).

TABLE 3.8: Summarised results regarding focus size in the carrier answer’s word order, transformed and trimmed  $f_0$  at the accented syllable of each word, and centred and trimmed intensity of each word.

Word order of answer		Fundamental frequency			Intensity		
Focus size	Broad focus: only SOV	SOV SUBJ	$S_F$	↓ = max. min.	SOV SUBJ	$S_F$	= ↑ max. min.
		vs broad focus:	$O$	↓ ↓ max. min.	vs broad focus:	$O$	↓ = max. min.
	Narrow focus: SOV and OSV		$V$	= = max. min.		$V$	↓ = max. min.
		SOV OBJ	$S$	= = max. min.	SOV OBJ	$S$	↓ = max. min.
		vs broad focus:	$O_F$	↓ ↓ max. min.	vs broad focus:	$O_F$	= ↑ max. min.
			$V$	↓ = max. min.		$V$	↓ = max. min.

**Note.** Arrows indicate estimate directions (i.e., estimates  $> 0$  are indicated by up arrows, while estimates  $< 0$  are indicated by down arrows). Non-significant effects are indicated as equal signs.

Contrary to the investigations on acoustic correlates of focus in Turkish by İpek (2011), Kamali (2014), İvoşeviç and Bekâr (2015), and Gürer (2020), our data show significant differences between SOV narrow object focus and (SOV) broad focus. Compared to broadly focused answers, the medial object is realised with lower maximum and minimum  $f_0$  when narrowly focused. Also, the postfocal verb is realised with a lower maximum  $f_0$ , while there is no  $f_0$  effect on the pre-focal subject. However, the question arises whether these effects are perceivable, especially considering their low (transformed) estimates: max.  $f_0$  effect at the object = -0.0453; min.  $f_0$  effect at the object = -0.0124; max.  $f_0$  effect at the verb = -0.0192. Considering that we transformed  $f_0$  values, these estimates indicate that the effect of narrow focus size in object foci, when compared to broad foci, is only -4.53% (estimated effect on the object for max.  $f_0$ ), -1.24% (estimated effect on the object for min.  $f_0$ ), and -1.92% (estimated effect on the verb for max.  $f_0$ ) from the respective trial’s baseline (i.e., the minimum  $f_0$  at each trial’s sentence-final verb; see section 3.3.4 for the  $f_0$  transformation). Thus, perception studies are needed to investigate whether listeners categorically perceive these minor effects. In this regard, the perception experiment of İpek (2011) suggests that neutral/broad focus

is often confused with narrow object focus, but further experiments controlled for focus type are needed.

Comparing SOV subject focus to broad focus, a clearer picture emerges regarding  $f_0$ , although other studies did not observe such effects. Kamali (2014) describes narrow focus as involving postfocal deaccentuation that should be apparent in cases of SOV subject focus. Our data shows that the postfocal syntactic object is realised with lower maximum and minimum  $f_0$  than in broad focus, with no effect on the verb. Another effect observed on SOV narrow subject foci is the reduction of the focused subject's maximum  $f_0$ . We argue that this effect represents the absence of a sentence-initial phrase-final rise when this subject is focused, while the non-focused, prenuclear subjects in broad foci do display such a rise (see section 3.3). Compared to the effects in narrow object focus discussed above, the effects in subject foci are stronger, especially the post-focal deaccentuation: max.  $f_0$  effect on the subject = -0.0546 (-5.46%), max.  $f_0$  effect on the object = -0.1130 (-11.30%), min.  $f_0$  effect on the object = -0.0707 (-7.07%). This is also in line with İpek's (2011) perceptual findings that 'initial' subject focus is perceived correctly the most often. Nevertheless, further perception studies are needed to confirm the perceivability of these effects when focus type is controlled for.

Contrary to prior research, we have also observed systematic patterns in intensity when comparing SOV narrow focus to broad focus. Minimum intensity of the narrowly focused element is increased while maximum intensity of the non-focused elements is reduced, regardless of SOV focus target and thus focus position. Contrary to post-focal deaccentuation in  $f_0$  for narrow focus compared to broad focus, intensity shows pre- and post-focal lowering not restricted to peripherally realised narrow focus. However, it remains to be investigated whether these effects of focus size on intensity are categorically perceivable, necessitating perception studies. One complicating aspect with such perception studies is that in listening,  $f_0$  and intensity contribute together to focus size realisation. As such, perception studies would not be able to discern whether it is  $f_0$  or intensity that may or may not disambiguate focus size in Turkish. A possible approach to this issue could be the manipulation of one of these contours to determine their roles in perception.

### 3.4.2 The role of focus target in Turkish focus realisations (II)

In our results regarding the realisation of focus target summarised in table 3.9, we have seen that object foci are almost exclusively realised medially (i.e., in immediately preverbal position) when triggered by SOV questions. This observation is



in line with the statistical correlation of the immediately preverbal position and (object) focus in Turkish described by Kılıçaslan (2004). The probability of narrow subject focus to be realised in OSV order, on the other hand, is significantly higher (but not necessary) compared to narrow object focus. This pattern could be understood to represent the supposed immediately preverbal focus position in Turkish. However, as we have repeatedly raised in chapter 2 and here, the idea of a ‘focus position’ in Turkish requires clearer demarcation. Turkish is not a strict focus position language, as narrow subject focus is more often, but not exclusively, realised verb-adjacent. As we will discuss in section 3.3.4, Turkish also lacks an IS-loaded position regarding focus type.

TABLE 3.9: Summarised results regarding focus target in the carrier answer’s word order, transformed and trimmed  $f_0$  at the accented syllable of each word, and centred and trimmed intensity of each word.

	Word order of answer	Fundamental frequency	Intensity
Focus target	Narrow SUBJ focus is realised more often in OSV answers than OBJ focus	SOV SUBJ vs	SOV SUBJ vs
		SOV OBJ focus:	SOV OBJ focus:
		$S_F$ ↓ max. = min.	$S_F$ ↑ max. ↑ min.
		$O$ ↓ max. ↓ min.	$O$ ↓ max. = min.
		$V$ = max. = min.	$V$ ↓ max. = min.
	OSV SUBJ vs	OSV SUBJ vs	OSV SUBJ vs
	OSV OBJ focus:	OSV OBJ focus:	OSV OBJ focus:
	$O$ = max. = min.	$O$ ↓ max. = min.	$O$ ↓ max. = min.
	$S_F$ ↑ max. ↑ min.	$S_F$ ↑ max. = min.	$S_F$ ↑ max. = min.
	$V$ = max. = min.	$V$ = max. = min.	$V$ = max. = min.

**Note.** Arrows indicate estimate directions (i.e., estimates  $> 0$  are indicated by up arrows, while estimates  $< 0$  are indicated by down arrows). Non-significant effects are indicated as equal signs.

We argue that the confusion around the presumed focus position in Turkish stems from the complication that the immediately preverbal position is the canonical position of syntactic objects and the bearer of nuclear stress (i.e., the most deeply embedded constituent in Turkish). As such, the immediately preverbal position just so happens to be the place where the in-situ narrow object focus is realised and the position that, at the same time, can project to neutral, broad focus. Narrow subject focus, however, can be realised peripherally in-situ or may occur as verb-adjacent. As claimed by Özge and Bozşahin (2010), this variability appears in no way to be related to focus itself. Instead, it appears to be driven by non-foci involving syntactic means, including other IS-related aspects such as backgrounding (i.e., de-focussing) or topicalisation, alleviating the need for the

postulation of a focus position (also see section 3.4.4 below). To illustrate the issue with assuming the most deeply embedded position as the focus position, consider the focus-bearing structure *Mary bought [the red dress]<sub>FOC</sub>* from the introduction: In English, there is a general tendency of assigning “the focus-related nuclear accent to the most deeply embedded constituent of the sentence”, as is the case in the example (Winkler, 2013, p. 74). However, focus (and focus accent) may be assigned to any constituent, as in *[Mary]<sub>FOC</sub> bought the red dress*, if the speaker assumes a question of *Who bought the red dress?* This pattern of free focus assignment in English, as it is called by Winkler, is “necessary to direct the attention of the interlocutors to nondefault readings” (2013, p. 75). As such, we would not assume the position to the right of the verb to be the focus position in English, although it is the default (object) focus realisation and statistically correlated. Rather, focus is realised in-situ, while focus dimensions may employ means focal accent shift as indicated above, or syntactic reordering (e.g., contrastive focus fronting) for encoding (e.g., fronting or *it*-clefts for contrastive foci). For Turkish, the only syntactic restriction on focus realisation is the focus field proposed by Göksel and Özsoy (2000), with focus never occurring postverbally. Nevertheless, it could be argued that the immediately preverbal position is loaded regarding focus because it is the preferred position for focus to be placed at in Turkish. However, given the statistically confounding fact that the immediately preverbal focus is the canonical position for objects and nuclear stress (i.e., it is the default focus realisation in Turkish), we cannot determine whether such a preference is present through production only, with perception and processing studies needed in this regard (see chapters 4 and 5). For the time being, we argue that the concept and terminology of focus position in Turkish should be abandoned as it cannot be defined in a way that straightforwardly conforms to the breadth of realisations observed.

Akin to our discussion on focus size, we can see that canonical SOV narrow subject focus compared to SOV narrow object focus is marked by (i) postfocal deaccentuation (i.e., reduction in maximum and minimum  $f_0$  on the postfocal object) and (ii) lower maximum  $f_0$  at the focused, initial subject, representing the lack of phrase-final rise if the initial subject in SOV order is focused (see Kamali, 2014; section 3.3). If narrow subject focus is realised verb-adjacent (i.e., in OSV answers), it differs from OSV initial narrow object focus only in higher maximum and minimum  $f_0$ . This could be described as *focal boost* as termed by Gürer (2020), although neither she, nor İvoşeviç and Bekâr (2015) observed such an effect.<sup>35</sup>

<sup>35</sup> İpek (2011) did not compare acoustic measures between SOV narrow subject focus and SOV narrow object focus, instead comparing these conditions and SOV narrow verb focus to broad focus as a baseline.

In these non-canonical OSV cases, the final pitch rise at the initial object is present, regardless of whether the initial word is focused or not (see figures 3.3 and 3.5). Considering that the current study is the first one analysing focus target in SOV and OSV structures in a 2x2 fashion, further research is needed to confirm this observation. In intensity, we see that the narrowly focused subject, when compared to narrowly focused objects, is realised with higher maximum intensity, in line with focal boost on  $f_0$  (and higher minimum when medially in OSV answers), while max.  $f_0$  is also reduced on the object (and the verb when peripheral in SOV answers). Like what we have seen in the previous section, intensity affects pre-focal elements consistently, thus behaving differently from what would be expected in post-focal deaccentuation and  $f_0$ .

Although we have observed clear effect patterns in focus target, it must (again) be questioned whether these effects are perceivable. If we look at the  $f_0$  effects, estimates are similarly small as the ones observed in focus size, spanning 5.38% to 11.7%, with the same question arising for intensity effect estimates (see this chapter's appendix for model summaries). Contrary to focus size, however, there is some evidence that SOV narrow focus, at least, can be differentiated. In her perception experiment, İpek (2011) showed that initial narrow subject focus and medial narrow object focus is rarely confused. Whether the same discernability in perception also applies to OSV answers and which role  $f_0$  and intensity play in perception is to be determined in further research.

### 3.4.3 The role of focus type in Turkish focus realisations (III)

As elaborated on in section 3.2, it has been argued that peripheral focus in Turkish must be contrastive in type, while immediately preverbal focus can be contrastive or new-information focus (e.g., see İşsever, 2003; Kılıçaslan, 2004). Considering focus type in our data summarized in table 3.10, we see that focus type did not significantly affect word order in narrow foci. Based on this (null) result, our findings lend evidence for the analysis by Özge and Bozşahin (2010), rejecting any syntactic means of focus realisation in Turkish, instead arguing that focus is solely realised in prosody. Thus, new-information focus, as well as contrastive focus in Turkish, can be realised in any position within the focus field.

Compared to focus size and focus target described above, only fragmented acoustic effects in  $f_0$  and intensity emerge for focus type. Furthermore, the interaction of focus type by focus target, differentiating potential focus type effects in narrow object and narrow subject foci, did not contribute to any of the respective models. As such, we cannot provide evidence to Özge and Bozşahin's (2010)

### Chapter 3. Production of syntactically variable focus in Turkish

TABLE 3.10: Summarised results regarding focus type in the carrier answer’s word order, transformed and trimmed f0 at the accented syllable of each word, and centred and trimmed intensity of each word.

Word order of answer		Fundamental frequency		Intensity	
Focus type	no effect	SOV contrastive vs SOV new-information focus:	S = max.	SOV contrastive vs SOV new-information focus:	S = max.
			= min.		↑ min.
			O = max.		O = max.
		= min.	↓ min.		
		V = max.		V = max.	
		= min.		= min.	
		OSV contrastive vs OSV new-information focus:	O = max.	OSV contrastive vs OSV new-information focus:	O = max.
			↑ min.		= min.
			S ↓ max.		S = max.
			= min.		↑ min.
			V = max.		V = max.
			= min.		= min.

**Note.** Arrows indicate estimate directions (i.e., estimates > 0 are indicated by up arrows, while estimates < 0 are indicated by down arrows). Non-significant effects are indicated as equal signs.

prediction that contrastive focus is necessarily deaccentuated in f0 at post-focal positions. Instead, we observed focus type effects on f0 and intensity in SOV and OSV answers independent of focus target, with no significant f0 effects observed between contrastive and new-information focus in canonical SOV answers.

Considering that none of the focus type production studies conducted by İvoşeviç and Bekâr (2015) and Gürer (2020) found acoustic correlates of focus type in Turkish, we argue that the effects described in table 3.10 do not conclusively represent acoustic correlates of focus type, instead capturing spurious variability in the data. Another aspect that raises questions regarding the validity of the observed effects is their low estimates, being between 2.48% and 4.08% from their respective baselines (i.e., from the mean intensity of each trial or the minimum f0 of each trial’s verb). Ultimately, a perception study on prosodically realised focus types in Turkish could show whether there are perceivable acoustic differences between focus types in Turkish. Such a study will be presented in chapter 4.

One aspect to be considered in future analyses of the prosody in Turkish focus type realisations is that contrary to post-focal deaccentuation in narrow focus, deaccentuation in contrastive focus may only occur later in the sentence. As argued by Özge and Bozşahin (2010, p. 144), “postfocal deaccenting can be observed more clearly in longer utterances”. Thus, an absence of systematic postfocal deaccentuation for contrastive focus compared to new-information focus in our data does not provide conclusive evidence against postfocal deaccenting in focus

types. Our limitation of answers to three words does not allow us to conclusively tease apart focus type effects deeper in the postfocal domain.

#### 3.4.4 The role of question word order in Turkish focus realisations (IV & e.V)

A vast body of research not reviewed in this article has investigated the case of *wh*-phrases in Turkish regarding syntax and prosody (Görgülü, 2006; İşsever, 2019; Kamali, 2014; Özge & Bozşahin, 2010; Özsoy, 2009; Şener, 2006, among others). Nevertheless, we have presented the analysis by Göksel and Özsoy (2000) in section 3.2, illustrating that Turkish is a *wh*-in-situ language, meaning that *wh*-phrases do not have to undergo overt movement as is the case in English (e.g., The man cut the bread – What did the man cut?). Instead, *wh*-phrases in Turkish directly replace their corresponding constituents in canonical structures. However, *wh*-phrases may ‘scramble’ in Turkish (see Özsoy, 2009), leading to ex-situ *wh*-questions. Syntactically, Göksel and Özsoy (2000) demonstrate that Turkish *wh*-phrases and foci behave alike, where both are banned from postverbal positions. They argue that both types of phrases indicate non-recoverable information that is banned postverbally (see section 3.2 for arguments against this assumption). In the current experiment, the question was raised whether *wh*-question configuration affects focus placement in answers.

In the results summarised in table 3.11, we see that ex-situ OSV questions are more probable to trigger OSV focus realisations compared to in-situ SOV questions. Consider that almost all narrow object focus answers were realised in SOV order when triggered by SOV questions. However, if triggered by OSV questions, between 5.4% and 12.4% of narrow object foci, depending on the other factors of interest, were realised in OSV order. Similarly, narrow subject foci triggered by OSV questions led to significantly more realisations in OSV orders. In summary, the presence or absence of *wh*-scrambling directly influences the syntactic realisation of the corresponding answer, whether through syntactic priming or discourse-pragmatic needs, such as backgrounding.

In an exploratory investigation, we have evaluated whether *wh*-question word order affects the acoustic realisation of answers. If, for example, *wh*-configuration implies explicit backgrounding of the non-*wh* constituent by scrambling of the *wh*-phrase, deaccentuation could be assumed to reflect this. In our f0 models, question word order contributed to all models, with the exception of maximum f0 in OSV answers. However, the interaction between focus target and question word order failed to improve any f0 model significantly. In intensity models,

question word order only contributed to SOV answer models but interacted with focus target therein for minimum and maximum intensity.

TABLE 3.11: Summarised results regarding question word order in the carrier answer’s word order, transformed and trimmed  $f_0$  at the accented syllable of each word (exploratory), and centred and trimmed intensity of each word (exploratory).

Word order of answer		Fundamental frequency			Intensity				
Question order	OSV question trigger more OSV answers than SOV questions	SOV answers to	<b>S</b>	=	max. min.	SOV SUBJ focus triggered	<b>S</b>	=	max. min.
		OSV questions vs	<b>O</b>	↑	max. min.	by OSV questions vs SOV questions:	<b>O</b>	=	max. min.
		SOV questions:	<b>V</b>	=	max. min.		<b>V</b>	=	max. min.
		OSV answers to	<b>O</b>	NA	max. min.	SOV OBJ focus triggered by	<b>O</b>	↑	max. min.
		OSV questions vs	<b>S</b>	↑	max. min.	OSV questions vs SOV questions:	<b>S</b>	=	max. min.
		SOV questions:	<b>V</b>	NA	max. min.		<b>V</b>	=	max. min.

**Note.** Arrows indicate estimate directions (i.e., estimates  $> 0$  are indicated by up arrows, while estimates  $< 0$  are indicated by down arrows). Non-significant effects are indicated as equal signs.

With question word order in  $f_0$  models not involving interactions with focus target, the effects observed cannot be attributed to focus. If there is no interaction with focus target, the independent variable of question word order by constituent does not take into consideration whether the respective constituent is in focus or not. In the intensity models, the only significant effect is observed in the syntactic, non-focused subject for SOV narrow object foci triggered by OSV questions compared to those triggered by SOV questions. If the subject that was medial and explicitly backgrounded in the OSV question is fronted in the SOV question, it may be understood to be a topic indicated by increased maximum intensity and decreased minimum intensity. However, one aspect of this exploratory analysis is that our data are not balanced in question word order regarding answer word order and focus target. Especially narrow object focus elicited by SOV questions is ‘never’ realised in OSV answers, while narrow subject focus elicited by OSV questions is predominantly realised in OSV answers. As such, the validity of the observed effects is to be questioned. Similar to all factors so far, further investigation is needed to clarify the effect of *wh*-question’s word order on congruent answers, particularly regarding whether the mismatch is perceivable. If, for example, an answer given to an SOV question is paired with a manipulated OSV

question, it should be investigated whether any effects on acceptability arise, indicating acoustic differences.

Notwithstanding the problematic aspects of our exploratory acoustic analysis in question word order, the effect of question word order on (syntactic) focus positioning should be considered in future research. As the only previous study investigating non-canonical narrow (object) focus, İvoşeviç and Bekâr (2015) accompanied OSV target sentences with OSV questions and vice-versa, presuming that answers are constructed parallel to answers. However, in our data, we have seen that question configuration non-categorically affects word order in focus-bearing answers. Thus, the presumption of parallelism appears not to hold in more spontaneous speech.

### 3.4.5 Exploratory analysis of the role of question type (e.VI)

In addition to the exploratory analysis of acoustic correlates associated with question word order, we have explored the potential effects of question type on word order,  $f_0$ , and intensity in contrastive foci, with results summarized in table 3.12.

TABLE 3.12: Summarised results regarding question type in the carrier answer's word order (exploratory), transformed and trimmed  $f_0$  at the accented syllable of each word (exploratory), and centred and trimmed intensity of each word (exploratory).

Word order of answer		Fundamental frequency		Intensity	
Question type	no effect	SOV	$\uparrow$ max. S = min. SF	SOV	U max. SF
		corrective	= min. OF	corrective	S = max. OF
		vs SOV	= max.	vs SOV	= min.
		closed	O = min. SF	closed	O = max. SF
	question:	$\uparrow$ min. OF	question:	$\downarrow$ min. OF	
		V = max. = min. SF = min. OF		V = max. SF = max. OF = min.	
	OSV	O $\uparrow$ max. $\downarrow$ min.	OSV	O $\uparrow$ max. $\downarrow$ min.	
	corrective	= max. = min.	corrective	S = max. = min.	
	vs OSV	S = max. = min.	vs OSV	S = max. = min.	
	closed	V = max. = min.	closed	V = max. = min.	
	question:		question:		

**Note.** Arrows indicate estimate directions (i.e., estimates  $> 0$  are indicated by up arrows, while estimates  $< 0$  are indicated by down arrows). Non-significant effects are indicated as equal signs.

As presented in chapter 2, there is disagreement regarding whether closed *wh*-questions trigger contrastive focus (Neeleman & Vermeulen, 2013) or whether such answers are best associated with focus types related to alternative sets (Krifka & Musan, 2012). In word order, our data show no difference between question types in contrastive foci, providing evidence for an analysis where both question types elicit contrastive focus.

In our acoustic analysis, question type contributed to all models in f0 and intensity, while the factor interacted with focus target in the minimum f0 and maximum intensity models for SOV corrective answers compared to SOV new-information answers. In the observed effects, sentence-initial words in SOV and OSV corrective foci compared to new-information foci are produced with increased maximum f0 and intensity, the latter only for focused subjects in SOV answers. Corrective OSV answers also show that the initial object is realised with significantly reduced minimum f0 and intensity. Together with the effects on minimum f0 on the focused object in SOV corrective foci and minimum intensity on the object in SOV answers, these effects potentially indicate differences between question types in Turkish, lending evidence to the analysis of Krifka and Musan (2012). Further research should investigate this differentiation of answers to corrective exchanges and closed questions in perception experiments to determine whether the effects observed affect comprehension.

### 3.4.6 Comparison to the literature and possible confounding factors

One important question to be raised revolves around the divergent findings of the current production study when compared to the limited previous research. Specifically, it must be asked why systematic acoustic correlates, although not necessarily perceivable and disambiguating, were observed for focus size and focus target while previous research did not detect such differences throughout.

First and foremost, the studies of İpek (2011), İvoşeviç and Bekâr (2015), and Gürer (2020) overlap considerably in their experimental procedure, with participants reading preformulated target sentences accompanied by contextual frames. The study presented here does not provide participants with the target sentences, requiring them to construct the focus-bearing answers. This methodological difference might be the primary source of differences in results. Both experimental set-ups have their advantages and disadvantages. Our procedure allows for the investigation of word order, as participants are free to generate answers as they see fit. The procedure(s) applied in previous research, however, make for more precise acoustic analysis, as different contexts accompany the same target



sentences to elicit different focus categories which can directly be compared. Still, the acoustic analysis of the present study was carried out across different sentences and is potentially suspect to various confounding factors, to which we briefly turn now.

Especially the production study by Gürer (2020) emphasised the use of sonorants and voiced obstruents in target sentences in order to avoid  $f_0$  perturbations due to stops and obstruents in general. However, we have chosen not to follow this approach to prevent somewhat unusual target sentences and exchanges exemplified earlier.

In our items, we have not explicitly controlled for the segmental makeup and stress properties of words, potentially rendering them subject to effects on our measures unrelated to prosodic structure in Turkish per se, such as intrinsic  $f_0$  (Whalen & Levitt, 1995). However, considering that our findings regarding focus size and focus target (effects of focus type were argued not to be conclusive in line with the literature) are predicted by what has been assumed and described for Turkish pitch structure, such as the lack of phrase-final rise in peripheral subject focus (see Kamali, 2014), we argue that our findings are reliable.

One aspect of prosodic focus realisation that we have not evaluated here is duration. Due to the use of forced alignment, we were unable to investigate duration as an acoustic correlate, as the aligner's analysis window caused perturbations in duration measurements. By including duration as an acoustic measure, we believe that future studies using the presented paradigm would contribute to our understanding of Turkish focus realisation. This is specifically of interest as İvoşeviç and Bekâr (2015) found broad focus and canonical narrow new-information object focus to differ in duration with the object's word duration in SOV new-information focus being significantly higher than objects in broad focus. A further refinement to our experimental paradigm would be the adaptation of longer utterances with postverbal backgrounded elements to capture postfocal deaccentuation reliably.

Last but of essential importance, the present study's results only refer to our restricted minimal syntax, where we have explored simple declarative structures in the form of three-word transitive answers. Other constraints on focus realisation may apply to more complex structures.

### 3.5 Conclusion and suggestions for further research

The experimental production study presented in this chapter elicited syntactically variable focus-bearing answers to *wh*-questions, providing participants syntactic freedom to formulate answers. *Wh*-questions were controlled for the factors and respective research questions of focus size (broad vs narrow focus), focus target (object vs subject focus), focus type (contrastive focus vs new-information focus), and question configuration (in-situ SOV questions vs ex-situ OSV questions) in Turkish, raising evidence for four primary conclusions presented below.

As the first conclusion regarding *focus size*, we have observed that broad focus is exclusively realised in canonical SOV structures, as is to be expected given that only default, neutral intonation (i.e., nuclear stress) can project focal status to the sentence. Observed narrow foci follow Göksel and Özsoy's (2000) focus field and focal stress/accents assumption, occurring variously across all elements preceding (and including) the verb. As such, we argue that the assumption of a verb-adjacent focus position in Turkish, at least in the sense of a strict focus position language or as an IS-loaded position, merely captures statistical patterns associated with canonicity rather than syntactic strategies associated with focus. Contrary to previous experimental research, we observed systematic acoustic correlates in  $f_0$  and intensity for focus size and focal stress/accents. As expected from the pitch effects of focus described by Kamali (2014), SOV narrow focus compared to broad focus is associated with postfocal deaccentuation in  $f_0$  and the lack of sentence-initial, phrase-final rise in  $f_0$  if realised peripherally (i.e., for SOV subject focus). Not directly predicted in the literature, verb-adjacent SOV object focus is associated with (postfocal) deaccentuation in  $f_0$  at the verb and the focused syntactic object itself compared to broad focus. Minimum intensity of the focused element is consistently increased while maximum intensity is decreased for all non-focused elements, regardless of focus target and word order/focus positioning (i.e., involving pre- and post-focal elements).

Regarding *focus target* in our second conclusion, this study provides evidence for the cross-linguistic observational tendency that subject focus is more marked than non-subject focus to hold in Turkish. Turkish exhibits focal argument hierarchy, with canonical SOV structures as the statistical default for subject and object foci, while non-canonical OSV realisations, mainly when triggered by scrambled OSV *wh*-questions, occur predominantly (but not exclusively or necessarily) with subject foci. As such, word order does not categorically distinguish any investigated focus category, including focus target. Acoustically, narrow subject foci differ from narrow object foci in terms of post-focal deaccentuation and the lack

### 3.5. Conclusion and suggestions for further research

of sentence-initial, phrase-final rise for narrow subject focus in f0 if realised peripherally (i.e., in SOV order). Focal boost in f0 was the only effect observed for all focus targets if realised medially verb-adjacent. The intensity of the narrowly focused element is boosted, while non-focused elements display lowering in maximum intensity.

In our third conclusion, we reject the assumption that focal (non-)verb-adjacency in Turkish is associated with *focus type*, as proposed by İşsever (2003) and Kılıçaslan (2004). Narrow foci are realised across the focus field, with no restriction of peripheral focus to the contrastive type or any other syntactic effect of focus type on word order in general. Acoustically, non-systematic effects were observed, which are argued not to be reliable, given that (i) previous research did not indicate any acoustic correlates for focus type and (ii) the restriction of answers to three words in the applied design. In summary, it is argued that, at least for simple transitive structures with no postverbal background elements, focus type is not associated with acoustic correlates.

As for possible syntactic effects of *question word order* in our fourth conclusion, in-situ SOV and scrambled ex-situ OSV trigger questions affect answers' word orders, raising the issue of potential confounds if parallel question-answer pairs are used and assumed a priori in research. Scrambled OSV questions cause object and subject foci to be realised in non-canonical OSV structures more often but not exclusively compared to ones triggered by in-situ SOV questions. Exploratory analysis of acoustic effects of question word order was inconclusive given the highly unbalanced structure of elicited answers, with further research needed in this regard.

Based on the 'debate' surrounding the question of whether answers to closed *wh*-questions bear contrastive focus, another exploratory analysis showed that contrastive focus elicited by such closed questions does not differ syntactically from ones elicited in corrective exchanges, in favour of Neeleman and Vermeulen's (2013) conceptualisation of contrast. Acoustically, however, sentence-initial raising effects on f0 and intensity were observed, which would lend evidence for the distinction of contrastive focus in corrective exchanges and alternative set size-based focus types elicited in open and closed question-answer pairs (see Krifka & Musan, 2012). Thus, more research is necessary in this regard.

In discussing these findings, it was repeatedly noted that the presence or absence of significant acoustic effects alone does not indicate whether the respective focal categorisations can or cannot be disambiguated. While there are some indicative data regarding perception of focus size and target provided by İpek (2011), her investigation is not controlled for focus type. The analyses and

conclusions presented in this chapter thus underline the need for perception studies based on coherent frameworks of IS, simultaneously considering the multiple differentiation involved in focus. It is also argued that such future studies should incorporate postverbal backgrounded material to investigate acoustic effects of focus type more conclusively. Furthermore, future studies should also consider duration as an acoustic parameter. It was suggested that such future studies might also potentially manipulate  $f_0$  and intensity to determine the roles of these parameters in Turkish focus perception. If acoustic measures indeed disambiguate realisations of these focus categorisations in Turkish, native speakers should reliably distinguish focus realisations in auditory perception.

## Chapter 4

# Timed acceptability judgments of focus and contrast in Turkish speech

### 4.1 Introduction

Having elicited syntactically free focus realisations in chapter 3, we argued that focus size (broad vs narrow focus), focus target (subject vs object focus), and question configuration (in-situ SOV questions vs ex-situ OSV questions) affect word order in focus-bearing structures. Specifically, broad sentence focus in Turkish is only realised in canonical SOV structures, in line with the presumption that only neutral intonation can project focal status (see İşsever, 2006). As for narrow focus, however, we have seen that the probability of non-canonical OSV word order is significantly higher for subject focus but crucially not necessary. However, object focus is predominantly, but not necessarily, realised in-situ (i.e., SOV), with peripheral narrow object focus (i.e., OSV) realised occasionally when triggered by ex-situ *wh*-questions. Finally, acoustically, it was shown that focus size and focus target display systematic correlates in  $f_0$  and intensity.

Furthermore, we have provided evidence against analyses that link focus type in Turkish (i.e., new-information focus in answers elicited by open *wh*-questions vs contrastive focus in the form of corrective statements and answers to closed *wh*-questions) to the preverbal syntactic variability observed. Contrary to the analyses by İşsever (2003) and Kılıçaslan (2004), suggesting peripheral focus (i.e., preverbal but not immediately preverbal focus) to be necessarily contrastive while immediately preverbal focus can be of either type, we did not observe any effect of focus type on word order. In other terms, we have shown that narrow new-information foci do not need to be realised as verb-adjacent in Turkish. As such, focus types are free within Göksel and Özsoy's (2000) focus field. In line with previous production studies, we could not determine systematic acoustic correlates of focus type in chapter 3. Exploratory analysis further indicated that sub-types of contrastive focus, comparing contrastive foci elicited by closed questions compared to the ones elicited in corrective exchange, may differ pro-

sodically, with no effect on word order. Based on these findings, we have argued that the realisation of narrow focus in Turkish is statistically correlated with, but not determined by, the alleged immediately preverbal focus position. Instead, we proposed that the syntactic variability of focus in Turkish be associated with canonicity and argument hierarchy, while focus is solely realised in prosody (see Özge & Bozşahin, 2010).

The production experiment presented in chapter 3 contributes experimental data to the debate surrounding (syntactic) focus and focus type realisation in Turkish. However, besides other remaining questions to be empirically investigated, we have pointed out that our findings in production cannot conclusively answer the questions of whether the immediately preverbal position in Turkish is inherently loaded with the IS notion of focus, or whether focus types are prosodically differentiable in Turkish. It is these questions we attempt to provide data on in the perception experiment presented in this chapter.

As mentioned in chapter 2, two understandings of focus position need to be differentiated: strict focus positions and IS-loaded positions or structures. Highlighted by Büring (2010; see section 2.2.4), none of the languages argued to have focus positions, such as Hausa, Hungarian, and Turkish, qualify as a strict position language, as these languages allow focus realisations out of the particular focus position. Instead, Büring argues that these languages may have “an information structurally ‘loaded’ construction” (2010, p. 198). An extensively cited example for such loaded positions/constructions can be found in Hungarian. É. Kiss (1998, 2010) famously associated the ex-situ focus position in Hungarian with exhaustive, identificational focus, requiring movement, while in-situ focus out of the focus position is of the new-information type (see sections 2.2.4 and 2.2.5).

In line with researchers like Özge and Bozşahin (2010) and Göksel and Özsoy (2000), we have shown that the supposed focus position in Turkish is not strictly associated with focus or focus type in our production data. Nevertheless, it could still be argued that the immediately preverbal (focus) position is a focally loaded position, with verb-adjacent elements associated with focus in general. Following the dual hypothesis of İşsever (2003), it might also be that focus out of this immediately preverbal position is associated with contrastive focus in the sense of a preference rather than a requirement. In this approach, canonical SOV structures would be preferable, but not obligatory, for object focus (i.e., SOFV), while non-canonical OSV structures would be preferable for subject focus (i.e., OSFV), corresponding statistically to the word order patterns observed in chapter 3. It could also be understood that peripheral foci are preferably, but not necessarily, associated with contrastive focus, regardless of focus target. These approaches

and predictions to the supposed focus position in Turkish are not directly testable in production experiments. They do, however, allow testing in the form of perception and processing studies, with two such investigations presented here and in chapter 5.

Following Uzun et al. (2021), who investigated the traditional understanding of the immediately preverbal focus position in Turkish in an eye-tracking study, the assumptions stated above are given as follows: If the immediately preverbal position in Turkish is focally loaded (i.e., the traditional point-of-view; e.g., see Erguvanlı, 1984; Erkü, 1983), processing cost (and reduced acceptability) is to be expected with structures in which focus is realised in other positions (i.e., SFOV and OFSV). If, however, focus can occur anywhere preverbally (i.e., the focus field assumption; see Göksel & Özsoy, 2000), there should be no (or minimal) disruption in processing and/or acceptability when immediately preverbal and peripheral focus-bearing structures are compared. Expanding on this approach, new-information focus at peripheral positions should be less acceptable or it should disrupt processing when compared to contrastive peripheral focus if the peripheral position is the preferred position for contrastive focus. While we will look at on-line processing under these predictions in a self-paced reading experiment in chapter 5, in the current experiment, we are specifically interested in timed *yes/no* acceptability judgements in listening to the previously collected focus-controlled answers (see chapter 3).

Besides the syntactic means of focus (type) realisation in Turkish, we have also investigated prosodic means in the production experiment presented in chapter 3. In line with the previous experiments by İvoşeviç and Bekâr (2015) and Gürer (2020), no systematic acoustic differences in *f0* and intensity between new-information focus and contrastive focus were observed, while spurious effects were present. Similarly, an exploratory analysis showed non-systematic spurious effects of contrastive sub-type in *f0* and intensity, raising the question of whether contrastive focus in Turkish elicited by corrective exchanges is differentiated by listeners from ‘contrastive’ focus elicited by closed *wh*-questions (see Krifka & Musan, 2012 for such a potential prediction). To provide data on these questions, we incorporate the factors of focus type and contrastive sub-type congruency to the presented timed acceptability judgment task. The underlying prediction of these congruency factors is that if an answer originally given to a question set for one side of the dichotomy (e.g., contrastive focus) is paired with a new context of the opposing side of the dichotomy (e.g., new-information focus) and vice-versa, acceptability rates and speeds should be reduced if the dichotomy (e.g., focus type) is realised and acoustically perceivable in Turkish. Still, if there is no

reduction in acceptability rates or speed, the dichotomy can be assumed not to be associated with a distinct and systematically perceivable acoustic pattern.

This chapter is structured as follows: Firstly, we will briefly revisit the divergent assumptions revolving around possible syntactic focus realisations in Turkish (section 4.1.1), followed by an overview of the few existing experimental studies on focus perception in Turkish (section 4.1.2). Next, the present experiment's aims are summarised in section 4.1.4, with the specific research questions posited. Transitioning to the timed acceptability judgment experiment, this study's design in participants, materials, procedure, and data analysis, is presented in section 4.2, with results provided in section 4.3. Lastly, our results are discussed in section 4.4, with conclusions and suggestions for further research provided in section 4.5.

#### 4.1.1 Syntactic means of focus realisation in Turkish summarised

In section 3.1.1, the divergent approaches to the role of syntactic means in Turkish focus realisation followed in the literature were presented (Erguvanlı, 1984; e.g., see Erkü, 1983; Göksel, 1998; Göksel & Özsoy, 2000; Hoffman, 1995; İşsever, 2003; Kılıçaslan, 2004; Kural, 1997; Özge & Bozşahin, 2010; Şener, 2010, 2019). Fundamentally, the literature and differences between investigations revolve around whether there is a focus position in Turkish, and if a focus position is assumed, how it relates to focus interpretational aspects such as focus type. Three major approaches are differentiated: *traditional assumption*, *dual assumption*, and the *focus field assumption*.

It is well known that Turkish exhibits an extensively variable word order driven by discourse-pragmatic factors, despite being an underlyingly SOV language (see Cevat, 1931; Erguvanlı, 1984; Erkü, 1983, among others), raising the question of the role of focus. The *traditional assumption* constitutes that the immediately preverbal position is the default focus position in Turkish, based on the functional positions postulated by Erguvanlı (1984). Illustrated in examples (61a,61b), this default focus realisation would render object focus in-situ in Turkish (61a), akin to English. In comparison, subject focus would implicate movement (61b), with all foci in Turkish carrying primary sentential stress (indicated in capitals).<sup>36</sup>

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<sup>36</sup> It is crucial to mention again that we only consider overtly case-marked simple transitive structures without any embedded sentences in this dissertation. Also, we will not elaborate on the prosodic means of focus realisation in this chapter, given that elaborations on the role of prosody in Turkish focus realisations are provided in chapter 3.



- (61) a. CANONICAL  $SO_FV$   
 Ahmet [GAZETE-Yİ]<sub>FOC</sub> oku-du.  
 Ahmet-NOM newspaper-ACC read-PAST-3SG
- b. NON-CANONICAL  $OS_FV$   
 Gazete-yi [AHMET]<sub>FOC</sub> oku-du.  
 newspaper-ACC Ahmet-NOM read-PAST-3SG
- c. CANONICAL  $S_FOV$   
 [AHMET]<sub>FOC</sub> gazete-yi oku-du.  
 Ahmet-NOM newspaper-ACC read-PAST-3SG
- d. NON-CANONICAL  $O_FSV$   
 [GAZETE-Yİ]<sub>FOC</sub> Ahmet oku-du.  
 newspaper-ACC Ahmet-NOM read-PAST-3SG
- e. NON-CANONICAL  $SVO_F$   
 # Ahmet oku-du [GAZETE-Yİ]<sub>FOC</sub>.  
 Ahmet-NOM read-PAST-3SG newspaper-ACC  
 ‘Ahmet read the newspaper.’

The possibility of peripheral focus in Turkish displayed in examples (61c) and (61d) has given rise to analyses against the traditional focus position point-of-view. In their landmark paper, Göksel and Özsoy (2000) propose the so-called *focus field assumption* in Turkish. The focus field encompasses all positions where focus and *wh*-phrases can occur in Turkish, spanning all preverbal positions and the verb itself, while sentential stress (i.e., main prominence), and thus focus and *wh*-phrases, is not available at postverbal positions, as shown in (61e).<sup>37</sup> Although we have argued against the analysis by Göksel and Özsoy that it is (non-)recoverability that drives the focus field in section 3.1.1, the focus field correctly captures the syntactic variability observed in chapter 3 and the literature. In the focus field assumption, there is no syntactic strategy or focus position involved in Turkish focus realisation. However, the question of what drives the syntactic variability of focus within the focus field illustrated in examples like (61a & 61b) and (61c & 61d) remains.

A possible answer to the driving force behind the focus field in Turkish is provided in İşsever’s (İşsever, 2003; also see Kılıçaslan, 2004) interface or *dual assumption* of focus realisation. Investigating focus interpretations within this variability, İşsever states that foci are the only necessary elements in Turkish,

<sup>37</sup> The same restriction on focus and *wh*-phrases to (pre)-verbal positions also persists in verb initial word orders not displayed in (15) (i.e., object or subject foci are not possible in VOS and VSO orders).

with all foci marked by primary sentential stress (i.e., focal accent). In Turkish, given information may be omitted (or fully reduced as described in chapter 2), rendering the sentence's focus the only compulsory element. A question *Çocuk neyi arıyor?* 'What is the child searching?' may thus be answered only by the focus *Frizbi'yi* 'The frisbee'. Distinguishing focus positions (i.e., immediately pre-verbal and peripheral foci), the dual assumption states that peripheral focus is necessarily of the contrastive type, while immediately verb-adjacent foci can be of the contrastive or new-information types (contra see Özge & Bozşahin, 2010). This pattern is presented in examples (52) and (53) reproduced below. Ultimately, İşsever (2003) argues that prosodic and syntactic means of focus realisation in Turkish are associated with focus interpretation in different ways: focal accent indicates focus status, separating it from topics and background elements, while focus position indicates the finer-grained aspect of focus type.

- (52) a. **Q:** *Ali ne-yi Ayşe'ye ver-di?*  
 Ali-NOM what-ACC Ayşe-DAT give-PAST-3SG  
*Kitab-ı mı kalem-i mi?*  
 book-ACC QP pen-ACC QP  
 'What did Ali give to Ayşe? The book or the pen?'
- A1:** *Ali [KİTAB-I]<sub>FOC</sub> Ayşe'ye ver-di.*  
 Ali-NOM book-ACC Ayşe-DAT give-PAST-3SG  
 'Ali gave the book to Ayşe.' CONTRASTIVE FOCUS
- A2:** *Ali<sub>1</sub> Ayşe'ye<sub>2</sub> [t<sub>1</sub> KİTAB-I t<sub>2</sub>]<sub>FOC</sub> ver-di.*  
 Ali-NOM Ayşe-DAT book-ACC give-PAST-3SG  
 'Ali gave the book to Ayşe.' CONTRASTIVE FOCUS
- b. **Q:** *Kim kitab-ı Ayşe'ye ver-di?*  
 who book-ACC Ayşe-DAT give-PAST-3SG  
*Ali mi Ahmet mi?*  
 Ali-NOM QP Ahmet-NOM QP  
 'Who did give the book to Ayşe? Ali or Ahmet?'
- A:** *[ALI]<sub>FOC</sub> kitab-ı Ayşe'ye ver-di.*  
 Ali-NOM book-ACC Ayşe-DAT give-PAST-3SG  
 'Ali gave the book to Ayşe.' CONTRASTIVE FOCUS

(Adapted from İşsever, 2003, pp. 1034–1036).

- (53) a. **Q:** *Fatma'yı kim arı-yor?*  
 Fatma-ACC who look.for-IMPF-3SG  
 'Who is looking for Fatma?'
- A1:** *Fatma'yı [ALİ]<sub>FOC</sub> arı-yor.*  
 Fatma-ACC Ali look.for-IMPF-3SG  
 'Ali is looking for Fatma.' NEW-INFORMATION FOCUS
- A2:** # *[ALİ]<sub>FOC</sub> Fatma'yı arı-yor.*  
 Ali Fatma-ACC look.for-IMPF-3SG  
 'Ali is looking for Fatma.' # NEW-INFORMATION FOCUS<sup>38</sup>

(Adapted from İşsever, 2003, pp. 1034).

To summarise this condensed overview of approaches to syntactic means in Turkish focus realisation, we differentiate three approaches:

The *traditional assumption* predicts that foci in Turkish are realised in the immediately preverbal position by default, with non-foci moving to the peripheral positions.

The *dual assumption* predicts that the prosodic focus realisation in Turkish through focal stress differentiates focus from other IS elements, while syntactic means partially disambiguate focus types, with peripheral focus reserved for contrastive focus.

The *focus field assumption* argues that there is no syntactic focus realisation in Turkish, with syntactic variability driven by discourse-pragmatic factors other than focus.

#### 4.1.2 Experimental studies on perception of focus in Turkish

While there have been comprehension studies on the role of the Turkish word order variability in able native speakers of Turkish and clinical populations, as well as its relation to givenness (e.g., see Aydın & Cedden, 2010; Kahraman & Hirose, 2018; Maviş et al., 2020; D. Özge et al., 2013), studies systematically investigating the effects of syntactically variable focus on comprehension and processing have been exceedingly scarce (e.g., see the conference paper by Kurt & Dinçtopal Deniz, 2020). Presented previously in section 3.1.2.1, İpek (2011) conducted a perception study comparing SOV broad focus structures to narrow peripheral subject, verb-adjacent object, and final verb focus constructions in SOV word orders.

<sup>38</sup> # marks infelicitous sentences in the given context.

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The results of this study showed that between these conditions, peripheral narrow subject focus was identified most correctly (75.63%), with final narrow verb focus also displaying relatively high identifiability (60%). Broad focus (45%) and immediately preverbal narrow object focus (56.25%), however, were often confused with the other conditions (see table 4.1).

TABLE 3.1: Confusion matrix of focus condition perception [%]. Correctly identified cases are marked by boldface. (repeated from page 56)

<u>heard as (x)</u> original (y)	Broad focus	SOV SUBJ <sub>F</sub>	SOV OBJ <sub>F</sub>	SOV VERB <sub>F</sub>
<b>Broad focus</b>	<b>45</b>	11.25	31.87	11.87
SOV SUBJ <sub>F</sub>	16.25	<b>75.63</b>	5	3.12
SOV OBJ <sub>F</sub>	21.87	18.75	<b>56.25</b>	3.12
SOV VERB <sub>F</sub>	26.87	5.63	7.5	<b>60</b>

(Adapted from İpek, 2011, p. 143).

İpek’s (2011) perception results are undoubtedly important regarding the prosodic predictions in connection to focus size and focus target presented in chapter 3. However, it remains unclear as to which focus types were involved in İpek’s trials, and no inference regarding the supposed immediately preverbal focus position can be drawn in general, given that all carrier sentences were provided in SOV word order. Considering the need for perception studies in connection to focus position and focus target, it is the work of Uzun and colleagues (2021) that stands out, and thus warrants presentation in greater detail below.

Comparing immediately preverbal and peripheral subject and object foci in reading, the eye-tracking study by Uzun et al. aimed to determine the sensitivity of Turkish readers to the supposed focus position. As mentioned previously, they argue that presuming the traditional assumption’s point-of-view of the immediately preverbal position as the default focus position in Turkish, reading disruptions should be detected when foci occur peripherally. If, however, foci are ‘freely’ distributed preverbally as suggested in the focus field assumption, weaker or no reading disruptions in foci at peripheral positions should arise.

Investigating these predictions, the 50 native speakers participating in the study of Uzun et al. read experimental question-answer pairs and provided posterior *yes/no* acceptability judgement by indicating “whether the answer stimulus was appropriate in reference to the question stimulus” (2021, pp. 16-17). Critically, the experimental question-answer pairs always consisted of four words (i.e., a sentence-initial locative adjunct, a subject, an object, and a sentence-final verb)

and varied in word order (i.e., canonical SOV vs non-canonical OSV), focus target (i.e., subject vs object focus) and focus position (i.e., immediately preverbal vs peripheral position). A set of experimental trials is exemplified in (62) and (63).<sup>39</sup>

(62) Immediately preverbal position

a. FOCUSED-SUBJECT CONDITION

**Q:** *Toplantı-da ressam-ı kim eleştir-di?*  
meeting-LOC artist-ACC who-NOM criticize-PAST-3SG

‘At the meeting, who criticised the artist?’

**A:** *Toplantı-da ressam-ı [yazar]<sub>FOC</sub> eleştir-di.*  
meeting-LOC artist-ACC writer-NOM criticize-PAST-3SG

‘At the meeting, the writer criticised the artist.’

b. FOCUSED-OBJECT CONDITION

**Q:** *Toplantı-da yazar kim-i eleştir-di?*  
meeting-LOC writer-NOM who-ACC criticize-PAST-3SG

‘At the meeting, who did the writer criticise?’

**A:** *Toplantı-da yazar [ressam-ı]<sub>FOC</sub> eleştir-di.*  
meeting-LOC writer-NOM artist-ACC criticize-PAST-3SG

‘At the meeting, the writer criticised the artist.’

(Adapted from Uzun et al., 2021, p. 13).

<sup>39</sup> The experiment by Uzun and colleagues (2021) also contained filler trials which either contained postverbal foci or the focused element in the answer did not occur at the position indicated by the *wh*-question, the latter type of ‘incongruent’ filler trials exemplified below:

*Kadın-ı sokak-ta kim öp-tü?*  
woman-ACC street-LOC who-NOM kiss-PAST-3SG

‘On the street, who kissed the woman?’

*[Adam]<sub>FOC</sub> kadın-ı sokak-ta öp-tü.*  
man-NOM woman-ACC street-LOC kiss-PAST-3SG

‘On the street, the man kissed the woman.’

While postverbal foci are not licensable (see Göksel & Özsoy, 2000) and are well-suited as fillers, the second kind of fillers presumes the parallelity of *wh*-questions and focus-bearing answers that was argued against in chapter 3. Although this aspect does not put their results or items into question, it is to be mentioned that such fillers must be considered possible and thus are not on the same level as postverbal filler trials.

(63) Peripheral position

a. FOCUSED-SUBJECT CONDITION

**Q:** *Toplantı-da kim ressam-ı eleştir-di?*  
meeting-LOC who-NOM artist-ACC criticize-PAST-3SG

‘At the meeting, who criticised the artist?’

**A:** *Toplantı-da [yazar]<sub>FOC</sub> ressam-ı eleştir-di.*  
meeting-LOC writer-NOM artist-ACC criticize-PAST-3SG

‘At the meeting, the writer criticised the artist.’

b. FOCUSED-OBJECT CONDITION

**Q:** *Toplantı-da kim-i yazar eleştir-di?*  
meeting-LOC who-ACC writer-NOM criticize-PAST-3SG

‘At the meeting, who did the writer criticise?’

**A:** *Toplantı-da [ressam-ı]<sub>FOC</sub> yazar eleştir-di.*  
meeting-LOC artist-ACC writer-NOM criticize-PAST-3SG

‘At the meeting, the writer criticised the artist.’

(Adapted from Uzun et al., 2021, p. 14).

In their analysis of end-of-trial *yes/no* acceptability judgments, which we will concentrate on in this chapter (their findings in reading times are provided in chapter 5), Uzun et al. (2021) found that Turkish readers judged narrow subject (99%; SD = 0.07) and object foci (96%; SD = 0.19) in immediately preverbal position as more acceptable compared to their narrow peripheral subject (93%; SD = 0.26) and object (85%; SD = 0.35) focus counterparts (SOFV & OSFV > SFOV & OFSV). Furthermore, acceptability rates indicated that readers preferred immediately preverbal foci over peripheral foci overall, with a preference for subject foci in immediately preverbal compared to peripheral positions (SF > OF; O[SF]V > S[OF]V; [SF]OV > [OF]SV). With focus target (what Uzun and colleagues incorrectly call focus type) and focus position significantly interacting in their statistical analysis, Uzun et al. collectively interpret their findings as evidence for the assumption that Turkish readers expect foci to occur in immediately preverbal position, a pattern the authors associate with a given-before-new processing strategy. Furthermore, they found that subject foci were more likely to be judged as acceptable compared to object foci. Ultimately, they conclude that Turkish readers are sensitive to focus, expecting it to occur in immediately preverbal position “rather than elsewhere in the preverbal area” (Uzun et al., 2021, p. 30).

Going back to the open questions regarding Turkish focus in comprehension and processing formulated at the beginning of this chapter, the findings of the

study by Uzun et al. lend evidence for the understanding of the immediately preverbal position as a focally loaded one in the sense that immediately preverbal focus is preferred over peripheral focus. Focus realised out of the immediately preverbal position in Turkish (i.e., left peripheral focus) is not strictly infelicitous, but immediately preverbal focus is more likely to be judged as felicitous. While further evidence for (or against) this finding is needed, Uzun et al. do not consider focus type in their design. Considering their items, the authors investigate new-information focus only, which may be due to their definition of focus (realisation) as “signal[ing] the newly asserted information by assigning contrastive information between current information and its alternatives” (Uzun et al., 2021, p. 3). Setting aside the problematic aspects of such definitions of focus discussed in chapter 2, it could be argued that their findings are supportive of the dual assumption, displaying a preference for immediately preverbal new-information focus rather than a preference for immediately preverbal focus overall. Thus, while Uzun and colleagues provide evidence against the ‘free’ focus field assumption in Turkish that assumes focus of either type to be freely variable (i.e., with no effect on felicity) within preverbal positions, ambiguity remains regarding the nature of the supposedly focus-loaded immediately preverbal position. Particularly, it remains to be investigated whether contrastive foci in Turkish do not display such a preference for the immediately preverbal position, as predicted by the dual hypothesis.

### 4.1.3 The present study

With the contribution by Uzun et al. (2021) being the only systematic study on the effects of focus target and the supposed traditional focus position on the acceptability of syntactically variable focus realisations in Turkish (their eye-tracking results are provided in chapter 5), the experiment presented in this chapter aims to provide further data to this scarcely studied scientific field by analysing *yes/no* acceptability judgment rates and speeds to recordings collected in the production experiment presented in chapter 3. In doing so, we attempted to disentangle the roles of focus, focus target, and focus type in Turkish word order regarding perception. At the same time, this study further covers the question of whether focus type and contrastive sub-type (i.e., contrastive focus triggered by closed questions vs contrastive triggered by corrective questions) can be distinguished prosodically, considering that effects in  $f_0$  and intensity, although spurious, were

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observed in chapter 3.<sup>40</sup> Specifically, we raise five research questions relating to focus position, focus target, focus type, focus type congruency, and contrastive sub-type congruency, respectively:

- (V) *Are recorded answers with narrow foci realised in immediately preverbal position judged as acceptable more often and faster overall than answers with peripheral narrow focus?*
- (VI) *Are recorded answers with object and/or subject focus realised in immediately preverbal position judged as acceptable more often and faster than answers with peripheral object and/or subject focus?*
- (VII) *Are recorded answers with contrastive focus realised in peripheral position judged as acceptable more often and faster than answers with contrastive focus at the immediately preverbal position?*
- (VIII) *Are recorded question-answer pairs matched for focus type judged as acceptable more often and faster than question-answer pairs mismatched for focus type?*
- (IX) *Are recorded question-answer pairs matched for contrastive sub-type focus judged as acceptable more often and faster than question-answer pairs mismatched for contrastive sub-type focus?*

In what follows, we describe and report on the timed *yes/no* acceptability judgment experiment conducted to provide data on these research questions.

## 4.2 Experimental Study

### 4.2.1 Participants

In total, 86 native speakers of Turkish participated in the presented online experiment. Sixteen participants out of an original participants' pool of 102 were excluded due to false-positive rates of over 50% in (incorrect) distractor trials (see section 4.3.1). We defined native Turkish speakers as people who grew up in a primarily Turkish-speaking family setting and attended primary (i.e., compulsory basic education of eight years) and, if applicable, secondary education (i.e.,

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<sup>40</sup> As will be further clarified in section 4.2.2, focus type congruency in research question (VIII) is limited to mismatched new-information and contrastive closed question contexts. With a potential difference between contrastive sub-types only emerging in an exploratory analysis, the experimental design presented in chapter 3 and thus obtained recordings did not allow full mismatch (i.e., exchange of new-information context with contrastive closed question and corrective contexts).



high school education of four years) solely in Turkey. Further participation criteria were that (i) participants had to be at least 18 years old, (ii) participants had no diagnosed neurological, language, hearing, or psychological disorders affecting language, (iii) participants had normal or corrected to normal vision, and (iv) participants had not previously participated in the production experiment presented in chapter 3 and conducted at the University of Potsdam, Germany and the MEF University in Istanbul, Turkey.

The group of this experiment's participants consisted of 53 women and 33 men, of which 41 participants were automatically assigned to list 1 and 45 participants were assigned to list 2, with the imbalance arising from aborted participation and participant exclusion. Participants' mean age at the time of participation, with obtained data limited to the year of birth, was 25.63 years (range 19-57; SD 7.99). Participants' highest levels of education, including the current level of education, are listed in table 4.1.

All participants provided an informed consent digitally before beginning the experiment and received the equivalent of 4€ in Turkish Lira as compensation in the form of electronic gift cards for Amazon Turkey. Ethical approval (CETO approval number 72950113) for this study was obtained from the Faculty of Arts' ethical research ethics committee of the University of Groningen, the Netherlands. Explicit approval for reusing recordings in linguistics research from respective participants was obtained at the beginning of the experiment presented in chapter 3 and the respective ethical approval.

TABLE 4.1: Highest levels of education obtained or currently attending by participants.

Highest level of education	Turkish terminology	Counts
No school-leaving qualification	Mezuniyetsiz	1
Middle school diploma	Ortaokul mezunu	0
High-school diploma	Lise mezunu	24
Bachelor's/undergraduate degree	Lisans mezunu (Bachelor)	46
Master's/graduate degree	Yüksek lisans mezunu (Master)	8
Doctorate	Doktora	7

#### 4.2.2 Experimental design & materials

The present study is a timed acceptability judgment task in the form of a *yes/no* task (Schütze & Sprouse, 2014). Materials consisted of five-second long contextual animations and auditory question-answer pairs. A female native speaker of Turkish recorded the *wh*-questions for this study's purpose, with the answers'

recordings taken from the study described in chapter 3. Selected across 23 speakers who gave their consent for reusing their recordings (each speaker had 3–17 recordings used; mean 10.44, SD 3), the first author of the present study selected answers to ensure appropriate prosodic structure and phonation, especially avoiding sentence-final creaky voice where possible. Furthermore, answers were chosen to represent the word orders produced by native speakers in chapter 3. As narrow focus-bearing answers were realised in SOV, as well as OSV word orders, answers were distributed across two lists with identical questions and animations. Each participant in the present study encountered only one list. Questions and answers were amplitude normalised using Audacity (version 2.4.2; Audacity Team, 2019). The animations were created using the online platform VYOND (<https://www.vyond.com>). A total of 135 unique animation-question combinations were paired with 187 unique answers in the two lists, constituting 15 practice and 120 experimental trials presented to each participant.<sup>41</sup>

The acceptability judgement task at the centre of the present study revolved around answers to *wh*-questions. In the same approach presented in chapter 3, it is assumed that the linguistic element of the answer corresponding to the *wh*-phrase of the question is in focus (i.e., question-answer congruence). We manipulated the answers' focused constituents through novel *wh*-questions and animations along three lines: identity, focus type congruence, and contrastive focus sub-type.

Firstly, 24 experimental trials formed distractors, where the 'identity' of the answer's focus phrase did not agree with the animation. In other words, the animation depicted another solution than the given answer (e.g., the animation depicts a child drinking the tea, while the answer to the question 'Who is drinking the tea?' participants hear is 'The granny is drinking the tea'). We have used the broadly focused answers of chapter 3 in combination with new questions and animations for these identity-manipulated distractor items. For this reason, all distractor answers were in canonical SOV order and could not be specified for the second manipulation of focus type congruence described below.

Secondly, 24 of the remaining correct-identity experimental trials were manipulated for focus type congruency. Here, answers were paired with contextual animations and *wh*-questions differing in targeted focus type from the ones that originally triggered them, while congruent trials are paired with their original questions. As an example, a focus type mismatched trial may be formed as follows: An answer triggered initially by a contrastive closed *wh*-question 'What

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<sup>41</sup> If a question from the experiment in chapter 3 only elicited answers in one word order, such as many narrow object focus in-situ SOV questions, both lists contained the same answer.

is the gardener cutting, the grass or the crop?', is paired with a new-information focus question 'What is the gardener cutting?' in the present experiment. New-information questions were substituted with contrastive closed *wh*-questions, while contrastive closed questions were substituted with respective new-information focus settings (see footnote 40). The animations are also adapted according to the new, mismatched questions, depicting either no overt alternatives for new-information focus or depicting two alternatives for contrastive focus, one being correct while the other is to be negated through contrast (see section 2.5).

Lastly, 24 contrastive focus trials of the remaining correct identity and focus type congruent question-answer pairs were manipulated for contrastive sub-type. Specifically, contrastive closed questions were substituted with corrective questions and vice-versa. As an example, such a trial mismatched for contrastive sub-type may be formed as follows: An answer triggered initially by a contrastive focus closed *wh*-question 'What is the gardener cutting, the grass or the crop?', is paired with a contrastive corrective question 'What is the gardener cutting, the tree or the crop?', where the targeted answer is "The gardener is cutting the grass". Similar to incongruent focus type trials, animations were also manipulated to reflect the new question.

Besides the (distractor) identity, focus type congruence, and contrastive sub-type congruence manipulations described above, trials were controlled for focus target (subject vs object focus), focus type (new-information vs contrastive focus), focus position (immediately preverbal vs peripheral focus), and question word order (canonical SOV vs non-canonical OSV). Answer word order (canonical SOV vs non-canonical OSV) followed the observed variability described in chapter 3 and could not be balanced. A breakdown table of this study's design in experimental trials is provided in table 4.2. Reflecting the factors of interest in the presented study, question and answer examples are provided in (64) to (66), together with frames representing the respective animations. A list of all experimental questions is provided in this chapter's appendix.

As described in chapter 3, the accompanying animations served to establish explicit referentiality of the question's constituents. By providing unique antecedents to the *wh*-questions' constituents in the animations, this allowed for the use of generic nouns in questions and answers, such as *the woman* or *the man*, eliminating the need for specific names or distinctive adjectives (e.g., *The man played the drums; The woman paid for the meat*). All animations and questions depicted transitive actions, with questions consisting of a *wh*-phrase, an imperfective verb zero-marked for the third person, and a definite direct object overtly marked for the accusative case or a definite zero-marked nominative subject. In comparison

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to the original questions used in chapter 3, the questions used in the here presented experiment were modified based on suggestions made by an informant. The biggest difference between the original questions and the questions used here is that the conjunction *veya* ‘or’ in contrastive closed and corrective questions was removed, as it was argued that its omission is more natural, although its use is not incorrect.

TABLE 4.2: Experimental trial conditions.

Identity	Congruency	Q-Order	F-Target	F-Type	A-Order		
96 Correct	48 Congruent	24 SOV	12 each	SUBJ	9 CONT	List 1	59 SOV
		24 OSV		OBJ	3 N-INF		37 OSV
	24 Focus type incongruent	12 SOV	6 each	SUBJ	3 CONT	List 2	64 SOV
		12 OSV		OBJ	3 N-INF		32 OSV
	24 CONT sub-type incongruent	12 SOV	6 each	SUBJ	6 CONT		
		12 OSV		OBJ	each		
24 Wrong	24 na.	12 SOV	6 each	SUBJ	4 CONT	Both lists	24 SOV
		12 OSV		OBJ	2 N-INF		
					2 N-INF		

**Note.** Focus, question and answer are abbreviated as F, Q and A; Focus types are abbreviated as CONT (contrastive) and N-INFO (new-information); Column F-Type indicates frequencies at the lowest level of F-Target; Column A-Order is representing overall answer word orders in both lists.

- (64) CORRECT IDENTITY, CONGRUENT, SOV QUESTION ORDER, CONTRASTIVE SUBJECT FOCUS TRIAL

*Kim et-i ödii-yor? Adam mı kadın mı?*  
 who meat-ACC.DEF pay.for-IMPF-3SG man-NOM QP woman-NOM QP

'Who is paying for the meat? The man or the woman?'

**Introductory part of animation:**



**Resolution part of animation:**



- (65) CORRECT IDENTITY, FOCUS TYPE INCONGRUENT, OSV QUESTION ORDER, NEW-INFORMATION OBJECT FOCUS TRIAL

*Ne-yi dede ser-iyor?*  
 what-ACC grandfather-NOM spread.out-IMPF-3SG

'What is the grandfather spreading out?'

**Introductory part of animation:**



**Resolution part of animation:**



(66) INCORRECT IDENTITY, SOV QUESTION ORDER, CORRECTIVE OBJECT FOCUS TRIAL

Adam ne-yi çal-ıyor? Keman-ı mı  
man-NOM what-ACC.DEF play-IMPF-3SG violin-ACC.DEF QP  
klarnet-i mi?  
clarinet-ACC.DEF QP

'What is the man playing? The violin or the clarinet?'

**Introductory part of animation:**



**Resolution part of animation:**



### 4.2.3 Procedure

The experiment was conducted online on the Gorilla platform (Anwyl-Irvine et al., 2020; <https://gorilla.sc/>), lasting 32.4 minutes on average (SD 12.1), not counting the consent form and brief demographic questionnaire conducted before the experiment. Participants were restricted to non-mobile devices (i.e., desktop or laptop computers). The 120 experimental trials were split into three blocks (i.e., 40 trials each), presented in fixed pseudorandomised order. Participants could take a break between each block lasting as long as they wanted (mean break of 3.0 min, SD 6.3; captured by the minute).

As mentioned previously, trials in the present experiment were timed *yes/no* acceptability judgment tasks. In each trial, participants were presented a five-second animation indicating the contextual setting and the answer, preceded by a fixation cross lasting for 250 ms. After a pause of 100 ms, a question mark at the centre of the screen indicated that the participants were now hearing the trial's prerecorded question. With a delay of 250 ms, this was followed by the prerecorded answer indicated by an exclamation mark at the screen's centre. Immediately after the answer finished playing, the judgment question (*Bu duruma ve soruya uygun bir cevap olabilir mi?* 'Could this be an appropriate answer to this situation and question?') was presented in writing on the screen. Participants were instructed to respond to this question by pressing one of two fixed keyboard

buttons (1 for yes, 2 for no), with the possible answers and keys also displayed at the lower-left (1 – *Evet* ‘yes’) and lower-right (2 – *Hayır* ‘no’) corners of the screen below the question. No time limit was imposed on this judgment question. However, participants were encouraged to answer as fast and accurately as possible.

#### 4.2.4 Data Analysis

To investigate possible effects of our factors of interest on acceptability rates and speeds, two statistical models were fitted: (i) a logistic linear mixed-effects regression model with judgments (1 = acceptable vs 0 = not acceptable) as dependent variables, and (ii) a Gaussian linear mixed-effects regression model with the dependent variable of reaction times (RTs) in trials judged as acceptable. These regression models were constructed using the *glmer* and *lmer* functions of the *lme4* package (version 1.1-26; Bates et al., 2015) in the R software environment (version 4.0.3; R Core Team, 2020).

Both models were constructed with the hypothesis testing fixed effects of *focus position* (research question V; immediately preverbal vs peripheral focus), *focus target*, and the interaction of *focus target: focus position* (research question VI; object vs subject focus), *focus type* and the interaction of *focus type: focus position* (research question VII; new-information vs contrastive focus), and *congruence* (research question VIII & IX; congruent vs focus type incongruent vs contrastive sub-type incongruent trials). In addition to the hypothesis effect structure presented above, model comparison was performed to obtain optimal model structures based on model fit using Analysis of Variance (ANOVA) without Maximum Likelihood refitting where necessary (i.e., when models differed only in random effects).

In both of our models, model criticism regarding problematic multicollinearity was performed using the *car* package’s *vif* function, with no problematic multicollinearity in either model (i.e., all generalised variance inflation factors < 3; version 3.0-10; Fox & Weisberg, 2019). The absence of autocorrelation of residuals for both models was confirmed with R’s *acf* function. Outlier inspection for the reaction time model was performed by excluding data points with model residuals  $\pm 2.5$  standard deviations (SDs) from the mean and refitting the model (see Baayen & Milin, 2010). Whether trimmed or untrimmed, model validation was performed in bootstrapping, using the *boot* function in R (Canty & Ripley, 2020; version 1.3.25; Davison & Hinkley, 1997). Multiple pairwise comparisons

for interactions were computed using the *emmeans* package's function of the same name (version 1.5.4; Lenth, 2021).

In addition to the hypothesis testing effects described above, exploratory fixed effects of experimental *list*, *order*, and *block* did not significantly ( $p < .05$ ) add to the logistic regression model on acceptability. Based on model comparison, the additional interaction of *focus target: focus type* was introduced into the model. To capture between-participant and between-answer variability, random intercepts of *participant* and *answer* were introduced, as both significantly improved model fit. While model residuals-based outlier exclusion indicated potential outlier influence, the untrimmed logistic model was successfully validated in bootstrapping (1000 simulations, confidence level = 0.95). Therefore, we report the output of the untrimmed logistic model in section 4.3.

Reaction times were modelled for correct identity trials (i.e., excluding distractors) judged as acceptable. Besides the model-based outlier exclusion as explained above, a priori reaction time cut-offs of  $\geq 100$  and  $\leq 10'000$ ms were applied, excluding 5.39% of the data. We argue that the relatively high number of a priori trimmed data points is a consequence of the unsupervised nature of online experiments, rendering them susceptible to extreme response patterns (i.e., extensively careful and delayed responses vs rushed responses). Due to positive skew in their distribution, (a priori trimmed) RTs were log-transformed.<sup>42</sup> The log(RT) model incorporated the hypothesis testing effects described earlier in this section, with model comparison showing no further interactions. Exploratory analysis revealed that the fixed effect of experimental *order* significantly improved the model, warranting its inclusion, while *list* and *block* did not improve model fit. Random intercepts of *participant* and *trial*, together with random slopes of *focus type by participant*, were introduced as they significantly improved model fit. In outlier inspection, the untrimmed and residual-based trimmed models showed no differences regarding significance levels of effects, with bootstrapping validating the observed effects. As the model-residuals based trimmed model improved the distribution of residuals, it is reported below.

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<sup>42</sup> Although recent research suggests the use of generalised linear mixed models with appropriate underlying distributions in place of transformations for reaction time data (Lo & Andrews, 2015), such attempts with inverse Gaussian and Gamma distributions led to fragile models and convergence issues in our case. As the present study is not concerned with specific RT effect sizes but rather investigates the presence or absence of differences between the factors of interest, we argue log transformations of RTs to be appropriate here.



## 4.3 Results

### 4.3.1 Acceptability judgments

Table 4.3 below describes response counts (acceptable vs not acceptable) for all trials, TRUE identity trials and FALSE identity distractor trials. Within the trials of interest to this study (i.e., TRUE identity trials), 10.27% of negative (i.e., non-acceptable) responses is to be explained within our statistical analysis. As described in section 4.2.1, we excluded 16 participants based on false-positive rates (i.e., incorrect identity trials judged as acceptable) above 50%. We assume that such a high rate indicates non-normal behaviour (e.g., distracted participation), especially given a mean false positive rate in our 86 eligible participants of 18.22%, and considering that we obtained data in an unsupervised manner through the conducted online experiment.

TABLE 4.3: Response counts of eligible participants (N = 86) by identity setting.

Identity	Trial types & responses	N	Percentage of acceptable responses
Total	all trials	10320	100%
	all TRUE identity trials	8256	80%
	all FALSE identity distractor trials	2064	20%
TRUE	acceptable (1)	7408	89.73%
	not acceptable (0; Type II error)	848	10.27%
FALSE	acceptable (1; Type I error)	376	18.22%
	not acceptable (0)	1688	81.78%

The output of our logistic mixed-effects regression model for acceptability judgements in TRUE identity trials is provided in table 4.4. Regarding our factors of interest, the only significant effects are **focus target** (narrow object vs narrow subject focus;  $p = .041$ ), with the probability of narrow subject focus being judged as acceptable significantly higher compared to narrow object focus, and the interaction of **focus target: focus type** ( $p = .029$ ). A non-significant trend was observed for acceptability in **contrastive focus sub-type congruency** ( $p = .054$ ), with incongruent trials having a lower probability of being judged as acceptable than congruent trials.

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TABLE 4.4: Output of the outlier untrimmed logistic mixed-effects model on 8256 TRUE identity trial acceptability judgment responses (1 = appropriate, 0 = inappropriate).

Random effects	Variance	SD
answer (intercept)	1.337	1.156
participant (intercept)	1.603	1.266

*Analysis conducted on 8256 trials, 164 answers, and 86 participants*

Fixed effects	Estimate	SE	Wald z	P-value
(intercept)	3.1673	0.39492	8.020	< .001 ***
focus-position.peripheral	-0.45803	0.50352	-0.910	.363
<b>focus-target.subject</b>	0.95032	0.46499	2.044	<b>.041 *</b>
focus-type.contrastive	0.20422	0.40170	0.508	.611
congruency.contrast-subtype-incongruent	-0.49339	0.25556	-1.931	.054
congruency.focus-type-incongruent	0.08496	0.26059	0.326	.744
focus-position.peripheral: focus-target.subject	-0.30808	0.43179	-0.713	.476
focus-position.peripheral: focus-type.contrastive	0.37216	0.49734	0.748	.454
<b>focus-target.subject: focus-type.contrastive</b>	-1.08503	0.49562	-2.189	<b>.029 *</b>

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); correlation matrices omitted; Significant fixed effects are marked in bold. Correlation matrices of random and fixed effects are not reported.

To inspect the significant interaction of *focus target: focus type*, the output of posthoc pairwise comparisons with Tukey contrasts are provided in table 4.5, with no contrast proving significant. We argue that the absence of significant contrasts in the focus target by focus type interaction is due to a lack of statistical power of the pairwise comparisons and the global effect of *focus target*. Pairwise comparisons using Fisher’s Least Significant Difference (LSD) appears to confirm this, with the contrast of *subject new-information focus/subject contrastive focus* proving the only significant one (odds ratio = 2.003;  $p = .041$ ) in this interaction. However, due to the lack of type I error correction in LSD, we will not regard this contrast as significant.

TABLE 4.5: Multiple comparisons of means using Tukey contrasts of the logistic response model's focus target: focus type interaction (z-tests).

Contrasts			Odds ratio	SE	z value	p-value
OBJ.N-INF	/	SUBJ.N-INF	0.451	0.196	-1.833	.257
OBJ.N-INF	/	OBJ.CONT	0.677	0.260	-1.015	< .740
OBJ.N-INF	/	SUBJ.CONT	0.903	0.338	-0.272	.993
SUBJ.N-INF	/	OBJ.CONT	1.501	0.536	1.136	< .667
SUBJ.N-INF	/	SUBJ.CONT	2.003	0.682	2.039	< .173
OBJ.CONT	/	SUBJ.CONT	1.335	0.329	1.172	.644

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); N-INF = new-information focus; CONT = contrastive focus; Significant fixed effects are marked in bold; Reported results are averaged over focus position and congruency.

### 4.3.2 Reaction times

Turning to reaction times in trials judged as acceptable, it should be mentioned again first that a priori cut-offs on the RTs of our 86 eligible participants were applied to remove very fast/preemptive (< 100 ms) and very long/distracted RTs (> 10,000 ms). These cut-off thresholds removed 5.39% of our available TRUE identity trials judged as acceptable (399 out of 7408 available observations were excluded), forming our data of interest in this analysis. Descriptive statistics of these remaining observations before log-transformation are provided in table 4.6.

The output of the outlier trimmed Gaussian linear mixed-effects model predicting log-transformed RTs is provided in table 4.7. The only significant effects observed are of **focus type** ( $p < .001$ ), with contrastive foci judged as acceptable significantly faster compared to new-information foci, and experimental **order** ( $p < .001$ ), indicating that later trials are judged as acceptable (minimally) faster than earlier trials. None of our other hypothesis testing effects proved to affect judgments as acceptable significantly.

Chapter 4. Timed acceptability judgments of focus in Turkish

TABLE 4.6: Descriptive RT [ms] statistics of all trials judged as appropriate (upper half) and TRUE identity trials judged as acceptable (lower half).

<b>Factor</b>	<b>N</b>	<b>Mean [ms]</b>	<b>SD [ms]</b>
<i>All items after cut-off</i>			
<i>none</i>	7359	819.93	918.47
<i>Identity</i>			
• TRUE	7009	797.33	885.8
• FALSE	350	1272.53	1346.77
<i>TRUE identity trials judged as acceptable post cut-off</i>			
<i>Congruency</i>			
• TRUE	3522	798.51	880.49
• Focus type incongruent	1803	846.27	911.13
• Contrastive sub-type incongr.	1684	742.47	866.54
<i>Focus target</i>			
• SUBJ	3484	808.32	922.37
• OBJ	3525	786.47	848.1
<i>Focus type</i>			
• New-information	1824	910.48	884.61
• Contrastive	5185	757.53	882.86
<i>Focus position</i>			
• Immediately preverbal	4417	787.12	857.42
• Peripheral	2592	814.74	932.1

TABLE 4.7: Output of the outlier trimmed linear mixed-effects log(RT) model on 6825 TRUE identity trials judged as appropriate (Response = 1).

Random effects		Variance	SD		
answer	(intercept)	0.01382	0.1175		
participant	(intercept)	0.1822	0.4268		
	focus.type.contrastive	0.01793	0.1339		
Residual		0.30396	0.5513		

*Analysis conducted on 6825 trials, 164 answers, and 86 participants*

Fixed effects	Estimate	SE	Df	T-value	P-value
(intercept)	6.5990	0.0617	173.9	106.933	< .001 ***
focus-position.peripheral	0.0206	0.0561	149.2	0.368	.714
focus-target.subject	-0.0014	0.0300	140.9	-0.046	.963
<b>focus-type.contrastive</b>	-0.2190	0.0389	154.8	-5.635	< .001 ***
congruency.contrastive-subtype-IC	-0.0174	0.0293	150.0	-0.592	.555
congruency.focus-type-IC	0.0154	0.0288	144.6	0.536	.593
<b>order</b>	-0.0021	0.0003	149.1	-6.398	< .001 ***
focus-position.peripheral:					
focus-target.subject	-0.0696	0.0490	152.4	-1.421	.157
focus-position.peripheral:					
focus-type.contrastive	-0.0055	0.0539	149.3	-0.102	.919

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); correlation matrices omitted; Significant fixed effects are marked in bold. Correlations of random and fixed effects are not reported. RTs were natural log transformed.

## 4.4 Discussion

We investigated timed *yes/no* acceptability judgements of adult native speakers on acoustically presented question-answer pairs in Turkish in the present study. Analysing acceptability rates and reaction times in ‘acceptable’ judgments, we aimed to investigate whether preferences emerge regarding focus position, focus target, focus type, as well as testing whether focus types and contrastive sub-types in Turkish are prosodically differentiable. Aiming to collect experimental data on the respective five research questions, participants were presented with potentially manipulated question-answer pairs. Their task was to judge whether the answers are appropriate given the context of the question and the preceding animation. Our results are summarised in table 4.8 below.

In our first *research question* (V), we asked whether narrow foci realised in immediately preverbal position, being the supposed focus position, are judged more often and/or faster than narrow foci realised peripherally. Contrary to Uzun and

colleagues' (2021) findings, who observed higher acceptability for focus at the immediately preverbal position, we did not observe such a preference, either in acceptability or reaction times. This is in line with our conclusion drawn in chapter 3 that the assumption of an immediately preverbal focus position in Turkish does not hold. Not only can focus be realised anywhere within Göksel and Özsoy's (2000) focus field, but no cost in acceptability rates and speed was observed when focus is realised peripherally.

TABLE 4.8: Summary of results for the fixed effects of interest regarding acceptability judgment and RT in items judged as acceptable.

Factor / DV	Acceptability judgements	RTs in acceptable items
Focus position (RQ V)	no effect	no effect
Focus target (RQ VI)	SUBJ > OBJ	no effect
Focus type (RQ VII)	no effect	contrastive < new-info.
Contrastive sub-type focus congruency (RQ VIII)	no effect	no effect
Focus type congruency (RQ IX)	no effect	no effect
Trial order (exploratory)	no effect	Later trials < earlier trials

**Note.** In acceptability judgments, X > indicates a higher probability of a positive (i.e., acceptable) judgement for X. In comparison, Y < indicates a lower probability of a positive judgment for Y. In RTs, X > indicates longer times for a positive judgement in X, while Y < indicates a shorter time for Y; RQ = research question.

As to why our findings are at odds with the observations made by Uzun et al., primarily methodological aspects are to be considered. In the study presented here, we have used prerecorded answers, while Uzun et al. applied textual materials that participants read silently while their reading pattern was eye-tracked, drawing from the Implicit Prosody Hypothesis (Fodor, 2002). Speculatively, it might be that implicit prosody treats immediately preverbal focus preferentially compared to peripheral focus, given that neutral intonation arises in such realisations (see chapter 3). To elaborate on this assumption, consider that implicit prosody imposes default prosody on the structure being read:

[Assuming implicit prosody] in silent reading, a default prosodic contour is projected onto the stimulus, and it may influence syntactic ambiguity resolution. Other things being equal, the parser favors the syntactic analysis associated with the most natural (default) prosodic contour for the construction. (Fodor, 2002, p. 113)

Notwithstanding the need for further research on Turkish focus perception and processing in reading compared to auditory processing and perception (see chapter 5), we have seen in our production experiment (chapter 3) that object foci are primarily, but not exclusively, realised in-situ (SOFV ≫ OFSV). We have argued that this is not because the immediately preverbal position is the focus

position of Turkish but rather because there is no reason for the in-situ object to move in order to receive main prominence, as nuclear stress falls on the immediately preverbal constituent by default. Importantly for the present acceptability judgment experiment, however, this pattern did not translate into a preference for immediately preverbal object focus over peripheral object focus. Crucially, this absence of a preference is in contrast to the findings by Uzun et al. (2021), who found that immediately preverbal foci in general (i.e., immediately preverbal object and subject foci) are more likely to be judged as acceptable when compared to their peripheral counterparts. We argue here that the assignment of a default prosodic contour in implicit prosody during reading, as is assumed in the eye-tracking study by Uzun et al., might have caused the emergence of a preference for immediately preverbal focus. In default prosody (i.e., without focal stress shift), nuclear stress is placed immediately preverbally in Turkish, coinciding with immediately preverbal (object) foci. As such, immediately preverbal in-situ object foci might be preferred in reading. The same reasoning might also apply to subject foci, which were observed to occur in immediately preverbal position, as well as in peripheral position in our production experiment, the latter receiving focal stress ( $S_{FOV} \approx OS_{FV}$ ). If subject foci are syntactically reordered, occurring in immediately preverbal position, they also coincide with nuclear stress, while peripheral subject foci require focal stress shift (see İşsever, 2006 for a detailed analysis of nuclear stress and focus assignment in Turkish). Thus, a preference for immediately preverbal subject foci over peripheral subject foci in canonical word order might emerge in reading as implicit prosody initially assigns default prosody. However, this speculative explanation requires focus assignment to be directly interpreted from (implicit) prosody. Although we have disregarded the debate surrounding the level of grammar IS is to be placed at for the purposes of this dissertation, the assumption of implicit prosody guiding focus assignment is at odds with experimental processing findings. Studies using event-related potentials have shown that implicit prosody is likely distinct from focus assignment, providing “support for the idea that information structure is not subsumed under structural representation, [instead being] its own independent level of representation” (Cowles, 2013, p. 303; also see Bornkessel et al., 2003; Cowles et al., 2007; Stolterfoht et al., 2007). As such, we cannot conclusively assume the difference in modality (i.e., comparing a reading experiment to a listening experiment) to underlie the differences observed between the here presented study and the study by Uzun et al. (2021). Further research is needed in this regard.

Another point of difference between studies possibly contributing to the divergent findings regarding focus position relates to the used question-answer

pairs. Notably, Uzun et al. used reversible transitive verbs only to rule out thematic role assignment effects (2021, p. 15). Although their subject NPs were zero-marked for the nominative case and object NPs were overtly marked for the accusative case as was also done in the presented study, all arguments were semantically reversible (i.e., human). In the current study, reversibility was not controlled for. In Turkish, thematic role assignment involves the morphosyntactic cues of word order, (overt) case marking, and determiners (in the order of importance) in reversible structures, while semantics as a cue is potentially involved in other cases (Batmanian & Stromswold, 2020). By removing semantic cues for thematic role assignment, participants in the study by Uzun et al. (2021) are left with word order and case marking only, while participants in the present study may or may not have used such cues depending on the respective trial. This confounding aspect should be considered in future alternations of our experiment.

In our second *research question (VI)*, we asked whether focus target interacts with focus positioning, in that narrow subject or object foci at immediately preverbal and/or peripheral position are judged as more acceptable and/or faster compared to opposed narrow focus targets. We have observed in our data that narrow subject focus is judged as more acceptable when compared to narrow object focus, with no effect on judgment speed and regardless of focus type or focus position. This is directly in line with Uzun et al.'s (2021) findings, who observed the same preference in acceptability judgments. Crucially, subject foci are considered to be (structurally) more marked within focal argument hierarchy, possibly facilitating their identification and therefore potentially leading to increased acceptability in judgments (see Skopeteas & Fanselow, 2010; chapter 2). In chapter 3, we have seen, for example, that peripheral subject focus is associated with the lack of the phrase-final rise in the focused element, while such a rise is present with peripheral narrow object focus. To investigate this pattern further, on-line measures are needed to inspect focused and non-focused subjects and objects, with such an experiment presented in chapter 5.

Questioning whether focus type in Turkish displays preferential patterns at different positions, *research question (VII)* asked whether contrastive focus at either position is judged acceptable more often and/or faster when compared to new-information focus. While we did not observe any effect of focus type on acceptability rates, it was observed that contrastive focus is judged as acceptable faster than new-information focus. Crucially, this effect is independent of focus position. As such, the quicker judgment in contrastive focus is not representative of an underlying association with the peripheral position as suggested by İşsever



(2003) and Kılıçaslan (2004), providing additional evidence for abandoning a focus position in Turkish.

Considering the focus type effect on judgment speed, it may be argued that it is the overtly presented and restricted alternative set in contrastive foci that accelerates the evaluation of the answer. In comparison, new-information focus trials require alternative set generation for evaluation. However, experimental evidence using (potential) alternatives as primes indicates that listeners generate alternative sets in contrastive foci, while new-information focus appears not to do so (also see Gotzner, 2017, 2019; Gotzner & Spalek, 2019; Washburn, 2012). However, we were also interested in potential differences between contrastive sub-types, triggering contrastive foci through corrective questions as well as through closed *wh*-questions. As such, focus type in the present study is confounded regarding givenness. Particularly, new-information foci are always non-given, while contrastive foci can be given if elicited by closed questions but are non-given when elicited by corrective questions. Extensive research regarding the givenness of information (i.e., non-presupposed new vs given information) showed that non-given information is comprehended and processed slower than given information, at least in first processing attempts (Bock & Mazzella, 1983; Camblin et al., 2007; Chen et al., 2012; Clifton & Frazier, 2004; Irwin et al., 1982; Kaiser & Trueswell, 2004; Sauermann et al., 2013; e.g., see Zimmer & Engelkamp, 1981). Thus, it appears more plausible that it is givenness in (some) contrastive foci rather than alternative set generation that accelerates judgement rather than focus type itself.

An important question investigated primarily in production studies is whether focus type is acoustically differentiable in Turkish. In line with the previous studies by İvoşeviç and Bekâr (2015) and Gürer (2020), no systematic and reliable acoustic effects of focus types were found in the production experiment in chapter 3, while it remained to be investigated whether focus types are indeed not prosodically perceivable. To provide new data to this question, we manipulated focus type congruency in *research question (VIII)*. Having illustrated that focus type realisation in Turkish is not associated with syntactic strategies or word order positions in particular, in chapter 3 and *research question (VII)* here, we drew from the prediction that if focus type in Turkish is prosodically encoded, mismatched question-answer pairs (i.e., answers originally given to new-information *wh*-question paired with contrastive questions and vice-versa) should display a reduction in acceptability and/or an increase in judgment speed. The presented timed acceptability judgement task did not reveal any effect of focus type mismatch, providing evidence to findings that argue against prosodic focus type

realisation in Turkish, at least in the simple transitive sentences investigated. One crucial caveat to be made here is that only contrastive closed question contexts were substituted with new-information contexts in focus type incongruent trials due to limitations in the data (i.e., recordings) collected in chapter 3. Therefore, it cannot be concluded whether the more traditional sub-type of contrastive focus triggered in corrective exchanges can be substituted with new-information focus, necessitating further research.

Similar to focus type congruency, we investigated contrastive sub-types in Turkish in *research question (IX)*. Briefly recapitulated, there is some disagreement surrounding the question of whether closed *wh*-questions trigger contrastive focus or are instead best defined based on alternative set size (see Samek-Lodovici, 2018). In an exploratory analysis conducted in chapter 3, we observed non-systematic acoustic effects between contrastive foci elicited by corrective and closed questions, raising the issue of whether these sub-types of contrastive focus are differentiated in perception. In the presented study, we predicted that reductions in acceptability ratings and/or speed should be observed in contrastive sub-type incongruent question-answer pairs (i.e., answers originally given to closed *wh*-question paired with new corrective questions and vice-versa) if these sub-types of contrastive focus are differentiated in Turkish. However, no such effects in acceptability judgments or speed were observed.

We did see a non-significant trend where contrastive sub-type incongruent trials were less likely to be judged as acceptable compared to congruent ones. A possible explanation for this trend could be found in anonymous feedback provided by a participant:

Although technically correct, I marked all answers where both options of the question were wrong as unacceptable, as they did not contain an expression of the form *İkisini de değil, X'i ...-yor* 'Neither of both, X is ...'. For example, when the child chooses the apple, the question is *Çocuk neyi doğruyor? Armutu mu, portakalı mı?* 'What is the child cutting? The pear or the orange?'. I consider the answer *Elmayı doğruyor* '(He) is cutting the apple' as wrong. Even though it is technically true, I considered this a wrong answer because it does not say *ikisini de değil* 'neither of both', *ne armudu, ne portakalı doğruyor, çocuk elmayı doğruyor* 'neither the pear nor the orange, the child is cutting the apple', or *ikisini de doğramıyor* 'he/she is cutting neither'. (translated anonymous comment)

It appears that the restriction of answers to three words in the production experiment in chapter 3 prevented us from detecting that at least some native speakers in Turkish prefer an overt negation of overtly presented incorrect alternatives in corrective focus realisation. Non-acceptability in such cases may have perturbed acceptability judgments in contrastive sub-type incongruent trials leading

to the substantial trend reported here. Future studies should acknowledge potential preferences for overt negation in corrective exchanges (e.g., in instructions), mainly if experiments are conducted unsupervised.

## 4.5 Conclusion and suggestions for further research

The present study collected timed *yes/no* acceptability judgements to auditorily presented question-answer pairs in Turkish to investigate the roles of focus position, focus target, and focus type in perception, as well as testing whether focus types and contrastive sub-types are prosodically perceivable in Turkish. The following conclusions were made regarding the respective research questions:

- a. In line with the observations made in production (chapter 3), our findings showed no preference for immediately preverbal focus in acceptability rates or speed, regardless of focus type, providing further evidence against syntactic focus realisation and the assumption of a (focally loaded) focus position in Turkish.
- b. A global effect of focus target on acceptability judgments was observed, where narrow subject focus-bearing answers are judged as acceptable more often than answers bearing narrow object focus. Not displaying any interaction with focus type or position, it was argued that this asymmetry stems from the observational tendency of subject focus being more marked than non-subject focus, facilitating comprehension.
- c. While the dimension of focus type did not interact with the position of focus, we observed that contrastive focus answers triggered by closed *wh*-questions were judged as acceptable significantly faster than new-information answers. We have suggested that the judgement speed reduction in new-information focus is best explained in terms of givenness, with the non-givenness in new-information focus slowing down processing compared to given contrastive focus triggered by closed *wh*-questions.
- d. Question/animation-answer pairs mismatched for focus type showed no effect on acceptability or judgement speed, indicating that new-information focus and contrastive focus elicited by closed *wh*-questions are not prosodically differentiated in perception.

- e. The question/animation-answer pairs mismatched for contrastive sub-type displayed no effect on acceptability or judgement speed, providing evidence that contrastive focus elicited by closed *wh*-questions and contrastive focus elicited by corrective questions are not prosodically differentiated in perception.

In the very sparse literature on focus in comprehension and processing in Turkish, the experiment presented in this chapter is the first one systematically differentiating syntactically variable focus types. Nevertheless, there is a clear need for experimental investigations to the debated and fragmented field of focus in Turkish. Besides the need for further evidence, especially considering that our results diverge from what Uzun and colleagues (2021) found regarding focus position, multiple aspects remain to be explored. Firstly, we have collected timed *yes/no* acceptability judgements only. Scalar acceptability judgements may provide a finer-grained picture of focus processing in Turkish than presented here. Preferentially, on-line measures should be employed, as potential disruptions may not be apparent in posterior judgements. Secondly, we could not investigate whether the mismatch between new-information focus and contrastive focus triggered in corrective exchanges is perceivable due to limited available recordings. Future work should attempt to investigate this open issue. Similarly, future work should also aim to provide further data on whether mismatch between broad and SOV narrow object focus affects acceptability or disrupts processing. Lastly, we have seen that thematic role assignment and givenness potentially confound studies on the comprehension and perception of focus, focus position, and focus target in Turkish, with future work urged to consider these aspects.

## Chapter 5

# On-line processing of focus and contrast in Turkish: A self-paced reading study

### 5.1 Introduction

Having elicited syntactically variable focus-bearing structures controlled for focus size, focus target, focus type, and question configuration in chapter 3, and investigating acceptability rates and speeds of these recorded structures in chapter 4, we will now turn to the effects of focus on on-line sentence processing in Turkish as measured by self-paced reading. As we have repeatedly illustrated, sentence comprehension is more elaborate than the mere decomposition of the words. The same set of words may be expressed in various ways regarding aspects like word order, prosody, or morphological structure, amongst others. One critical source of this variability in linguistic form is captured in the linguistic concept of *information structure* (IS) and its fundamental notions presented in greater detail in chapter 2. As stated by Arnold et al., “linguistic form varies as a function of informational considerations” (2013, p. 403). Following the influential work by Chafe (1976) and others, speakers adapt their utterances to guide and satisfy the informational needs of communicative partners and thus to achieve successful communication, using IS to bridge “the form of language and the mental states of interlocutors” (Cowles, 2013, p. 187). This, in turn, requires the person attempting to comprehend language shaped for IS to adequately process these cues in linguistic form.

To illustrate once more, consider the broadly focused, out of the blue sentence ‘*John bought the NEWSPAPER*’. Comprehension of this sentence is straightforward for able, proficient speakers of English. However, if this sentence is intentionally realised with pitch accent on the grammatical subject as in ‘*JOHN bought the newspaper*’, successful comprehension also involves understanding that the speaker intends the listener(s) explicitly to know that it was *John* who bought the news-

paper, while it could have been *Mary, Frank, Juliette*, or someone else, with the speaker assuming that the listener is explicitly or implicitly raising the question ‘*Who bought the newspaper?*’. Thus, what the speaker achieves through pitch accent regarding IS is the realisation of *focus* on the subject. Repeated here, Krifka and Musan (2012, p. 7) define focus in (4) based on Rooth’s Alternative Semantics (AS) framework (1985, 1992, 1996, 2016) as inducing alternatives to the focus-bearing structure in its focus semantic value (see chapter 2).

(4) **Definition of focus:**

Focus indicates the presence of alternatives that are relevant for the interpretation of linguistic expressions.

(Adapted from Krifka & Musan, 2012, p. 7).

Given the need to perceive focus as illustrated in the examples above, the question of the specific role focused information plays in sentence processing—and specifically in sentence comprehension—arises. As will be illustrated more extensively in section 5.1.1, a substantial body of research conducted on this question found that focus on an element increases the attention paid to it. Crucially, however, results of these studies diverge regarding the question of whether this increased attention accelerates or inhibits the processing of focused elements in on-line measures such as reading times. Benatar and Clifton (2014) propose these contradictory findings to be caused by unclear notions or theories of focus in studies on focus in on-line sentence processing, leading to various and possibly confounded ways focus is manipulated. For example, studies may fail to consider the IS notion of contrast with the dichotomy of new-information focus and contrastive focus often not explicitly made in psycholinguistic studies (Cowles, 2013; see section 2.2 for a more elaborate overview of inappropriate understandings of focus based on newness, importance, and/or highlighting). In the study presented in this chapter, we argue that an essential recent contribution by Uzun et al. (2021) on the intriguing issue of focus (and focus position) in Turkish sentence comprehension (partially) suffers from the same complications, particularly investigating non-given, new-information focus only. We present an alternative experimental approach to rectify some issues by distinguishing non-given new-information focus in answers to open questions from given contrastive focus triggered by closed questions.

This chapter is structured as follows: Firstly, an overview of studies on focus in sentence processing is provided in section 5.1.1, followed by a presentation of on-line findings by Uzun and colleagues (2021) in section 5.1.2, being the only systematic experimental study on focus perception in Turkish. Next, the pre-

sent experiment's aims are summarised in section 5.1.3, with specific research questions raised therein. Transitioning to the self-paced reading experiment, this study's design concerning participants, materials, procedure, and data analysis is presented in section 5.2, with results provided in section 5.3. Lastly, our results are discussed in section 5.4, with conclusions and suggestions for further research provided in section 5.5.

### 5.1.1 Focus in sentence comprehension

Numerous studies have shown that focus directs attention, with “a word or phrase in focus increas[ing] the attention paid to it” (Benatar & Clifton, 2014, p. 2; see the overview of Cowles, 2013). This heightened attention to focus is probably displayed most overtly in semantic illusions such as the *Moses illusion*, where many people will answer the question ‘*How many animals of each kind did Moses take on the Ark?*’ by responding ‘*Two*’, as well as by verifying statements like ‘*Moses took two animals of each kind on the Ark*’ although they know that it was Noah and not Moses that built and sailed the Ark (see Bredart & Modolo, 1988; Cowles, 2013). If, however, the incorrect information (i.e., *Moses*) is narrowly focused and thus receives increased attention, the erroneous information is detected more often. This pattern was observed in a study with native speakers of French by Bredart and Modolo (1988), where non-narrowly focused (i.e., broadly focused) statements like ‘*Moses took two animals of each kind on the Ark*’ were less likely to be marked as incorrect compared to statements structurally marked for focus through *it*-clefts like ‘*It was Moses who took two animals of each kind on the Ark*’.<sup>43</sup> Conversely, Bredart and Modolo found that if focus, as realised through *it*-clefts, is put on something else than the incorrect name (e.g., ‘*It was two animals of each kind that Moses took on the Ark*’), more illusions emerge compared to when the incorrect name is in focus, as attention is drawn to something other than the illusion. In a similar vein, Cutler and Fodor (1979) found that the presence of a target phoneme was detected faster when it is contained in a word marked for (new-information) focus through a preceding open *wh*-question. Beyond these classical cases, further evidence for “the advantages of focus on language comprehension” (Chen et al., 2014, p. 29) comes from studies that have shown that focal attention (i) affects memory by increasing the amount of time the referent of focus is sustained in memory (e.g., Birch & Garnsey, 1995; Birch et al., 2000),

<sup>43</sup> While early studies regarded *it*-clefts in English as a mere syntactic mean of focus realisation (e.g., see S. Birch & Rayner, 1997), such structures are understood today to be associated with contrastive focus in languages like English (see chapter 2). By investigating focus through *it*-clefts only, what is being done is a reduction of focus to contrastive focus.

(ii) guides the processing of syntactically ambiguous sentences (e.g., Bader, 1998; Schafer et al., 2000), and (iii) interacts with the resolution of anaphora and coreference, where subsequent reference to focus is linked to pronouns (see Cowles, 2013; e.g., Cowles et al., 2007).

While the literature outlined above indicates particular attention directed towards focused elements with consequent effects on sentence processing, the question of how focal attention relates to specific measures of on-line processing (e.g., fixation times) is more complex. Notably, “it is far from clear whether this extra attention speeds or slows comprehension of the focused material” (Benatar & Clifton, 2014, p. 2). This unclarity becomes evident if we consider a collection of landmark studies. For example, the eye-tracking study on the role of focus in sentence processing during reading by Birch and Rayner (1997) found that focus status slowed down later processing (i.e., higher regression probabilities and second-pass reading times for focused elements compared to their non-focused counterparts) with no systematic effect of focus in earlier measures of first-fixation time and gaze duration. In a later study, however, Birch and Rayner (2010) report syntactically more prominent positions (i.e., focused information, see Benatar & Clifton, 2014) to accelerate (early) processing in first-fixation time and gaze duration, as well as decreasing total reading time and total number of fixations.

Further studies on the role of focus in sentence processing manifest these discrepancies. Lowder and Gordon (2015), for example, report generally increased reading times for focused targets, while Morris and Folk (1998) found no effect of focus in early reading times (i.e., gaze duration) but observed lower total reading times and fewer regressions associated with focused critical elements compared to their non-focused counterparts. Lastly, Ward and Sturt (2007) did not observe any effect of focus on eye-tracking measures in their change-detection task, while focus made changes more reliably detectable.<sup>44</sup>

In light of the discrepancies described above, recent investigations into the role of focus in sentence processing have identified specific issues with the outlined studies and beyond, suggesting that they may underlie the divergent results. Benatar and Clifton (2014), in particular, argue that the inconsistent findings regarding on-line measures of focus and its effects on sentence processing

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<sup>44</sup> Briefly summarized, participants in the experiment by Ward and Sturt were presented passages consisting of three sentences. Each participant encountered the passages twice, where the focused or non-focused target word (i.e., first dimension of manipulation is focus status) changed to an alternative one in half of the passages (i.e., second dimension of target change). Beyond eye-tracking during reading of the passages, the participants were instructed to detect whether any word change occurred between the two presentations of passages.



are potentially due to the different ways studies realised focus (e.g., through answers to open *wh*-questions as well as *it*-clefts), complications they propose to be caused by a lack of a clear theoretical framework of focus (also see Chen et al., 2012, 2014 for similar proposals regarding focus and givenness). In particular, these studies did not consider that these means of focus realisation are possibly confounded by additional focus dimensions, such as the contrastive understanding in English *it*-clefts, for example.

To alleviate these issues, Benatar and Clifton (2014) report multiple eye-tracking experiments, strictly drawing on Schwarzschild's (1999) givenness framework. Briefly and informally characterised, Schwarzschild considers givenness (in terms of entailment) to be the central IS notion, somewhat demoting focus as a notion. Information and thus word or phrases may be given or non-given, where non-given information must be focused. Focus is realised sparingly, only to indicate that information is non-given. However, given information may or may not be focused, depending on pragmatic/semantic needs. In other terms, information "not in focus must be given" (Krifka & Musan, 2012, p. 25). As such, this approach clashes with the IS framework presented in chapter 2 and the rest of this dissertation, where focus and givenness are distinct but potentially interacting basic notions.<sup>45</sup>

Drawing strictly on the Schwarzschild (1999) framework, Benatar and Clifton (2014) investigated potential processing differences between (non-focused) given and focused non-given elements, as well as potential differences between non-given new-information focused and contrastive focus in corrective exchanges.<sup>46</sup> Examples (67) and (68) from Benatar and Clifton's second and third experiments (target terms underlined) illustrate the kinds of exchanges employed. The participants were presented the background, questions (Speaker A), and critical answers (Speaker B) simultaneously on the screen above each other.

(67) a. INFERENTIALLY GIVEN (NON-FOCUSED) TRIAL

**Q:** *Tell me, when did Caitlin leave to go to the cardiologist?*

**A:** *I believe she left to go to the doctor just a little while before 11 this morning.*

<sup>45</sup> Also consider that a cohesive definition of focus, such as the one postulated by Krifka and Musan (2012) and reported in chapter 2, is not associated with non-givenness. Contrast(iveness) à la Neeleman and Vermeulen (2013) is also associated with rejection of at least one focus alternative and not givenness.

<sup>46</sup> Not further reported here, another aspect investigated by Benatar and Clifton (2014) is related to the givenness definition by Schwarzschild (1999) on the basis of entailment. Furthermore, Benatar and Clifton "do not enter [the] debate" surrounding the question of what characterises contrastive focus (2014, p. 12).

b. NON-GIVEN FOCUSED TRIAL

**Q:** *Tell me, when did Caitlin leave to go somewhere?*

**A:** *I believe she left to go to the doctor just a little while before 11 this morning.*

(Adapted from Benatar & Clifton, 2014, pp. 9–10).

(68) a. NON-GIVEN NEW-INFORMATION FOCUS

**Background:** *John and Mary are working today.*

**Q:** *Did you tell someone to go home early?*

**A:** *I told John, but I don't know if it was a good idea.*

b. CONTRASTIVE FOCUS

**Background:** *John and Mary are working today.*

**Q:** *Did you tell Mary to go home early?*

**A:** *I told John, but I don't know if it was a good idea.*

(Adapted from Benatar & Clifton, 2014, p. 12).

Benatar and Clifton (2014) report that non-given focused information is associated with longer reading times compared to given (non-focused) information, independent of whether the givenness in the latter is explicit (i.e., the word is repeated) or entailed (given < non-given). Similarly, and essential to the present study, they found that contrastive focus displayed longer reading times than non-given new-information focus (new-information focus < contrastive focus). However, this effect of contrastiveness was only present on the target word (i.e., no effects were present on the preceding word or the spillover region). Furthermore, an effect of contrastiveness was only present for first fixation duration, gaze duration, and go-past time (i.e., the cumulative reading time on a word before it is left for the word to the right). The measures of total reading time (marginal) and regression probability did not display an effect of contrastiveness, while the latter measure was high for both conditions. Although the notion of givenness is considered as distinct from focus in this dissertation (see Krifka & Musan, 2012; chapter 2), the findings by Benatar and Clifton (2014) form specific predictions: Non-given new-information focus in answers to open wh-questions should exhibit (a) longer reading times compared to non-focused given elements, and (b) shorter reading times compared to contrastive focus in corrective exchanges.

### 5.1.2 Focus in Turkish sentence comprehension

As mentioned in chapter 4, experimental research on the role of focus in comprehension and sentence processing in Turkish is scarce (e.g., see the conference contributions of Kurt & Dinçtopal Deniz, 2020, 2021), with the recent study by Uzun et al. (2021) being the first study of this kind to systematically investigate syntactically variable Turkish focus in processing. While their study was presented in more detail in section 4.1.2, Uzun and colleagues' experimental investigation is briefly outlined here, elaborating on their results regarding on-line reading measures.

In their eye-tracking study, Uzun and colleagues had two main goals: (i) investigating whether the focus position within the focus field (i.e., peripheral focus vs immediately preverbal focus) affects acceptability and/or reading times, and (ii) determine whether syntactic function (i.e., the grammatical relation of the read word as either subject or object) influences (focus) processing.<sup>47</sup> They predicted that if the traditional view of the immediately preverbal focus position as default was to hold, reading disruptions with peripheral focus were to be expected. On the other hand, if no such effect was observed, but an effect of syntactic function is present, they suggest that "processing cost may be affiliated with syntactic sources" (Uzun et al., 2021, p. 12), while a co-occurrence of both effects would indicate simultaneous effects on processing.

Contrary to the approach to IS and focus taken in the present study and dissertation, Uzun et al. (2021, p. 3; highlighting added) define focus as "signal[ing] the *newly* asserted information by assigning *contrastive* information between current information and its *alternatives*", restricting focus to non-given new-information focus and confounding the understanding of focus alternatives with one of contrast. Given this 'restricted' understanding of focus, Uzun et al. use open question-answer pairs only to elicit focal readings. Consider example (62) repeated here.

(62) Immediately preverbal position

a. FOCUSED-SUBJECT CONDITION

Q: *Toplantı-da ressam-ı kim eleştir-di?*

meeting-LOC artist-ACC who-NOM criticize-PAST-3SG

'At the meeting, who criticised the artist?'

<sup>47</sup> The latter aim of Uzun et al.'s (2021) study was not mentioned in this way in chapter 4 as syntactic function primarily relates to on-line reading times. In chapter 4, we concentrated on acceptability judgments, thus differentiating focus targets (i.e., the position of the focused element).

**A:** *Toplantı-da ressam-ı [yazar]<sub>FOC</sub> eleştir-di.*  
meeting-LOC artist-ACC writer-NOM criticize-PAST-3SG  
'At the meeting, the writer criticised the artist.'

b. FOCUSED-OBJECT CONDITION

**Q:** *Toplantı-da yazar kim-i eleştir-di?*  
meeting-LOC writer-NOM who-ACC criticize-PAST-3SG  
'At the meeting, who did the writer criticise?'

**A:** *Toplantı-da yazar [ressam-ı]<sub>FOC</sub> eleştir-di.*  
meeting-LOC writer-NOM artist-ACC criticize-PAST-3SG  
'At the meeting, the writer criticised the artist.'

(Adapted from Uzun et al., 2021, p. 13).

Summarising the results of Uzun et al. (2021) with regards to *acceptability judgments*, participants displayed a higher probability of accepting answers with immediately preverbal focus over peripheral focus [immediately preverbal focus > peripheral focus], as well as favouring subject focus over object focus, with an interaction between these effects [subject focus > object focus] (compare to our acceptability judgments in chapter 3, where a similar effect of focus target was observed in acceptability while no effect was present regarding focus position). Regarding reading times, Uzun and colleagues ran separate models for each of the two areas of interest (i.e., the peripheral, post-adjunct and immediately preverbal word), as their global model showed a three-way interaction between focus position, syntactic function, and region of interest (i.e., peripheral vs immediately preverbal word). These region-specific models are reported below.

At the *peripheral word*, early (i.e., first fixation and first-pass duration) and late measures (i.e., number of regressions, second-pass duration, and dwell-time duration) of processing in reading were increased for focused elements compared to non-focused ones [focused > non-focused]. Focused subjects caused longer processing in first-fixation duration, second-pass duration, dwell-time (i.e., the total amount of time the reader fixates on an area of interest), and a higher number of regressions compared to non-focused SOV subject NPs [focused subject > non-focused subject]. A similar pattern emerged for focused object NPs compared to non-focused ones (in addition to a significant effect on first-pass duration) [focused object > non-focused object]. Sentence-initial ex-situ object NPs (i.e., OSV) caused longer reading times than sentence-initial in-situ subject NPs (i.e., SOV), both when focused and non-focused (both in first-pass duration, second-pass duration, and number of regressions).

In contrast, *immediately preverbal* non-focused subject NPs caused significantly longer reading times when compared to focused subjects in early and late processing measures (i.e., first-fixations, second-pass durations, and dwell-time) [non-focused subject > focused subject]. This pattern is present for object NPs only in second-pass durations. Immediately preverbal object NPs were read longer than subject NPs in second-pass durations and total dwell-time when both were focused, but only in first-fixation durations when both were non-focused, indicating different time courses of focus and focus target processing between focus positions.

In conclusion, Uzun et al. (2021) infer from their results that Turkish readers expect focus to occur at the immediately preverbal position regardless of focus target, presumed to represent the cross-linguistic given-new hierarchy in word order (contra see chapter 4). They further argue that focus increases processing demand (i.e., fixation times) at the peripheral position. Crucially, however, immediately preverbal subjects displayed an inverse pattern, where non-focused subjects lead to reading disruptions compared to focused subjects, while this pattern was only present for immediately preverbal object NPs in second-pass durations. Thus, Uzun et al. ultimately suggest that if a subject is moved to the immediately preverbal position, it is expected to be focused. Regarding focus target, “subject-focus is default, especially when subjects move to the immediate pre-verbal area to receive focus” (Uzun et al., 2021, p. 30).

### 5.1.3 The present study

As the first study of its kind, the formative processing study by Uzun and colleagues has provided evidence in acceptability judgments and reading times for the supposed immediately preverbal focus position, particularly for narrow subject focus. These findings are at odds with our timed acceptability judgments in listening (chapter 4), where we have provided experimental data against the traditional assumption of a focus position in Turkish. Furthermore, we observed a global preference for narrow subject focus over narrow object focus in reaction times, independent of focus position. Discussing possible reasons for these divergent findings, we have speculated that they may stem from thematic role assignment. Uzun et al. (2021) used reversible transitive sentences only, eliminating any semantic cues and leaving readers with word order and case marking for thematic role assignment while question-answer pairs in chapter 4 were not controlled for reversibility. Word order, however, is also at the core of their investigation regarding focus position and may interact with preferences for cer-

tain constructions. Besides this highly speculative possible reason for the observed divergences, we also argued that they might surface due to the different investigated modalities (i.e., reading and implicit prosody vs listening with overt prosody). If this assumption is confirmed, we should observe preferences for the immediately preverbal position akin to what was described by Uzun and colleagues if we investigate reading. Therefore, one aim of the study presented here is to provide further on-line processing data on the roles of focus position and syntactic function in reading.

As a novel contribution to the field, the timed acceptability judgment task presented in chapter 4 investigated syntactically variable focus (sub-)types in Turkish comprehension. With no interaction of focus type and focus position observed in chapter 4, we concluded that focus positioning is not associated with focus type in Turkish, contrary to what is assumed by authors like İşsever (2003) and Kılıçaslan (2004). Furthermore, the absence of effects related to focus type congruency and contrastive sub-type congruency indicated that these dichotomies are not differentiated by Turkish listeners given the absence of systematic acoustic correlates in our production experiment (chapter 3). Instead, we saw that contrastive foci were judged as acceptable significantly faster than new-information foci. It was argued that this effect might represent a givenness confound rather than an effect of focus type itself. Considering that Benatar and Clifton (2014) found new-information focused elements to be read faster than contrastive focused elements, while given information is read faster than non-given (focused) information, the effect of focus type on judgment speed would indeed agree with the givenness effect in reading speed rather than the focus type effect. To provide further evidence to this understanding, the second aim of the present study is to investigate on-line measures in reading when non-given new-information focus is compared with (given) contrastive focus triggered by closed *wh*-questions.

Given the two aims outlined above, we present a self-paced reading experiment conducted over the internet to gather on-line processing data. Furthermore, to validate our results in chapter 4, posterior *yes/no* acceptability judgments were also obtained. Specifically, we posit three research questions:

- (X) *Do reading times and/or acceptability rates of foci at the immediately preverbal position differ significantly from foci at the peripheral position?*
- (XI) *Do reading times and/or acceptability rates of syntactic subjects differ significantly from syntactic objects at the immediately preverbal and/or peripheral position?*

- (XI) Do reading times and/or acceptability rates of new-information foci differ significantly from given contrastive foci elicited by closed *wh*-questions at the immediately preverbal and/or peripheral position?

## 5.2 Experimental Study

### 5.2.1 Participants

Data of a total of 85 eligible native speakers of Turkish were included in the analysis of the present self-paced reading experiment after participant exclusion. The participants' pool consisted of 42 women and 43 men with a mean age, obtained in years of birth, of 33.29 years (SD 8.72). In addition, further demographic information was collected regarding participants' highest level of education, including currently attended education, represented in table 5.1.

TABLE 5.1: Highest levels of education obtained or currently attending by participants.

Highest level of education	Turkish terminology	Counts
No school-leaving qualification	Mezuniyetsiz	0
Middle school diploma	Ortaokul mezunu	2
High-school diploma	Lise mezunu	4
Bachelor's/undergraduate degree	Lisans mezunu (Bachelor)	41
Master's/graduate degree	Yüksek lisans mezunu (Master)	26
Doctorate	Doktora	12

Before the start of the experiment, participants were screened by confirming that they (i) were native speakers of Turkish, (ii) were 18 years or older, (iii) had not been diagnosed with any neurological, language, hearing, or psychological disorders, (iv) had normal or corrected to normal vision, and (v) had not previously participated in either the *Focus in Turkish* experiment described in chapter 3 and conducted at the University of Potsdam, Germany and the MEF University in Istanbul, Turkey or the *Context and Answer in Turkish* experiment presented in chapter 4 conducted online. We specifically defined native speakers as people who grew up in a primarily Turkish-speaking setting, which attended primary (i.e., compulsory basic education of eight years) and, if applicable, secondary education (i.e., high school education of four years) solely in Turkey.

All participants provided informed consent digitally before the experiment and received the equivalent of 4€ as compensation. Ethical approval for this study

was obtained from the faculty of arts' research ethics committee of the University of Groningen, the Netherlands (CETO approval number 72950113).

### 5.2.2 Experimental design & materials

The present study was a centred, non-masked self-paced reading task with a *yes/no* acceptability judgment at the end of each trial. Materials consisted of five-second-long contextual animations, followed by written *wh*-questions and answers, with the written stimuli presented in succession. The animations were designed using the VYOND (<https://www.vyond.com>) online platform. A total of 132 unique animation-question-answer sets were split into 12 practice trials (i.e., one trial per condition) and 120 experimental trials.

Following the methodology applied in chapters 3 and 4, the accompanying animations, together with the respective open and closed *wh*-questions, specified individual contexts for each trial. The animations specifically established unique antecedents for overt subjects and objects of the questions through distinct characters without the need for specific names or distinctive adjectives (e.g., the woman<sub>1</sub> is driving the train, the woman<sub>2</sub> is watering the plant, the woman<sub>3</sub> is paying for the meat). Animations, *wh*-questions and answers depicted transitive actions through imperfective verbs zero-marked for the third person. Grammatical subjects were zero-marked for the nominative case, whereas grammatical (direct) objects were overtly marked for the (definite) accusative case.

*Wh*-questions and answers created for the purpose of the present study were controlled regarding four independent factors: **identity** (correct vs incorrect distractor trials), **focus target** (subject vs object focus target), **focus type** (non-given new-information vs given contrastive focus), and **word order** (canonical SOV vs non-canonical OSV word order), where questions and answers in the dialogues were matched for word order (in-situ SOV *wh*-question and canonical SOV answer vs scrambled OSV *wh*-question and non-canonical OSV answer). The distribution of these four factors of interest over the 120 experimental trials is represented in table 5.2.

As our trials consist of unique (animation-)question-answer sets with different lexical items, we counterbalanced trials across conditions for the objective variables of character length (i.e., the number of characters in the word) and lexeme frequency in regions of interest (i.e., peripheral and immediately preverbal subjects and objects), as well as incorporating these measures in our statistical analysis, as explained in section 5.2.4.2 (see Jegerski, 2013). To this end, nouns for subjects and objects, as well as verbs—the latter were not counterbalanced—were



TABLE 5.2: Experimental trial conditions.

Total	Word order	Focus target	Focus type	Identity
120 experimental trials	SOV (N = 60)	subject (N = 30)	new-information (N = 15)	correct (N = 10) distractor (N = 5)
			contrastive (N = 15)	correct (N = 10) distractor (N = 5)
		object (N = 30)	new-information (N = 15)	correct (N = 10) distractor (N = 5)
			contrastive (N = 15)	correct (N = 10) distractor (N = 5)
	OSV (N = 60)	subject (N = 30)	new-information (N = 15)	correct (N = 10) distractor (N = 5)
			contrastive (N = 15)	correct (N = 10) distractor (N = 5)
		object (N = 30)	new-information (N = 15)	correct (N = 10) distractor (N = 5)
			contrastive (N = 15)	correct (N = 10) distractor (N = 5)

taken from the normation datasets of Göz (2003), Bayram et al. (2017), Göz et al. (2017), and Selvi Balo et al. (2020). Character length was counterbalanced across trials, within a deviation of  $\pm$  one character caused by vowel harmony (i.e., the imperfective morpheme  $-(I)yor$  adds a harmonic vowel ( $I$ ) if the verb stem ends in a consonant:  *vur-mak* ‘to hit’  $\rightarrow$   *vur-uyor* ‘she/he/it is hitting’).

Syntactic object and subject frequencies, as measured in words per million (wpm) of the lexeme, were categorised in three groups and counterbalanced along these groups: wpm  $<$  20 were low-frequency words, wpm 20-99 were medium frequency words, and wpm  $\geq$  100 were high-frequency words. Upon comments by S. Arslan, question-answer pairs were constructed in such a way that subject and object foci were always triggered by the same Turkish *wh*-phrase respectively (personal communication, February 2, 2021). Subject focus trials always targeted human alternatives for the answer with the respective *wh*-phrase *kim* ‘who’ rather than non-human alternatives expressed by the *wh*-phrase *ne* ‘what’. Object focus trials always targeted non-human alternatives for the answer with the *wh*-phrase *ne-yi* ‘what-ACC’ instead of human alternatives through

the *wh*-phrase *kim-i* ‘what-ACC; whom’. All trials (i.e., question-answer pairs) were checked for logical probability by the author and a second native speaker of Turkish.

To avoid onset effects on our regions of interest, particularly the sentence-initial, peripheral region (i.e., peripheral grammatical subjects and objects), *wh*-questions and answers were preceded by an adjunct marked for the locative case. A selection of experimental trials demonstrating our factors of interest are provided below in examples (X) through (Y), with frames representing the respective contextual animations. A complete listing of all question-answer pairs is provided in this chapter’s appendix.

(69) CORRECT IDENTITY, SOV NEW-INFORMATION NARROW  
SUBJECT FOCUS TRIAL

**Q:** *Mutfak-ta kim yumurta-yı çırp-ıyor?*  
kitchen-LOC who-NOM egg-ACC whisk-IMPF-3SG

‘In the kitchen, who is whisking the egg?’

**A:** *Mutfak-ta kız yumurta-yı çırp-ıyor.*  
kitchen-LOC girl-NOM egg-ACC whisk-IMPF-3SG

‘In the kitchen, the girl is whisking the egg.’

**Introductory part of animation:**



**Resolution part of animation:**



(70) CORRECT IDENTITY, OSV CONTRASTIVE NARROW  
OBJECT FOCUS TRIAL

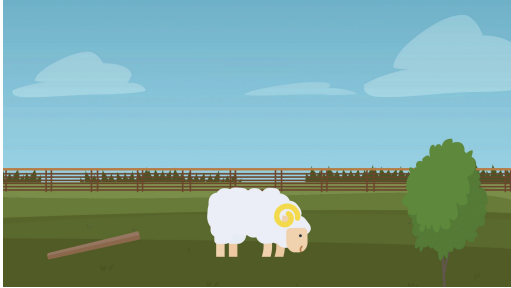
**Q:** *Tarla-da ne-yi koyun kır-ıyor,*  
field-LOC what-ACC sheep-NOM break-IMPF-3SG  
*çubuğ-u mu ağac-ı mı?*  
stick-ACC QP tree-ACC QP

'On the field, what is the sheep breaking, the stick or the tree?'

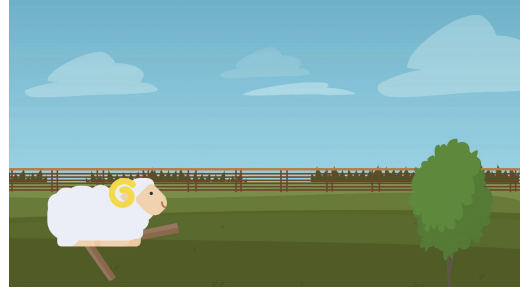
**A:** *Tarla-da çubuğ-u koyun kır-ıyor.*  
field-LOC stick-ACC sheep-NOM break-IMPF-3SG

'On the field, the sheep is breaking the stick.'

**Introductory part of animation:**



**Resolution part of animation:**



(71) INCORRECT IDENTITY (DISTRACTOR), SOV  
NEW-INFORMATION NARROW OBJECT FOCUS TRIAL

**Q:** *Okul-da çocuk ne-yi yalıyor?*  
school-LOC child-NOM what-ACC lick-IMPF-3SG

'At school, what is the child licking?'

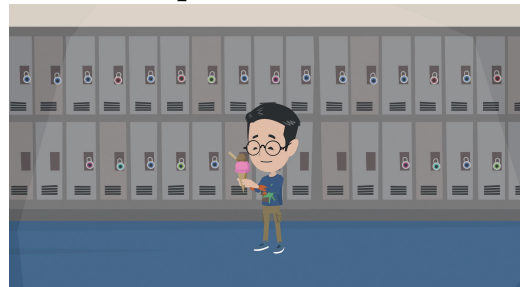
**A:** *Okul-da çocuk lolipop-u yalıyor.*  
school-LOC child-NOM lollipop-ACC lick-IMPF-3SG

'At school, the child is licking the lollipop.'

**Introductory part of animation:**



**Resolution part of animation:**



### 5.2.3 Procedure

The experiment was conducted on the Gorilla.sc platform (Anwyl-Irvine et al., 2020; <https://gorilla.sc/>), with recruitment performed through social media, the Amazon Mechanical Turk platform (<https://www.mturk.com/>), and the Prolific platform (<https://www.prolific.co/>), with an identical pre-screening as described in the previous section. As described in section 5.2.1, the experiment consisted of 12 practice trials and 120 experimental trials, the latter split into four 30-trial blocks. Between each block, participants could take a break with a non-predetermined duration. All trials were presented in a fixed, pseudorandomised order. Each session lasted approximately 40 minutes, and participants could use non-mobile (i.e., desktop and laptop computers) as well as mobile devices (i.e., tablet computers and smartphones). Of our 85 analysed participants, 15 used mobile devices, and 70 used non-mobile computers as identified by Gorilla.sc, with device type integrated into our statistical analysis as described in section 5.2.4.2.

Each trial consisted of four main segments: the five-second-long animation preceded by a fixation cross lasting for 500 ms, self-paced reading of the question, self-paced reading of the answer, and the end-of-trial *yes/no* acceptability judgment. The self-paced reading of the question was carried out in a centred and isolated fashion (i.e., each word was separately displayed in the middle of the screen), with participants advancing to the next word by clicking anywhere on the screen for non-mobile devices or pressing anywhere on the screen for mobile devices. The question-initial locative adjunct was always preceded by a question mark displayed in the middle of the screen, transitioning to the question after the participant clicked/pressed (*? – Mutfakta – kim – yumurtayı – çırpıyor?* ‘In the kitchen, who is whisking the egg?’). Similarly, self-paced reading of the answer was done in a centred and isolated fashion, with answers preceded by an exclamation mark (*! – Mutfakta – kız – yumurtayı – çırpıyor.* ‘In the kitchen, the girl is whisking the egg.’). Finally, the *yes/no* acceptability judgement task (see Schütze & Sprouse, 2014) was presented to participants at the end of each trial. Specifically, participants had to answer the following question in a binary fashion (i.e., yes or no): *Bu duruma ve soruya uygun bir cevap mı?* ‘Is this an answer appropriate to the question and situation?’ To answer this question, participants had to click/press on one of two buttons on the screen, labelled *Evet* ‘yes’, always displayed on the left below the question, and *Hayır* ‘no’, always displayed on the right below the question.

## 5.2.4 Data Analysis

### Data pre-processing

As we conducted our experiment online in a non-supervised fashion due to in-person testing restrictions, the data collected was screened and pre-processed in multiple steps. Of the original 100 individuals that participated in our experiment, two were excluded a priori. For one participant, a device switch from non-mobile to mobile mid-experiment was detected, while the other participant was presented numerous trials twice, possibly due to server-side or connection problems. Three trials were removed from all remaining participants due to coding errors. Specifically, we removed one distractor trial and two experimental trials (i.e., one incorrect distractor new-information subject focus target trial with OSV word order, one correct corrective subject focus target trial with SOV word order, and one new-information object focus target trial with OSV word order).

Of the remaining 98 participants and 117 trials, we excluded individuals that scored at or below 70% accuracy in distractor trials (i.e., participants had to display > 70% *no* judgments for distractor trials) and at or below 25% acceptability for experimental trials (i.e., participants had to display > 25% *yes* judgements for experimental trials). This screening was performed to investigate whether participants were attentive and/or displayed a response bias towards *yes*, which would lead to 100% in experimental trials and 0% in distractors, or *no* responses, which would lead to 0% in experimental trials and 100% in distractors. This approach excluded a further 13 participants who did not meet these criteria, leaving us with the 85 participants described in section 5.2.2.

In a further pre-processing step, 15 observations were excluded due to technical problems, consisting of nine trials with video encoding errors and six server-side video loading errors. Of these 15 individual observations, eight were experimental observations (seven were distractor trials). Lastly, we applied a priori cut-offs for reading/reaction times in answers judged as acceptable, excluding durations below 100 ms and above 2000 ms. These cut-offs removed 0.60% of the remaining data. Following Baayen and Milin (2010), further outlier exclusion was performed based on the statistical models described in the next section.

### Analysis

Expanding on the analyses by Uzun et al. (2021), we investigated the hypothesis testing effects of *focus position* (immediately preverbal vs peripheral focus), *syntactic function* (subject vs object), *focus target* (narrow subject focus vs narrow

object focus), *region of interest* (immediately preverbal vs peripheral position), and *focus type* (new-information vs contrastive focus elicited by closed questions) on acceptability judgements and reading times in two sets of (generalised) linear mixed-effects models: an acceptability judgement model (model 1) and four self-paced reading models (models 2-5). These models, elaborated on in detail below, were fitted using the *lmer* and *glmer* functions of the *lme4* package (version 1.1-26; Bates et al., 2015) in the R software environment (version 4.0.3; R Core Team, 2020). Optimal model structures were determined using Analysis of Variance (ANOVA) without Maximum Likelihood refitting where necessary (i.e., when models differed only in random effects). Binary hypothesis testing predictors (i.e., focus position, syntactic function, focus target, region of interest, and focus type) were sum-to-zero coded (i.e., +0.5 or -0.5) to avoid biases due to data imbalance. To facilitate model fitting, the control predictors of word length in characters and word frequency in words per million were rescaled to the standardising binary variables of -0.5 and +0.5 using the *rescale* function of the *arm* package (version 1.11-2; Gelman & Su, 2020).

Model criticism was performed in three different ways: (i) using the *car* package's *vif* function (version 3.0.10; Fox & Weisberg, 2019), we checked for problematic multicollinearity (i.e., all variance inflation factors in our models are  $< 2$ ), (ii) autocorrelation was inspected using the base *acf* function, and (iii) outlier inspection was performed by refitting models with trimmed data, where data points with model residuals 2.5 standard deviations (SDs) from the mean were removed (see Baayen & Milin, 2010). Model validation was performed through bootstrapping using the *boot* function in the R package of the same name (version 1.3.25; Canty & Ripley, 2020; Davison & Hinkley, 1997). Multiple pairwise comparisons were run for interactions using the *emmeans* package's *emmeans* function (version 1.5.4; Lenth, 2021). Below, the individual models are described in closer detail.

**Model 1:** Modelling *yes/no* acceptability judgments in correct experimental trials (i.e., excluding distractor trials), the hypothesis testing fixed effects of *focus position*, *focus target* and *focus type* were introduced. Model comparisons revealed no interaction between these fixed effects. Exploratory analysis showed no effect (i.e., model improvement) of the fixed effects of participants' *sex*, *age*, or *device type* (i.e., desktop/laptop computers vs mobile devices). Random intercepts of *participant* and *trial/item* were introduced and significantly improved the model ( $p < .05$ ), while no random slope displayed improvements. Outlier exclusion predominantly removed negative responses (i.e., non-acceptable), possibly due to class imbalance. Given that bootstrapping validated outlier untrimmed outputs (1000 simulations, confidence level = 0.95), the untrimmed model is reported.

**Model 2:** To investigate reading times, we first constructed a full model predicting reading times of syntactic subjects and objects at peripheral and immediately preverbal regions in correct experimental answers judged as acceptable. Reading times were log-transformed after cut-off application to fulfil the assumption of normally distributed residuals in linear mixed-effects models. The full reading time model included the hypothesis testing fixed effects of *focus position*, *syntactic function*, *region of interest*, and *focus type*, as well as the three-way interaction of *focus position*\**syntactic function*\**region* that significantly improved the model. As mentioned above, rescaled fixed effects of *word length* in characters and word (i.e., lexeme) *frequency* in words per million were introduced to control for these objective measures. Participants' *sex*, *age*, or *device type* as exploratory fixed effects did not contribute to the model. Random intercepts of *participant* and *trial/item* significantly improved to model. In addition, the most complex random slope structure leading to a parsimonious model included random slopes of *focus position by participant* and *region of interest by participant*. Residual-based outlier inspection revealed possible outlier effects on model outcomes (focus position reaches significance in the trimmed model:  $\beta = 0.03114$ ,  $\varepsilon = 0.01351$ ,  $df = 70.38$ ,  $T = 2.305$ ,  $p = .024$ ). However, bootstrapping (1000 simulations, confidence level = 0.95) validated the outlier untrimmed model, which is thus reported in the following results section.

**Model 3:** As region of interest contributed globally and in interaction with focus position to model 2, we specified two separate models for each region, akin to the analysis of Uzun et al. (2021). The model for the IMMEDIATELY PREVERBAL REGION OF INTEREST (i.e., any word preceding the verb) described here, bears the fixed effects of *focus position*, *syntactic function*, *focus type*, *word length*, and *word frequency*, as well as the interaction of *focus position:syntactic function*. *Participant* and *trial/item* are introduced as random intercepts, with random slopes of *focus position by participant* significantly improving model fit. No exploratory effect, including *device type*, contributed to the model. Model criticism in the form of residual-based outlier inspection indicated effects on the interaction of *focus position:syntactic function*, which reaches significance in the trimmed model (focus position:syntactic function:  $\beta = 0.071912$ ,  $\varepsilon = 0.035894$ ,  $df = 69.04$ ,  $T = 2.003$ ,  $p = .049$ ). However, bootstrapping (1000 simulations, confidence level = 0.95) validated the outlier untrimmed model (i.e., *focus position:syntactic function* is not significant), which is reported below.

**Model 4:** The model predicting reading times of PERIPHERAL SUBJECTS AND OBJECTS contains the hypothesis testing fixed effects of *focus position*, *syntactic function*, *focus type*, *word length*, and *word frequency*. Although it did not signifi-

cantly improve model 4, the interaction of *focus position:syntactic function* was included to disentangle the same interaction observed in models 2 and 3. Besides random intercepts of *participant* and *trial/item*, no random slopes or any exploratory fixed effects improved the model. Hereafter, the trimmed model 4 is reported as residual-based outlier inspection improved residual distribution. Outlier inspection further indicated possible effects on the fixed effect of word frequency, which does not reach significance in the untrimmed model ( $\beta = 0.003158$ ,  $\varepsilon = 0.015451$ ,  $df = 72.21$ ,  $T = -1.963$ ,  $p = .053$ ). Bootstrapping (1000 simulations, confidence level = 0.95) validated the outlier trimmed model.

**Model 5:** Lastly, we investigate the SENTENCE-FINAL VERB POSITION (i.e., spillover region) as an exploratory region of interest. With only verbs occurring in this region, the fixed effects introduced in this model are *focus position*, *focus target*, *focus type*, *word length*, and *word frequency*. The interaction of *focus position:focus type* further contributed to the model. With random intercepts of *participant* and *trial/item*, random slopes for *focus type* in the former are introduced based on model comparison. Neither participant's *age*, *sex*, nor *device type* significantly improved the model. Although model criticism did not reveal outlier influence on model outcomes regarding significance levels, we report the trimmed model due to improved residual distribution. Bootstrapping (1000 simulations, confidence level = 0.95) validated the outlier trimmed model's output.

## 5.3 Results

### 5.3.1 Acceptability judgments

Investigating participants' end-of-trial acceptability judgments, table 5.3 displays responses (acceptable vs unacceptable) by trial type in correct experimental and incorrect distractor trials. Correct experimental trials are further tabulated by *focus position* (immediately preverbal vs peripheral focus trials), *focus target* (object vs subject focus trials), and *focus type* (new-information vs contrastive focus trials). While correct experimental trials show high overall acceptability (90.61%, SD 7.42%), the remaining 9.39% of experimental trials judged not to be acceptable are central to this study. In light of our research questions, we specifically investigate whether the factors of *focus position*, *focus target*, and *focus type* affect acceptability judgments in correct experimental trials. To this end, we constructed a logistic mixed-effects linear regression model (model 1), described in closer detail in section 5.2.4.



TABLE 5.3: Response counts of eligible participants (N = 85) by trial types.

Trial types	Participants' responses				SD
	Acceptable		Not acceptable		
	N	%	N	%	
correct experimental trials (N = 6622)	6000	90.61%	622	9.39%	7.42
incorrect distractor trials (N = 3308)	395	11.94%	2913	88.06%	7.17
correct IPV focus trials (N = 3397)	3064	90.20%	333	9.80%	8.18
correct peripheral focus trials (N = 3225)	2936	91.04%	289	8.96%	7.71
correct object focus trials (N = 3310)	3043	91.93%	267	8.07%	7.98
correct subject focus trials (N = 3312)	2957	89.28%	355	10.72%	8.31
correct new-information focus trials (N = 3313)	2906	87.72%	407	12.28%	9.5
correct contrastive focus trials (N = 3309)	3094	93.50%	215	6.50%	6.61

**Note.** IPV = immediately preverbal

The output of model 1 is reported in table 5.4, showing that neither *focus position* nor *focus target* (or their interaction, that did not contribute significantly to the model) affected acceptability probabilities in our experiment.<sup>48</sup> This indicates that, at the end of the trial, the participating Turkish readers did not favour any focus target or focus position; specifically, there was no preference for immediately preverbal focus-bearing sentences over peripheral ones or a preference for narrow subject focus over narrow object focus. Conversely, *focus type* as a fixed effect, differentiating non-given new-information focus from given contrastive focus elicited by closed *wh*-questions, significantly affected acceptability judgments in model 1. Specifically, the probability of new-information foci to be judged as acceptable is significantly lower than the probability of contrastive foci. Thus, in the (late) evaluation of focus-bearing answers to open or closed *wh*-questions, readers prefer given contrastive focus compared to non-given new-information focus. None of our exploratory effects (i.e., participants' age, sex, or device type) significantly improved the model.

<sup>48</sup> For interpretation of estimates, 'reference' levels (i.e., the level associated with the negative pole of the sum-to-zero coding; -0.5) of fixed effects across all models presented in the results here are as follows: *focus position*: ref. peripheral position, *focus target*: ref. subject focus, *focus type*: ref. contrastive focus, *syntactic function*: ref. subject, & *region of interest*: ref. peripheral word.

TABLE 5.4: Output of the logistic mixed-effects model (model 1, no outlier exclusion) on 6622 correct experimental answer acceptability judgment responses (1 = appropriate, 0 = inappropriate).

Random effects	Variance	SD
participant (intercept)	0.7816	0.8841
trial (intercept)	1.6401	1.2807

*Analysis conducted on 6622 observations, 78 trials, and 85 participants*

Fixed effects	Estimate	SE	z-value	P-value
(intercept)	3.1667	0.1900	16.667	< .001 ***
Focus-position	0.1026	0.3155	0.325	.745
Focus-target	0.2736	0.3151	0.868	.385
<b>Focus-type</b>	-0.8348	0.3156	-2.645	<b>.008 **</b>

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); PP = peripheral position; Significant fixed effects are marked in bold. Correlations of random and fixed effects are not reported.

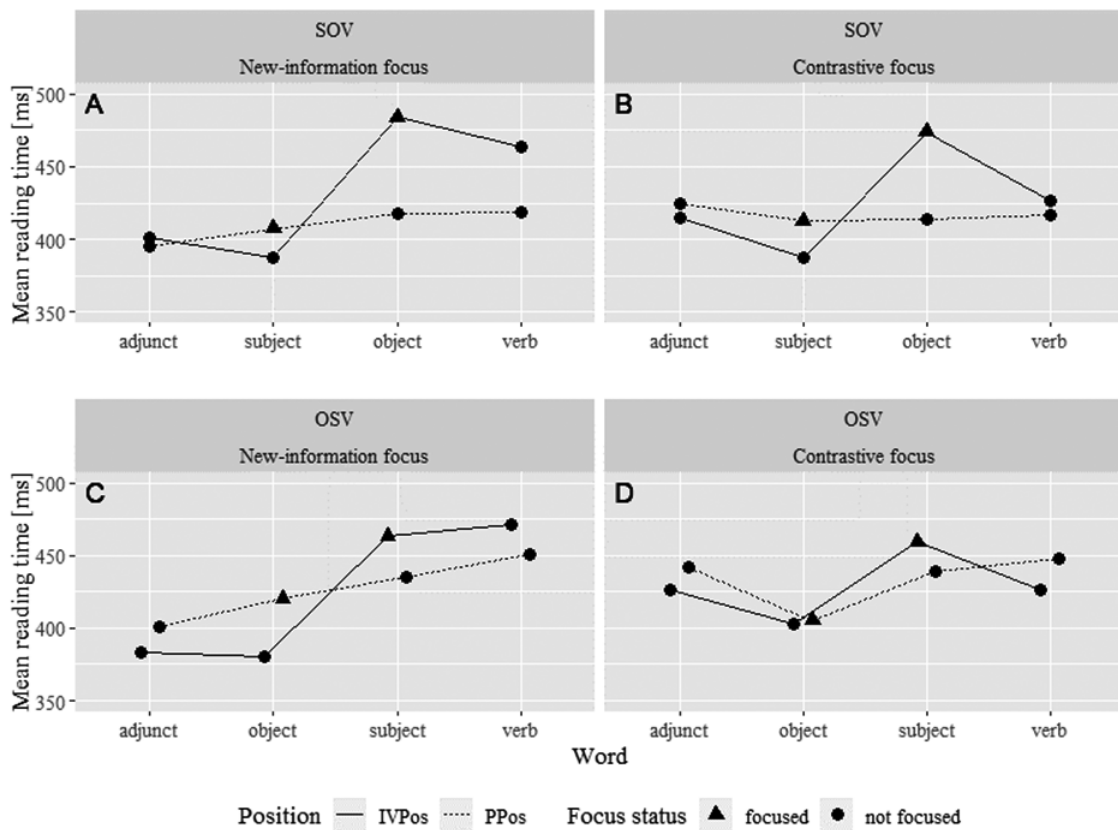
### 5.3.2 Reading times

To evaluate the observed reading times in light of our research questions, pre-processed but untransformed mean reading times are visualised in figure 5.1 by *word order* (panels A & B vs C & D), *focus type* (panels A & C vs B & D), *focus position* (compare line types per panel), and *focus target* (compare point shapes per panel). To statistically investigate the effects of *focus position*, *syntactic function* (i.e., whether the respective word is the syntactic subject or object), and *focus type* on reading times of focused and non-focused words at the immediately preverbal or peripheral (i.e., post-adjunct) *regions of interest*, a generalised linear mixed-effects regression model of log-transformed reading times was constructed, as described in section 5.2.4 (model 2).

The output of model 2 is reported in table 5.5. Here, we see a significant fixed effect of *region of interest*, which is also involved in a significant two-way interaction of *region: focus position*. While no significant global effects of *focus position* or *syntactic function* were observed, the interaction of *focus position: syntactic function* proved significant. Similar to model 1, none of our exploratory effects significantly improved the model, including *device type*, indicating no overall effect of mobile devices on reading times compared to non-mobile devices in our experiment. Contrary to ‘late’ acceptability judgments, reading times of immediately preverbal and peripheral words did not reveal an effect of focus type, regard-

less of focus position or syntactic function, indicating that contrast and givenness status through focus type do not affect ‘earlier’ processing during reading.

FIGURE 5.1: Per-word trimmed mean reading times [ms] by focus position (IVPos = immediately preverbal focus position vs PPos = peripheral focus position) for each focus type (new-information vs contrastive focus) in SOV and OSV word orders.



The significant interaction of *region: focus-position* indicates that Turkish readers are sensitive to focus positional differences in focus realisations dependent on the constituent’s position (i.e., the region of interest). Meanwhile, the *focus-position: syntactic-function* interaction indicates that the effect of *focus position* varies depending on the read word’s *syntactic function* (subject vs object). To investigate these interactions in more detail, consider figure 5.2 below representing the estimated marginal means (i.e., the model-based means of the dependent variable  $\log(\text{RT})$  for the levels of each independent variable) for each level of the factors *focus position*, *syntactic function*, and *region of interest* of model 2.

Looking at the peripheral, post-adjunct constituents first (i.e., the left panel of figure 5.2), we see that peripheral subjects appear to be read faster than objects at the same position. With peripheral words necessarily focused if the carrier sentence’s focus is realised at the peripheral focus position (indicated through solid lines), we see that this appears to hold for focused peripheral words, as well as

non-focused ones (indicated through dotted lines). To determine whether these observations are statistically significant, multiple comparisons for all main-effect contrasts were calculated and are provided in table 5.6. In contrast (9) within table 5.6, we see that peripheral focused subjects and objects do not significantly differ regarding reading times. Similarly, we see in contrast (11) that there is no statistical difference between peripheral non-focused subjects and objects in reading times.

TABLE 5.5: Output of the global linear mixed-effects log(RT) model (model 2, no outlier exclusion) on correct experimental trials judged as appropriate (Response = 1).

Random effects	Variance	SD
participant (intercept)	0.099134	0.31486
Region	0.009587	0.09792
Region:Focus-position	0.019103	0.13821
trial (intercept)	0.003375	0.05809
Residual	0.097844	0.31280

*Analysis conducted on 11945 observations, 78 trials, and 85 participants*

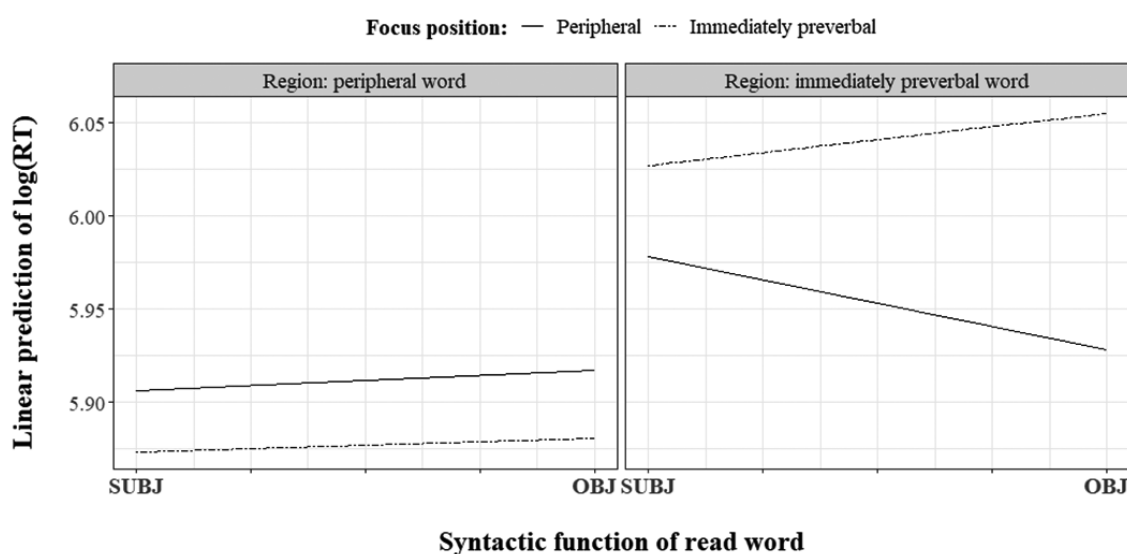
Fixed effects	Estimate	SE	Df	T-value	P-value
(intercept)	5.9460	0.0349	90.13	170.368	< .001 ***
<b>Region</b>	0.1029	0.0121	83.57	8.515	< .001 ***
Focus-position	0.0265	0.0144	69.21	1.844	.070
Syntactic-function	-0.0007	0.0072	8701	-0.099	.922
Focus-type	-0.0037	0.0144	69.46	-0.257	.798
Word-length	0.0102	0.0078	4709	1.301	.193
Word-frequency	0.0112	0.0084	3240	1.337	.181
<b>Region:Focus-position</b>	0.1222	0.0190	87.45	6.422	< .001 ***
Region:Syntactic-function	-0.0203	0.0288	69.41	-0.705	.483
<b>Focus-position:Syntactic-function</b>	0.0371	0.0115	11630	3.235	.001 **
Region:Focus-position:Syntactic-function	0.0819	0.0576	69.83	1.421	< .160

Note. \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); PP = peripheral position; Significant fixed effects are marked in bold. Correlations of random and fixed effects are not reported. RTs were natural log transformed.

Turning to immediately preverbal constituents, represented in the right panel of figure 5.2, we see that the pattern of subjects being read faster than objects only appears to hold for focused words (i.e., immediately preverbal words in carrier sentences with immediately preverbal focus position). Similar to peripheral foci, however, contrast (12) shows this pattern not to be statistically significant. Crucially, the effect of syntactic function appears to be reversed for non-focused immediately preverbal constituents (i.e., the right panel’s solid line), with objects

read faster than subjects. In contrast (10), we see that this does not prove to be significant, although the estimate is, indeed, negative. Nevertheless, this cross-over pattern for non-focused, immediately preverbal constituents can be assumed to cause the significance of the interactions.

FIGURE 5.2: Estimated marginal means of each level of the factors focus position (whether the read word is contained in a carrier answer with peripheral or immediately preverbal focus), syntactic function (whether the read word is the carrier answer's syntactic subject or object), and region of interest (whether the read word is in peripheral or immediately preverbal position) in the overall model (model 2) predicting log-transformed reading times.



Comparing across the regions of interest (i.e., comparing the two panels), we see that immediately preverbal constituents appear to be read longer than peripheral ones, regardless of syntactic function and focus status. Statistically, this is captured by the significant global effect of *region of interest* in the output of model 2 (see table 5.5). However, concluding that all immediately preverbal constituents take longer to read compared to peripheral ones appears to be incorrect. Comparing carrier answers with identical focus positions across our regions of interest (i.e., comparing line types across panels), we see that non-focused, immediately preverbal objects appear to be read at a speed no different from focused, peripheral objects. This is confirmed by the non-significance of contrast (3). Furthermore, focused peripheral subjects are also read at a speed no different from non-focused immediately preverbal subjects, as indicated in contrast (1).

In figure 5.2, we can further see that across both regions of interest and for both syntactic functions of constituents, the focused variant of a constituent is read longer than its non-focused counterpart. However, this proves statistically significant only for immediately preverbal objects. As such, contrast (8) in our multiple

comparisons, shows that focused immediately preverbal objects are read slower than non-focused immediately preverbal ones. Immediately preverbal subjects in contrast (6), peripheral subjects in contrast (5), and peripheral objects in contrast (7) do not display significant reading time differences when their respective focused and non-focused forms are compared. Crucially, it should be noted that the multiple comparisons in table 5.6 may lack statistical power overall (see also section 4.3.1 for this issue with regards to multiple comparisons). Furthermore, Bonferroni adjustments of multiple comparisons are likely to be conservative. Given these caveats with the results of model 2, we constructed two separate models per region of interest to disentangle the effects of focus position and syntactic function directly in each region of interest (models 3 and 4).

TABLE 5.6: Multiple comparisons of estimated marginal means of the global linear mixed-effects log(RT) model's (model 2) region: focus-position: syntactic-function interaction.

	Focus position	Syntactic function	Region	Contrast	Estimate	SE	Df	t ratio	P-value
(1)	PPos	SUBJ	.	IPV-PP	0.07243	0.0266	148	2.728	.0859
<b>(2)</b>	IVPos	SUBJ	.	IPV-PP	0.15369	0.0246	134	6.258	< .001 ***
(3)	PPos	OBJ	.	IPV-PP	0.01119	0.0264	144	0.424	1
<b>(4)</b>	IVPos	OBJ	.	IPV-PP	0.17437	0.0245	134	7.107	< .001 ***
(5)	.	SUBJ	PP	IVPos-PPOS	-0.03269	0.0232	118	-1.408	1
(6)	.	SUBJ	IVP	IVPos-PPOS	0.04857	0.0232	119	2.089	.4659
(7)	.	OBJ	PP	IVPos-PPOS	-0.03653	0.0231	117	-1.579	1
<b>(8)</b>	.	OBJ	IVP	IVPos-PPOS	0.12665	0.0231	117	5.471	< .001 ***
(9)	PPos	.	PP	OBJ-SUBJ	0.01135	0.0228	107	0.497	1
(10)	PPos	.	IVP	OBJ-SUBJ	-0.04989	0.0224	101	-2.227	.3382
(11)	IVPos	.	PP	OBJ-SUBJ	0.00751	0.022	103	0.341	1
(12)	IVPos	.	IVP	OBJ-SUBJ	0.02819	0.0222	107	1.271	1

**Note.** \*\*\* Significant P-value (<.001); PPos = peripheral focus position; IVPos = immediately preverbal focus position; PP = peripheral region of interest; IVP = immediately preverbal region of interest; Significant contrasts are marked in bold; P-values are Bonferroni adjusted for 12 tests; Degrees of freedom are calculated using Kenward-Roger approximations; Results averaged over the levels focus type; Dots (.) indicate the contrasted fixed effect.

As described in section 5.2.4, model 3 predicted log-transformed reading times of focused and non-focused syntactic subjects and objects at the immediately preverbal region. In the output of model 3 provided in table 5.7, we see that the only significant fixed effect is *focus position*. Consider that focus position in this particular model compares focused and non-focused immediately preverbal words (i.e., if the sentence's focus position is immediately preverbal, the word at that region is assumed to be focused). Contrary to model 2, the effect of *focus position* does not significantly differ depending on the syntactic function of the read word, as indicated by the non-significant interaction of *focus position:syntactic function*. Furthermore, none of our exploratory effects significantly improved the model. Thus, the global effect of focusing at the immediately preverbal position

(i.e., focus is associated with longer reading times compared to non-focused elements) affects objects and subjects the same way. At the same time, syntactic function alone does not affect reading times, indicating the absence of any preference or disruptions caused by objects or subjects at the immediately preverbal position.

TABLE 5.7: Output of the immediately preverbal region linear mixed-effects log(RT) model (model 3, no outlier exclusion) on correct experimental trials judged as appropriate (Response = 1).

Random effects		Variance	SD		
participant	(Intercept)	0.10533	0.32455		
	Focus position	0.01568	0.12523		
trial	(Intercept)	0.00518	0.07197		
Residual		0.10293	0.32083		

*Analysis conducted on 5966 observations, 78 trials, and 85 participants*

Fixed effects	Estimate	SE	Df	T-value	P-value
(Intercept)	5.998414	0.036379	92.67054	164.889	< .001 ***
<b>Focus-position</b>	0.08927	0.022967	112.1476	3.887	< .001 ***
Syntactic-function	-0.01234	0.020759	68.40709	-0.595	.554
Focus-type	0.00837	0.018399	68.27522	0.456	.650
Word-length	-0.00602	0.020214	68.03366	-0.298	.767
Word-frequency	-0.01280	0.020190	68.97866	-0.634	.528
Focus-position:Syntactic-function	0.068415	0.037156	68.68563	1.841	.070

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01);\*\*\* Significant P-value (<.001); PP = peripheral position; Significant fixed effects are marked in bold. Correlations of random and fixed effects are not reported. RTs were natural log transformed.

With outputs provided in table 5.8, model 4 investigated *focus position*, *syntactic function*, *focus type*, and the interaction of *focus position:syntactic function* as predictors of reading times of words at the peripheral, post-adjunct region. While the interaction proved not to exert an effect on reading times, the fixed effect of *focus position* proved to be a significant predictor of log-transformed reading times. Like in model 3, consider that focus position in this region-specific model differentiates focused and non-focused words. Thus, focused subjects and objects at the peripheral location cause longer reading times than their non-focused counterparts.<sup>49</sup> Similar to models 1 through 3, our exploratory effects did not significantly improve the model. However, contrary to models 2 and 3, *word frequency* in (rescaled) words per million is another significant predictor of reading time at the peripheral region. Although trials were counterbalanced for high,

<sup>49</sup> For clarification, the sign change in the associated estimate is due to the fact, that all models are based on the same reference levels. For example, the reference level of 'immediately preverbal position' for focus position indicates focused elements in the immediately preverbal position model 3, while the same reference level indicates non-focused elements in model 4 for the peripheral region of interest.

middle, and low-intensity subjects and objects (see section 5.2.4.2), higher frequency words in model 4 lead to slower reading times.

TABLE 5.8: Output of the peripheral region linear mixed-effects log(RT) model (model 4, outliers excluded) on correct experimental trials judged as appropriate (Response = 1).

Random effects	Variance	SD
participant (Intercept)	0.10339	0.32155
trial (Intercept)	0.00236	0.04858
Residual	0.07048	0.26547

*Analysis conducted on 5842 observations, 78 trials, and 85 participants*

Fixed effects	Estimate	SE	Df	T-value	P-value
(Intercept)	5.882103	0.035483	88.1035	165.774	< .001 ***
<b>Focus-position</b>	-0.039000	0.013194	72.02176	-2.955	<b>.004 **</b>
Syntactic-function	-0.002230	0.015409	71.7023	-0.145	.885
Focus-type	-0.007710	0.013152	72.14239	-0.586	.560
Word-length	0.008446	0.014646	72.19354	0.577	.566
<b>Word-frequency</b>	-0.030900	0.014985	72.55114	-2.062	<b>.043 *</b>
Focus-position:Syntactic-function	-0.006850	0.026250	72.00197	-0.261	.795

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01);\*\*\* Significant P-value (<.001); PP = peripheral position; Significant fixed effects are marked in bold. Correlations of random and fixed effects are not reported. RTs were natural log transformed.

In addition to models 3 and 4, we further performed an exploratory analysis of reading times at the sentence-final verb region in model 5. Recall that *focus type* did not affect peripheral or immediately preverbal reading times, indicating that these ‘earlier’ measures of the processing of subjects or objects at these regions are not affected by considerations of contrast or givenness of the focused constituent. However, delayed processing in the form of end-of-trial acceptability judgments was affected by *focus type*. Thus, we were interested in whether the spillover region of the verb displayed any indications of these ‘later’ processing steps.<sup>50</sup> As indicated by the output of model 5 in table 5.9, the sentence-final verb indeed displays effects of contrast and givenness (i.e., *focus type*). Here, focus type is a significant fixed effect with new-information foci associated with longer reading times of verbs compared to contrastive foci.

<sup>50</sup> As will be discussed later, self-paced reading as conducted in this experiment does not unambiguously allow us to correlate effects observed on the verb with that specific element. It may very well be that what we observe in model 5 is, in fact, a delayed effect associated with prior words.



TABLE 5.9: Output of the verb region linear mixed-effects log(RT) model (model 5, outliers excluded) on correct experimental trials judged as appropriate (Response = 1).

Random effects		Variance	SD		
participant	(intercept)	0.090687	0.30114		
	Focus type	0.013460	0.11602		
trial	(intercept)	0.008959	0.09465		
Residual		0.119195	0.34525		

*Analysis conducted on 5610 observations, 78 trials, and 85 participants*

Fixed effects	Estimate	SE	Df	T-value	P-value
(Intercept)	5.98892	0.03474	101.2213	172.368	< .001 ***
Focus-position	0.03193	0.02383	68.06756	1.340	.185
Focus-target	0.03372	0.02367	68.09788	1.425	.159
<b>Focus-type</b>	0.06897	0.02761	96.17836	2.498	<b>.014</b> *
Word-length	-0.02705	0.02491	67.78050	-1.086	.281
Word-frequency	0.01279	0.02618	66.88632	0.489	.627
<b>Focus-position:Focus-target</b>	-0.09921	0.04766	68.18338	-2.082	<b>.041</b> *

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01);\*\*\* Significant P-value (<.001); PP = peripheral position; Significant fixed effects are marked in bold. Correlations of random and fixed effects are not reported. RTs were natural log transformed.

In addition to the fixed-effect of *focus type*, the interaction of *focus position: focus target* significantly improved model 5. While none of our exploratory effects significantly improved the model, including *device type*, this interaction indicates an effect of focus position, which varies over focus target. As the respective fixed effects of this interaction are not significant, this interaction represents a crossover pattern. Further investigations using Multiple Tukey contrasts provided in table 5.10 revealed a non-significant trend in contrast (1) of subject foci at peripheral position leading to lower verb reading times compared to subject foci at the immediately preverbal position. The estimate for object foci in contrast (6) confirms the assumption of a crossover pattern, with a very weak trend of immediately preverbal object focus leading to shorter verb reading times compared to peripheral object focus. In contrast (2), a further non-significant trend is present with peripheral subject foci leading to lower verb reading times compared to peripheral object foci, while the trend for immediately preverbal foci in contrast (5), again, displays a very weak crossover trend.

TABLE 5.10: Multiple comparisons of means using Tukey contrasts of the verb region linear mixed-effects log(RT) model's focus position: focus target.

Contrasts	Estimate	SE	Df	t ratio	p-value
(1) PPf:subject foc. / IPVf:subject foc.	-0.08154	0.0337	69.3	-2.417	0.083
(2) PPf:subject foc. / PPf:object foc.	-0.08332	0.0340	68.7	-2.449	0.078
(3) PPf:subject foc. / IPVf:object foc.	-0.06565	0.0332	68.9	-1.976	0.207
(4) IPVf:subject foc. / PPf:object foc.	-0.00179	0.0339	68.8	-0.053	> .999
(5) IPVf:subject foc. / IPVf:object foc.	0.01589	0.0331	69.2	0.479	0.963
(6) PPf:object foc. / IPVf:object foc.	0.01768	0.0337	68.6	0.525	0.953

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); IPVf = immediately preverbal focus position; PPf = peripheral focus position; foc. = focus; Significant fixed effects are marked in bold; Reported p-values are Tukey adjusted; Degrees of freedom are calculated using Kenward-Roger approximations; Results averaged over the levels of region and focus type.

## 5.4 Discussion

To recapitulate, the study presented in this chapter aimed to elaborate on the work by Uzun et al. (2021) and the acceptability judgment experiment in chapter 4 by investigating the roles of focus position, syntactic function, focus target, and focus types in on-line sentence processing in Turkish. Below, our most crucial findings on these factors of interest are summarized regarding our obtained acceptability judgments and reading times (see table 5.11):

TABLE 5.11: Summary of results for acceptability judgement in correct trials (i), and overall (ii), immediately preverbal word (iii), post-adjunct, peripheral word (iv), and sentence-final verb (v) reading times.

	Focus position	Syntactic function/ focus target	Focus type
Acceptability judgements (i)	PP.F = IPV.F	SUBJ.F = OBJ.F	CONTR.F > N-INF.F
Overall reading times (ii)	{PP < IPV}	{OBJ = SUBJ}	N-INF.F = CONTR.F
Immediately preverbal words (iii)	nF < F	OBJ = SUBJ	N-INF.F = CONTR.F
Peripheral words (iv)	nF < F	OBJ = SUBJ	N-INF.F = CONTR.F
Sentence-final words (v)	{IPV.F = PP.F}	PP.SUBJ.F [<] IPV.SUBJ.F PP.SUBJ.F [<] PP.OBJ.F	CONTR.F < N-INF.F

**Note.** F = focus; nF = non-focus; IPV = immediately preverbal; PP = peripheral; N-INF = new-information focus; CONTR = contrastive focus; squared brackets [...] indicate non-significant trends; curly brackets {...} indicate global effects involved in interactions; comparison symbols (i.e., >, <, and =) refer to the measurement per comparison: (i) acceptability probability, (ii – v) log transformed reading times.

**Focus position** – No effect of focus position in the experimental target answers was observed regarding acceptability. As such, answers with immediately preverbal foci were not more likely to be judged as acceptable compared to answers with peripheral focus, regardless of focus target. Overall, immediately preverbal constituents took longer to read compared to peripheral (i.e., post-adjunct) constituents. Focus on immediately preverbal words caused longer reading times compared to non-focused immediately preverbal constituents. Similarly, focus on peripheral constituents caused longer reading times compared to non-focused peripheral constituents. No significant effect of focus position was observed on reading times for the sentence-final verb.

**Syntactic function & focus target** – No preference for either focus target (i.e., comparing narrow subject and object foci) was observed in acceptability. Similarly, syntactic function (i.e., whether the read word is the sentence's subject or object) did not significantly affect reading times of peripheral or immediately preverbal constituents. However, we have observed a non-significant cross-over effect where immediately preverbal non-focused objects are read faster than non-focused subjects at the same position. In addition, a non-significant trend of longer reading times at the sentence-final verb was observed if the answer contained a peripheral subject focus when compared to verbs in answers with an immediately preverbal subject focus. Similarly, the verb was read marginally longer when the carrier answer contained a peripheral subject focus when compared to carrier answers with a peripheral object focus.

**Focus type** – An effect of focus type (i.e., comparing new-information foci with contrastive foci triggered by closed *wh*-questions) was observed on acceptability judgments, where contrastive foci were more likely to be judged as acceptable. No effect of focus type was observed on reading times of peripheral or immediately preverbal constituents. However, the sentence-final verb took longer to read if the carrier answer contained a new-information focus when compared to cases where it contained a contrastive focus.

In what follows, we will discuss our findings in relation to these existing investigations, presenting possible reasons for divergent results where needed.

#### 5.4.1 Focus position in Turkish processing

Beginning with **focus position**, we followed Uzun et al. (2021) in assuming that if there is an immediately preverbal focus position in Turkish, as is assumed in the traditional approach, processing disruptions should emerge if focus is realised anywhere else (i.e., compared to peripheral focus). As was shown in the results

in section 5.3, the data collected do not support this assumption, with no preference observed for answers with immediately preverbal foci over answers with peripheral foci in acceptability judgments (model 1). Furthermore, focus position did not globally affect reading times but was involved in the interactions of *region: focus-position* and *focus-position: syntactic-function*, while the three-way interaction of *region: focus-position: syntactic-function* did not prove significant (model 2). Upon closer inspection using estimated marginal means contrasts, we determined a non-significant cross-over effect in non-focused immediately preverbal words to underlie these interactions. In particular, non-focused immediately preverbal objects display a trend of being read faster than non-focused immediately preverbal subjects, while objects tend to be generally read more slowly than subjects, regardless of focus status. We have also seen that immediately preverbal constituents are generally read more slowly when compared to peripheral constituents, as indicated through the global effect of the region of interest in model 2. Crucially, however, this effect is independent of focus status and syntactic function of constituents, with the exception of the cross-over trend described above.

Beyond our finding that immediately preverbal focus is not preferred over peripherally realised focus in Turkish, we have also seen non-significant trends at the sentence-final verb, indicating in-situ focus (i.e., immediately preverbal object and peripheral subject focus) in Turkish to be preferred. If the sentence contains a peripheral subject focus, the verb tends to be read more quickly compared to cases where the verb is contained in a sentence with an immediately preverbal subject focus. Similarly, the verb tends to be read more quickly when it is situated in a sentence with peripheral subject focus compared to carrier sentences with peripheral object focus. The cross-over effect described above may also reflect a preference for in-situ (subject) focus in Turkish. For a non-focused immediately preverbal object to occur in our experimental setting, it had to be preceded by a peripheral, in-situ subject focus. If focus is preferably (but not necessarily) realised in-situ in Turkish, the preceding peripheral subject focus would explain the cross-over trend of immediately preverbal non-focused objects being read more quickly compared to immediately preverbal non-focused subjects that would be preceded by peripheral object foci. However, as all indications for an in-situ preference do not reach statistical significance, this question will have to be investigated in further research. Overall, our results do not display a preference for the supposed immediately preverbal focus position in Turkish. In other words, peripheral focus does not disrupt processing [immediately preverbal focus = peripheral focus]. Thus, our data lend evidence for the focus field (Göksel & Özsoy, 2000), arguing that focus may be realised at any preverbal position.

The finding that there is no preference for immediately preverbal focus in Turkish, is in line with what we have seen in the acceptability judgment experiment presented in chapter 4 but is at odds with the observations by Uzun et al. (2021). In chapter 4, it was speculated that the absence of a focus position preference in judgments of answers in listening might be due to overt prosody. This assumption is refuted here, as we have shown that there is no preference for the immediately preverbal position in self-paced reading either. As another major difference between the study by Uzun et al. (2021) and the perception and processing experiments conducted in this dissertation, we speculate that the use of reversible structures by Uzun and colleagues may underlie their participants' preference for immediately preverbal focus. This reasoning will be elaborated on in relation to the discussion of the findings for the syntactic function below.

### 5.4.2 Syntactic function in Turkish processing

For **syntactic function**, the question was raised how subjects and objects affect reading times in syntactically variable answers. Although the subjects generally tended to be read faster than objects in our overall model (model 2), this did not prove to be statistically significant, as determined in multiple comparisons of the overall model's interactions, as well as the non-significance of syntactic position in the region-specific models (models 3 and 4). Thus, our data does not display any effect of syntactic function on reading times. In other words, subjects and objects were read at the same pace within each region, regardless of word order. This was also true when both were focused and when both were not focused.

With regards to acceptability judgments, syntactic function could not be specified in a similar manner to reading times, as the complete target answer was judged by participants. Therefore, we raised the more specific question of whether the syntactic function of the focus (i.e., focus target) affected acceptability judgments. We specifically asked whether answers with subject foci are more (or less) likely to be judged as acceptable when compared to answers containing object foci. Akin to focus position, we did not observe any such effect of focus target in acceptability judgments. Carrier answers with subject foci were as likely to be judged as acceptable as were carrier sentences with object foci [subject focus = object focus].

Similar to the question of a possible focus position described above, our finding regarding focus target, in particular, contrasts with Uzun et al. (2021), who found that subject focus was preferred over object focus in acceptability judgments. Interestingly, the absence of a focus target effect on acceptability is also

in contrast to the observation of preferred subject foci in the judgement data provided in chapter 4. Our data further show that focused words are read longer than non-focused ones in general [non-focused < focused]. This is, again, in partial contrast to what was found by Uzun et al., who had observed that immediately preverbal subject foci, contrary to the general pattern of focused words being read longer than non-focused ones, were read faster than non-focused subjects at the immediately preverbal position, leading them to argue that subjects are preferred as focus, especially when moved to the verb-adjacent position.

The question arises why no effect of syntactic function or focus target was observed in the data presented here, while a preference for subject focus is present in chapter 4 and the acceptability judgments and reading times by Uzun et al. First and foremost, we must consider that both studies differ methodologically, measuring different aspects of processing, and affecting the circumstances in which participants encountered and read the question-answer pairs differently. In the study by Uzun et al., participants' reading patterns were (eye-)tracked during an in-lab setting, while in chapter 4 and the study presented here, participants read the material in a self-paced, unsupervised manner, as the experiment was conducted online. As such, participants in the study by Uzun and colleagues were able to regress to already read positions in the target sentence (i.e., the full questions and target answers were displayed in succession), while participants in the present self-paced reading study read the sentence through words in isolation and succession, without the possibility of regressing to earlier words. While an extensive consideration of these and further aspects differentiating studies using self-paced reading and eye-tracking during reading is beyond the scope of this discussion, it is important to outline how they may have caused the divergent results described above.

Being the two "most widely-accepted experimental tasks for the investigation of sentence comprehension during reading" (Witzel et al., 2012, p. 106), these two methods crucially differ regarding *what* they measure: self-paced reading cumulates processing in a single measure, rendering it an overall indicator of processing, while eye-tracking is a finer-grained measure of on-line processing able to dissect the time-course of on-line processing. It could, for example, be that immediately preverbal focused and non-focused subjects do differ in late processing and when earlier words can be re-assessed (e.g., through regression to the focus position), an aspect our study using self-paced reading is unable to capture as described above. Another aspect to consider is that both methods are susceptible to different reading strategies (see Witzel et al., 2012 for a comparative study of these methodological approaches). Participants may read slower and

extraneously carefully than would be expected in a non-experimental setting. On the other extreme, they may rush through the words, transitioning to the next word as soon as the current word was perceived, delaying or buffering its integration. Especially the latter buffering strategy could be the cause why self-paced reading experiments often report effects in spillover regions (Witzel et al., 2012). If conducted online, self-paced reading studies like the present one, given their unsupervised nature, may be particularly susceptible to buffering or dragging reading strategies. Further research must be conducted on the questions of focus and syntactic function in Turkish, particularly in supervised experiments.

Previously, we have also suggested that the limitation of answers to reversible verbs by Uzun et al. may underlie their observed effects. In particular, all subject and object NPs in their study were human, with the questions always containing the human question words *kim* ‘who’ and *kim-i* ‘who-ACC; whom’. In such sentences, readers cannot access semantic information for thematic role assignment, necessitating them to rely solely on case marking and word order. In Turkish reversible sentences, Batmanian and Stromswold (2020) provide data that suggests that word order is the first and strongest cue for thematic role assignment, followed by the strong secondary cue of case marking. In chapter 4, we had not strictly controlled for semantic cues to thematic role assignment (i.e., some sentences were reversible while others were not). In the here presented experiment, however, subjects were always human, semantically indicating their role as agents, while direct objects were always non-human, providing semantic cues for thematic role assignment as themes or patients. In conjunction, participants could also use case marking and word order cues for thematic role assignment. This also renders questions used here different from the ones used by Uzun et al., with the respective human and non-human question words of *kim* ‘who’ and *ne-yi* ‘what-ACC’. Considering that the patient in the study by Uzun et al. (2021) is initially available to the agent role (i.e., until case marking and word order is integrated), we hypothesize that participants prefer a given-new (i.e., given vs non-given) hierarchy in answers. As the focused element in the experimental setting of Uzun and colleagues was always non-given, immediately preverbal focus would be preferred.

There is some experimental ground to assume that a facilitative given-new preference in reversible Turkish sentences may affect focus positional preferences. Kahraman and Hirose (2018) investigated the role of context on on-line processing of canonical SOV and non-canonical OSV semantically reversible sentences in Turkish. In their self-paced reading study, they were interested in whether canonicity of the target sentence and/or its givenness order, as defined by a

preceding contextual sentence, facilitate comprehension. They found that there is no preference for the canonical word order and that a given-new noun order facilitated processing in reversible (matrix) sentences at the first and second word (i.e., SO or OS) compared to new-given settings. However, it should be noted that their experimental materials differ from the target answers employed throughout this dissertation and by Uzun et al. (2021) in that given elements were personal pronouns with overt referents in the context, as well as containing an embedded clause after the SO or OS matrix. The latter difference is particularly important as the preferential given-new effect was reversed at the embedded verb position, where new-given orders lead to faster reading times. While we will refrain from a more detailed representation of the study by Kahraman and Hirose (2018) given these differences, the facilitative effect of given-new order on sentence-initial and semantically reversible SO and OS matrices may explain why Uzun et al. found immediately preverbal to be preferred over peripheral foci. Under this assumption, the effect of the verb-adjacent focus position observed by Uzun et al. and in chapter 4, would be an effect of givenness, where the non-given focus is preferably the second element in reversible sentences.

### 5.4.3 Focus type in Turkish processing

Integral to this study's goal of extending our understanding of focus processing in Turkish, the factor of **focus type**—differentiating non-given new-information focus from given contrastive focus—did not interact with focus position, syntactic function, or focus target in any of our models. Considering that the prevalent, *dual assumption* of focus position in Turkish states that contrastive foci may occur anywhere in the preverbal field, while new-information foci may only occur in immediately preverbal position (i.e., peripheral foci are necessarily contrastive in type), our results regarding focus type do not support such an assumption. As such, focus position variability in Turkish does not appear to be driven by focus type restrictions. Crucially, this finding is in line with our production data (chapter 3) and acceptability judgments in listening (chapter 4). We have, however, seen that given contrastive foci are more likely to be judged as acceptable when compared to non-given new-information foci in the present experiment's task-final acceptability judgement. This hierarchy in acceptability was not observed in chapter 4, where focus type did not affect judgements. This inconsistency is most easily attestable to the fact that in the listening judgment experiment in chapter 4, contrastive foci were elicited by closed *wh*-questions, as well as corrective exchanges, confounding contrastive focus with degrees of givenness. Con-



trastive foci were only elicited by closed questions in the experiment presented here, rendering the focused word repeated and given in our understanding here. Thus, the preference for contrastive focus over new-information focus here is a preference for given focus over non-given focus.

As to the effect of focus type, and thus givenness, on reading times, we have made an intriguing observation in that an effect was only observed in the spill-over region of the verb rather than the focused word itself. Reading times at the verb were increased for non-given new-information focus compared to given contrastive focus. The same pattern was also observed in judgments speeds in chapter 4. As explained above, the methodology of self-paced reading does not allow us to assume that the effect of focus type is directly associated with the verb. It may, instead, be a delayed processing cost associated with the peripheral or immediately preverbal region. Therefore, no evidence-based assumptions regarding the time course of the focus type and givenness effect can be made here, and further research is required to answer this question.

#### 5.4.4 Our findings in relation to focus research in Turkish

Throughout this chapter, we have compared the results of our self-paced reading experiment to the eye-tracking study by Uzun et al. (2021). Together with our acceptability judgement during listening data presented in chapter 4, these studies are the only ones to investigate comprehension and processing of syntactically variable focus constructions to date in Turkish. As these studies are also similar regarding materials, the discussion of divergent findings in this section has raised questions to be further explored, such as the role of givenness in semantically reversible sentences. Nevertheless, the question arises of how the present findings are to be interpreted in relation to general focus research in Turkish. In what follows, we will take this broader perspective.

As we have previously elaborated on in greater detail (see sections 3.1.1 and 4.1.1), the core aspect of divergence in the literature on focus in Turkish is the potential role syntactic means, and word order in particular, play in focus realisation. We have contrasted three central approaches on this issue in the literature:

The *traditional assumption* predicts that foci in Turkish are realised in the immediately preverbal position by default, with non-foci moving to the peripheral positions (see Erguvanlı, 1984; Erkü, 1983; Hoffman, 1995; Şener, 2019, inter alia).

The *dual assumption* predicts that the prosodic realisation of focus in Turkish through focal stress differentiates focus from other IS elements, while syntactic means partially disambiguate focus types, with peripheral focus reserved for the contrastive focus type (see İşsever, 2003; Kılıçaslan, 2004, inter alia).

The *focus field assumption* argues that there is no syntactic focus realisation in Turkish, with syntactic variability driven by discourse-pragmatic factors other than focus (see Göksel & Özsoy, 2000; Özge & Bozşahin, 2010, inter alia).

Considering the traditional assumption of focus realisation in Turkish first, we have shown here and elsewhere in this dissertation, that focused elements in Turkish are neither required to occur immediately preverbally nor is immediately preverbal focus preferred over its peripheral (i.e., sentence-initial or post-adjunct in the present chapter) counterparts. In this chapter, we have also presented tentative evidence that in-situ focus may be preferred over Turkish foci realised by means of movement. As for the dual assumption, its central prediction of peripheral foci being necessarily contrastive has been disproven throughout this dissertation. As also stated by Özge and Bozşahin (2010), peripheral focus in Turkish is contrastive in contrastive contexts, but may also be of the new-information type in respective contexts. Taken together, the present chapter and the remainder of this dissertation, have shown that focus in Turkish may be realised anywhere preverbally, as predicted in the focus field assumption. Word order is not involved in Turkish focus realisation, with the variability potentially driven by other information structural processes, such as backgrounding (i.e., the movement of background information to the postverbal area) or topicalisation (i.e., fronting of topic elements) (see Özge & Bozşahin, 2010).

While refuting the existence of a focus position in Turkish, whether in the sense of a strict positional restriction or as a focally loaded construction, is not a novel approach (e.g., see Göksel & Özsoy, 2000), the experiment presented in this chapter is, along with the other experiments of this dissertation, the first of its kind to provide evidence for this analysis. As such, our findings also put into question the generalisability of the few experimental studies on (prosodic) focus realisation in Turkish. Presented in greater detail in section 3.1.2, the study of İvoşeviç and Bekâr (2015) investigated acoustic effects of focus in Turkish by eliciting immediately preverbal foci only in the form of SOV broad focus, SOV new-information and contrastive object foci, and OSV new-information and contrastive subject foci. Similarly, Gürer (2020) investigated pitch and duration in

Turkish foci and non-focused elements by eliciting immediately preverbal SOV broad foci and SOV new-information and contrastive object foci. If we assume no focus-inherent mechanism that requires foci to occur immediately preverbally, investigations on focus in Turkish should consider all possible focus constructions, with variability in the focus field. This is the approach we have taken in our acoustic analysis in chapter 3, presenting systematic acoustic effects of focus size and focus target on intensity and  $f_0$ .

## 5.5 Conclusion and suggestions for further research

The present study collected reading time and posterior acceptability judgment data in a self-paced reading experiment with new-information open question-answer pairs and contrastive closed question-answer pairs in Turkish. In the collected data, we investigated the roles of focus position, syntactic function, focus target, and focus type in perception. The following conclusions were made regarding the research questions raised in this chapter:

- a. In line with the observations made in production (chapter 3) and acceptability judgment in listening (chapter 4), we have not observed a preference for immediately preverbal focus over peripheral focus in reading times and acceptability judgements. This lack of processing cost lends further evidence against the assumption of a (focally loaded) focus position in Turkish.
- b. Contrary to our listening judgment task in chapter 4 and the study by Uzun and colleagues (2021), no preference for subject focus over object focus in acceptability judgment was present. Furthermore, no subject-object asymmetry at the peripheral or immediately preverbal position was found.
- c. Similar to our findings in chapter 4, focus type did not interact with focus position, providing evidence against the dual assumption of focus realisation in Turkish. As such, we have not observed any disruptions in reading times or reduced acceptability judgements associated with peripheral new-information foci. A preference for given contrastive focus over non-given new-information focus emerged in acceptability judgments, with the only effect on reading times displayed at the spill-over region of the verb.

Building on the first focus processing study in Turkish conducted by Uzun et al. (2021) in the form of eye-tracking, we explored existing assumptions regarding focus positions, syntactic functions, focus targets, as well as adding focus types

in the here presented self-paced reading study. Within the little comparable data across studies, inconsistencies emerged which we proposed attributable to thematic role assignment in the semantically reversible sentences of Uzun et al. and the function of givenness therein. Further research should consider this aspect systematically in combination with focus. We have also raised the issue that the here presented study was conducted over the internet in a non-supervised fashion. As such, participants may have applied non-normal reading strategies, necessitating supervised in-lab experiments for validation, applying finer-grained on-line measures such as eye-tracking. Another aspect to be considered regarding the experimental paradigm is that the present study, as well as Uzun et al., used binary *yes/no* acceptability judgment tasks at the end of each trial. It may be that this approach was not sufficiently sensitive to capture fine-grained differences in acceptability between the focus dimensions of interest. Thus, future studies are encouraged to employ scaled judgment tasks to contribute further data regarding potential preferences in comprehension and processing of syntactically variable focus realisations in Turkish.

Further questions remain open, especially surrounding the role of givenness and its interaction with focus in Turkish. Following the framework of Krifka and Musan (2012; see chapter 2), we have primarily investigated focus in the present experiment, considering it an information structural notion independent of (but interacting with) the notion of givenness. As elaborated on in section 5.1.2, Benatar and Clifton (2014) followed Schwarzschild's (1999) approach to information structure, regarding givenness as the fundamental information structural notion (i.e., focus is subsumed under givenness where all non-given information is focused but focus may also be given). Nevertheless, Benatar and Clifton's finding of shorter reading times for given non-focused information compared to non-given focused information can be understood to be the same as our finding of longer reading times for foci over non-foci. Crucially, however, focus in the present experiment was realised in non-given new-information and given contrastive focus types. With focus type not affecting reading times, we thus considered focus to cause longer reading times, not givenness. The observation that focus type does not affect reading times is also at odds with another finding by Benatar and Clifton, who determined given contrastive foci to cause longer reading times than non-given, new-information foci (non-given new-information focus < given contrastive focus). We did, however, observe a focus type effect on acceptability judgments, where given contrastive foci were more likely to be judged as acceptable compared to non-given new-information foci. Considering that no such effect of focus type was observed in chapter 4, where contrastive foci were

### 5.5. *Conclusion and suggestions for further research*

given and non-given, we argued that this pattern here represents givenness effects. Thus, givenness does, in fact, appear to affect focus processing and it may be that the present analysis was unable to capture potential effects of givenness on reading time, especially considering the complex analysis and that self-paced reading is not as fine-grained as, for example, eye-tracking. Thus, we propose to specifically investigate the roles of givenness and focus in future studies. Following Benatar and Clifton, this may be done in multiple experiments, where (i) given, non-focused elements are compared with non-given, new-information foci only, (ii) given, non-focused elements are compared with given, contrastive foci, and (iii) non-given, new-information foci are compared with given, contrastive foci.

In general, focus processing in Turkish as a field has received little attention, with the few studies, including the one presented here, displaying inconsistencies. It is suggested that future experiments are conducted, particularly investigating the confounding function of givenness in word order when no semantic cues are available for thematic role assignment, such as in reversible sentences.



## Chapter 6

# General discussion and future directions

### 6.1 Research questions addressed in this dissertation

The central goal of this dissertation was to provide experimental data on the roles of word order and acoustic measures (i.e., fundamental frequency & intensity) in Turkish focus realisation, explicitly employing experimental designs free of preconceived notions regarding a possible immediately preverbal focus position. Accordingly, we have presented three experiments investigating the production, perception, and processing of focus-bearing transitive structures in Turkish. For each of these experiments, multiple research questions presented below were raised, investigated, and discussed along focus dimensions and in relation to the gathered data. While conclusions regarding each of these questions are presented in the respective chapters in greater detail, we present the major conclusions drawn in this dissertation in what follows.

*Production related research questions:*

- (I) Do realisations of broad foci in Turkish differ from narrow foci in word order, intensity, and/or  $f_0$ ?
- (II) Do realisations of subject foci in Turkish differ from realisations of object foci in word order, and do object and subject foci in Turkish differ acoustically in intensity and/or  $f_0$ ?
- (II) Do realisations of new-information foci in Turkish differ from realisations of contrastive foci in word order, intensity and/or  $f_0$ ?
- (IV) Do focus realisations triggered by in-situ SOV *wh*-questions differ from ones triggered by scrambled ex-situ OSV *wh*-questions in word order?

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### *Perception related research questions:*

- (V) Are recorded answers with narrow foci realised in immediately preverbal position judged as acceptable more often and faster overall than answers with peripheral narrow focus?
- (VI) Are recorded answers with object and/or subject focus realised in immediately preverbal position judged as acceptable more often and faster than answers with peripheral object and/or subject focus?
- (VII) Are recorded answers with contrastive focus realised in peripheral position judged as acceptable more often and faster than answers with contrastive focus at the immediately preverbal position?
- (VIII) Are recorded question-answer pairs matched for focus type judged as acceptable more often and faster than question-answer pairs mismatched for focus type?
- (IX) Are recorded question-answer pairs matched for contrastive sub-type focus judged as acceptable more often and faster than question-answer pairs mismatched for contrastive sub-type focus?

### *Processing related research questions:*

- (X) Do reading times and/or acceptability rates of foci at the immediately preverbal position differ significantly from foci at the peripheral position?
- (XI) Do reading times and/or acceptability rates of syntactic subjects differ significantly from syntactic objects at the immediately preverbal and/or peripheral position?
- (XII) Do reading times and/or acceptability rates of new-information foci differ significantly from given contrastive foci elicited by closed *wh*-questions at the immediately preverbal and/or peripheral position?

## **6.2 Overview of major conclusions**

### **6.2.1 Syntactic focus realisation in Turkish**

As was repeatedly illustrated in this dissertation, there is a long-standing debate surrounding focus realisation in Turkish and the role the immediately preverbal



position plays therein. Notably, we have distinguished three approaches to the involvement of syntactic focus realisation in Turkish and a possible focus position in chapters 3 and 4: (i) the *traditional assumption* of focus being realised at the immediately preverbal position in the sense of a strict focus position or as a focally loaded structure à la Büring (2010; among others, see Erguvanlı, 1984; Şener, 2019), (ii) the *dual assumption* requiring new-information focus to occur at the immediately preverbal position while contrastive focus may occur anywhere preverbally (e.g., see İşsever, 2003; Kılıçaslan, 2004), and (iii) the *focus field assumption* refuting any syntactic focus realisation beyond the ban of postverbal focus, with focus in Turkish only realised through prosody (e.g., see Göksel & Özsoy, 2000; Özge & Bozşahin, 2010). Given these divergent predictions and understandings, the central aim of this dissertation was to conduct production, perception and processing experiments designed in such a way as to not limit our investigations to the supposed immediately preverbal focus position or canonical focus-bearing structures only, consequently evaluating the role of focus positioning in Turkish. Based on the results of these experiments, we make three main conclusions and proposals regarding the role of word order in Turkish focus realisation:

1. *There is no focus position in Turkish, neither in the sense of a strict focus position language nor as a focally loaded position facilitating focus perception and/or processing.*
2. *The evident syntactic variability of focus in the Turkish preverbal area is a consequence of movement triggered by other IS aspects like topicalisation and backgrounding.*

At first glance, the rejection of a focus position appears contradictory to our observations in the production experiment presented in chapter 3. While no focus realisation in postverbal position was observed in production, as is to be predicted based on the literature only permitting backgrounded material postverbally (e.g., see Göksel & Özsoy, 2000), results showed that narrow object focus is primarily realised in canonical SOV answers, rendering them in an immediately preverbal position.<sup>51</sup> As phrased by Kılıçaslan, (object) focus in Turkish is thus statistically correlated with the immediately preverbal position (2004). However, considering this correlation of narrow (object) focus with the immediately preverbal position to be grounds for an immediately preverbal focus position falls into

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<sup>51</sup> For clarification, narrow object foci realised through in-situ wh-questions were always realised in SOV order, with the exception of a single case, while scrambled OSV wh-questions triggered 5.4-12.4% of OSV realisations, depending on focus type.

the fallacy of equating correlation and causation. In fact, objects occur canonically in the immediately preverbal position, rendering the correlation of (object) focus and the immediately preverbal position a canonicity effect. Therefore, we argue that there is no reason to assume that it is verb-adjacency itself that ‘realises’ narrow object focus.

Furthermore, it was shown that broad foci in our production experiment were realised only in canonical order. We have argued that this strict restriction is due to the general pattern that only default intonation (i.e., nuclear stress), and thus default configuration and focus in Turkish, can project (see İşsever, 2006; Kamali, 2014). As for narrow focus, a focus target effect was observed. Comparing narrow subject foci and narrow object foci (i.e., focus targets), we have seen that subject focus is more probable to be realised in OSV answers, again rendering them immediately preverbal. Crucially, however, narrow subject focus is not necessarily realised in OSV answers, with 29.6-83.6% of narrow subject foci realised in SOV answers, depending on *wh*-question configuration and focus type. We argued that the focus target effect might indicate the general observational tendency for subject focus being potentially marked explicitly compared to non-subject focus, rather than representing an underlying focus position (see Skopeteas & Fanselow, 2010 and references therein). Taken together, our results provide clear evidence against the understanding of Turkish as a strict focus position language as described by Büring (2010). However, we have concluded in chapter 3 that production data alone is not informative regarding the alternative understanding of a focus position in Turkish as a focally loaded construction, necessitating further perception and processing studies.

Following and extending on the work of Uzun and colleagues (2021), we have made the following prediction with regards to perception and production: If the immediately preverbal position is focally loaded, focus realisations in other positions (i.e., peripherally), although possible, should lead to processing costs. To investigate this prediction, we conducted a timed acceptability judgment task in listening and a self-paced reading experiment in chapters 4 and 5, respectively. Crucially, neither experiment displayed a preference for immediately preverbal focus in acceptability judgment rates. Also, judgment speeds and reading times did not display processing costs/disruptions for peripheral foci, cumulatively providing evidence against the assumption of a focally loaded immediately preverbal focus position. Following and extending the work of Özge and Bozşahin (2010), we conclude that there is no focus position in Turkish, neither as a strict focus position nor as a focally loaded construction. Instead, focus is realised only in prosody, with the syntactic variability of narrow focus realisation in Turkish

within the preverbal focus field (Göksel & Özsoy, 2000) stemming from other IS aspects such as topicalisation and backgrounding, or the additional marking of narrow subject focus observed in chapter 3.

Before turning to our next major conclusion/proposal, it should be noted that the absence of any preference for immediately preverbal foci in Turkish within our perception and processing results are contrary to the findings by Uzun et al. (2021). In chapters 4 and 5, we have argued that the study by Uzun and colleagues might be confounded by thematic role assignment. If Turkish interlocutors cannot access semantic information for thematic role assignment, as is the case in the reversible verbs used by Uzun and colleagues, word order becomes the primary cue for thematic role assignment, possibly confounding preferences regarding word order (see Batmanian & Stromswold, 2020).

3. *Focus type in Turkish, differentiating new-information focus and contrastive focus, is not associated with word order in production, perception, or processing. In particular, the peripheral position in Turkish is not restricted to nor preferred for contrastive focus.*

While we have presented how the results of this dissertation provide quantitative evidence for the focus field assumption of focus realisation in Turkish, contradicting the traditional focus position assumption, the dual assumption remains to be explored. Briefly summarised, the dual assumption of focus realisation in Turkish predicts that new-information foci must occur in the immediately preverbal position, while contrastive foci may occur anywhere in the preverbal field (see İşsever, 2003; Kılıçaslan, 2004, among others). This means that, according to the dual assumption, the peripheral position may only be occupied by contrastive foci. To evaluate this claim, we have investigated focus type as a dimension in all of our experiments, differentiating new-information and contrastive focus in Turkish. If the dual assumption of focus realisation in Turkish holds in a strict sense akin to the differentiation of focus position understandings presented above, new-information foci should not be realised in peripheral position. However, if we assume the peripheral position to be contrastive focally loaded, peripheral new-information foci, although possible, should lead to detrimental effects in perception/processing in the form of reduced acceptability or processing costs. Below, we relate our experiments' results to these predictions.

Contrary to the dual assumption of peripheral focus being necessarily of the contrastive type in Turkish, or inversely, the restriction of new-information focus to the immediately preverbal position, our production results in chapter 3 did not indicate any significant association of focus position with focus type. Both focus

types, with new-information foci elicited by open *wh*-questions while contrastive foci were elicited by closed *wh*-questions as well as corrective *wh*-questions, were realised peripherally and at the immediately preverbal position, providing evidence against the 'strict' dual assumption.

Regarding the understanding of the dual assumption where the immediately preverbal position in Turkish is focus type loaded, our acceptability judgment task presented in chapter 4 did not indicate a preference for new-information focus in immediately preverbal position or contrastive focus at the peripheral position. We did, however, observe that contrastive foci were judged as acceptable faster than new-information foci overall. In the discussion of this observation in chapter 4, it was suggested that givenness might confound this observation. Consider that contrastive foci were elicited by either closed *wh*-questions, rendering focus given, or contrastive *wh*-questions, where the focused element is non-given. As such, we suggested that it is givenness in contrastive foci triggered by closed questions that caused faster judgments rather than focus type itself.

To clarify the role of givenness in focus type perception, contrastive foci in the self-paced reading experiment presented in chapter 5 were solely elicited by closed *wh*-questions, rendering them given while new-information focus is non-given. Unlike our results in chapter 4, acceptability judgments in chapter 5 showed that given contrastive foci were more likely to be judged acceptable than non-given new-information foci. Interestingly, no effect of focus type on on-line reading time was observed in the regions of interest (i.e., the peripheral word and the immediately preverbal word). However, an effect of focus type/givenness was observed in the spillover region of the verb. Although it cannot be said with certainty that the spillover effect is not a holdover effect of previous regions, given the methodological limitations of self-paced reading, it was argued that focus type/givenness affects processing in a delayed fashion, as was also indicated by differences in judgment speeds in chapter 4.

Overall, we conclude that there is no association of focus type with focus position in Turkish, neither in a strict sense nor in the sense of a focus type loaded position. It appears that givenness affects focus processing, while further research is needed using non-given, or more specifically, less given contrastive focus types considering that givenness is a spectrum (see Krifka & Musan, 2012).

## 6.2.2 Prosodic focus realisation in Turkish

Chapter 3 of this dissertation presents the few existing experimental investigations on the prosodic realisation of focus in Turkish, illustrating that the debate

surrounding focus position also permeates these studies, limiting materials to preverbal focus only or canonical focus-bearing structures. Kamali (2014), for example, only investigated canonical SOV focus-bearing structures, rendering narrow object focus to be at the immediately preverbal position while narrow subject focus is peripheral. Similarly, the production and perception study by İpek (2011) was also limited to canonical structures. İvoşević and Bekâr (2015), on the other hand, studied immediately preverbal focus only, with narrow object focus being in canonical SOV structures and narrow subject focus being in non-canonical OSV sentences. Even more restrictive, Gürer (2020) investigated acoustic effects of immediately preverbal narrow object focus only in SOV structures. While the comparison of prosodic focus size realisations in Turkish is, indeed, inherently limited to canonical structures, with broad sentence focus only realised in such structures, narrow focus targets can also be compared in the immediately preverbal as well as the peripheral position. Below, we present our major conclusions regarding the acoustic effects of focus realisation in Turkish.

4. *Significant acoustic correlates of focus size (broad sentence focus vs narrow constituent focus) and focus target (narrow subject focus vs narrow object focus) in fundamental frequency and intensity were observed in the forms of focal boost, postfocal deaccentuation, and the presence or absence of a phrase-final rise in the sentence-initial word.*

To briefly recapitulate the general realisation of focus in Turkish pitch, Kamali (2014) argues that pitch tracks of broad foci and immediately preverbal object foci are very much alike, with a rise on the final syllable of the prenucleus which is absent in the focused nucleus. Also, the nucleus is lower in pitch compared to the postnucleus. Given that Kamali only considered in-situ focus in canonical structures, we further argued that the same pattern holds for immediately preverbal narrow subject focus. In comparison, peripheral (i.e., sentence-initial) narrow subject focus does not bear the rise on the final syllable that is otherwise present on the syntactic, non-focused subject in sentences with immediately preverbal narrow object focus and broad focus, as described by Kamali. Extending this description, we have argued that peripheral narrow object focus differs in this regard, bearing this word-final rise. As described by Kamali, it is the deaccentuation of postfocal elements that renders narrow peripheral foci prosodically prominent.

While the description above is essential in describing the default (i.e., broad focus) and narrow focal pitch contours in Turkish, it is descriptive in nature rather than quantificational. As such, we have briefly reviewed three experimental stud-

ies on the acoustic correlates of focus in Turkish in chapter 3. Briefly summarised, Gürer (2020) did not observe any differences in  $f_0$  or duration between broad foci and narrow, immediately preverbal object foci. Similarly, İvoşeviç and Bekâr (2015) did not observe differences in  $f_0$  or intensity between broad and immediately preverbal narrow subject and object foci, while they did observe word duration to be prolonged on the new-information focused object compared to the object in broad focus. Going beyond the immediately preverbal position, İpek (2011) found no differences between immediately preverbal narrow object foci and broad foci in  $f_0$ , intensity, or duration. However, peripheral narrow subject focus is realised with a longer duration of the focused word and lower postfocal  $f_0$  and intensity compared to broad focus (İpek, 2011).

Although İpek's work, in particular, investigated peripheral as well as immediately preverbal foci in Turkish, the few other experimental investigations on the prosodic realisation of focus in Turkish elicited immediately preverbal foci only (see Gürer, 2020; İvoşeviç & Bekâr, 2015). As such, the question remains, how non-immediately preverbal focus in Turkish is realised prosodically. In other words, if focus is not restricted to the immediately preverbal position (see above), a complete picture of phonetic focus realisation in Turkish must include all focus targets in all preverbal positions. To this end, we investigated acoustic focus size and focus target correlates in  $f_0$  and intensity within the syntactically variable focus realisations obtained in the production experiment presented in chapter 3.

For focus size, the comparison of narrow immediately preverbal object focus answers ( $SO_{FOC}V$ ) to broadly focused answers revealed that the narrowly focused object is realised with lower maximum and minimum  $f_0$ , as well as lower maximum  $f_0$  on the postfocal verb. Peripheral narrow subject focus ( $S_{FOC}OV$ ), on the other hand, is realised without a final rise on the initial word (i.e., lower maximum  $f_0$ ), while such a rise is present in broadly focused answers. Peripheral narrow subject focus is further realised with postfocal deaccentuation on the syntactic object (i.e., lower maximum and minimum  $f_0$ ) compared to broad focus. Regardless of focus target, narrow focus is realised with higher minimum intensity on the focused word and lower maximum intensity in pre- and postfocal words when compared to broad focus.

Comparing focus targets, differentiating peripheral and immediately preverbal narrow subject and narrow object foci, we also observed acoustic correlates in  $f_0$  and intensity. In canonical SOV answers, peripheral narrow subject focus ( $S_{FOC}OV$ ) lacks the word-final rise in the initially focused word compared to immediately preverbal narrow object focus ( $SO_{FOC}V$ ), akin to what was described

for focus size. Peripheral subject focus is also realised in postfocal deaccentuation (i.e., lower maximum and minimum  $f_0$ ) of the syntactic object compared to immediately preverbal object focus. In intensity, the peripheral subject focus is marked by increased maximum and minimum intensity, while the postfocal syntactic object and verb bear lower maximum intensity compared to immediately preverbal object focus. In non-canonical OSV answers, the immediately preverbal subject focus ( $OS_{FOC}V$ ) is realised through focal boost (i.e., higher maximum and minimum  $f_0$ ) compared to peripheral object focus ( $O_{FOC}SV$ ), with no difference regarding the final rise in the initial word. The immediately preverbal subject focus further bears higher maximum intensity compared to peripheral object focus, while the initial syntactic object is realised with lower maximum intensity. Overall, peripheral subject focus deletes the typical final rise of the initial subject as well as deaccentuating immediately postfocal words, while immediately preverbal (subject) focus is marked by focal boost.

Lastly, it was highlighted in chapter 3 that the observation of systematic acoustic correlates does not indicate that these focus conditions are differentiable by listeners. Notably, it remains to be investigated whether broad and (object) narrow foci are interchangeable. While İpek's emphasis identification task indicates this not to be the case, we suggested that mismatch judgments akin to our investigation of prosodic focus type realisations described below is to be conducted.

5. *No acoustic correlates of focus type in simple, three-word transitive structures were observed. Furthermore, such focus type realisations proved interchangeable with mismatch not leading to lower judgment rates or processing speeds.*

In line with the analysis of Özge and Bozşahin (2010), we have seen that new-information focus is neither restricted to nor preferred at the immediately preverbal position, providing evidence for what we called the focus field assumption, discarding the idea of underlying syntactic strategies in Turkish focus (type) realisation. However, Özge and Bozşahin also predict that focus types in Turkish are differentiated prosodically in the form of postfocal deaccentuation associated with contrastive foci due to their contextual narrowness. This prediction was previously investigated by İvoşeviç and Bekâr (2015) and Gürer (2020), comparing contrastive foci elicited by corrective exchanges and new-information foci elicited by open and additive questions, respectively. Ultimately, neither of these studies observed acoustic correlates of focus type in  $f_0$ , intensity, and duration. To contribute further data to this question of prosodic focus type realisation in Turkish, we also investigated the prosodic realisation of focus type, comparing contrastive foci to new-information foci in  $f_0$  and intensity, akin to our analysis of focus position and focus target. Below, we outline our findings, leading us to the major

conclusion that focus type is not realised prosodically in simple, three-word transitive structures.

Contrary to our conclusion at first consideration, we did observe effects in our focus type models in the form of higher maximum  $f_0$  at sentence-initial words and higher minimum intensity of the syntactic subject irrespective of its position for corrective foci. However, we argued that these effects are not systematic and not clearly associable with focus type itself, mainly as no interaction with focus position was present across all models. Therefore, the observed effects do not relate to whether the word in question is focused or not. To provide further evidence for this 'zero' understanding of the observed effects, we raised the question of whether listeners perceive focus type mismatch in Turkish. The prediction was that if focus type is not realised prosodically, as we argued in chapter 3, no such processing difficulties should arise when focus type is mismatched (i.e., new-information questions paired with contrastive focus answers and vice-versa). If processing disruptions arise in focus type mismatched question-answer pairs, an effect of focus type on prosody must be assumed. We investigated these predictions in our timed acceptability judgment task provided in chapter 4, where we assumed that lower acceptability judgments and/or higher judgment speeds indicate processing disruptions. Importantly, our results showed no effect of focus type mismatch on acceptability judgments or judgment speeds, lending evidence for our understanding that there are no acoustic effects systematically associated with focus type in Turkish.

One caveat to our finding of no focus type mismatch effects in chapter 4 is that such a mismatch was realised by interchanging new-information foci elicited by open *wh*-questions with contrastive foci elicited by closed *wh*-question only. Crucially, this restriction is a consequence of a secondary analysis conducted in the context of focus type: contrastive sub-type. Consider that there is some disagreement in the literature surrounding the question of whether closed *wh*-questions trigger contrastive foci or not, while it is generally agreed upon that corrective exchanges do so (see Krifka & Musan, 2012; Neeleman & Vermeulen, 2013; Samek-Lodovici, 2018). Thus, we conducted exploratory analyses in chapter 3 investigating whether answers triggered by closed *wh*-questions and corrective questions differ acoustically and/or in word order. Our results showed no effect on word order and only non-systematic effects on  $f_0$  and intensity similar to what was described for focus type overall. Similar to our findings regarding focus type, we argued that the observed effects do not clearly indicate perceivable prosodic differences regarding contrastive sub-type (i.e., question type in the analysis), especially as focus position only partially interacted with contrastive sub-type.



Thus, we investigated contrastive sub-type mismatch in chapter 4, with the prediction being that processing disruptions should arise if focus-bearing answers elicited by closed *wh*-questions are prosodically differentiable from ones elicited by corrective questions. Our results did not show an effect of contrastive sub-type mismatch on acceptability judgments or judgement speeds, providing evidence for our conclusion that there is no prosodic realisation of contrastive sub-type in Turkish. Nevertheless, it should be noted that it remains unclear whether a mismatch between new-information and contrastive focus elicited by corrective questions disrupts processing, with further research needed on this question.

### **6.3 Limitations and future directions**

As the central aim of this dissertation, we have experimentally investigated the language-specific means involved in Turkish focus realisation. As such, our particular findings, like the observed acoustic correlates of focus size and focus target, are first and foremost informative for Turkish. Nevertheless, we believe the approach of experimentally testing theoretical presumptions regarding focus realisation to be crucial in relation to focus research in general. For close to four decades, if we consider Erguvanlı's (1984) seminal work as a starting point, the idea of an immediately preverbal focus position in Turkish has persisted in focus research. However, little experimental research has been conducted in this regard. Furthermore, the existing work is directly limited by the debate, investigating immediately preverbal foci or canonical focus-bearing structures only. Although the question of how focus realisation in Turkish is accomplished is not at the forefront of interest in IS and focus research in general, the scientific development in Turkish is indicative of the issues surrounding IS in general: insufficient definitions ranging from the notion of focus to the concept of focus position, incoherent definitions of sub-concepts such as focus type or focus position, and substantial differences in elicitation materials. While we do not claim in any way that the approach presented in this dissertation is the only correct or absolute one, it was highlighted repeatedly that systematic experimental investigations are needed. Such experimental work must be based on a modern and coherent framework of focus and IS (see Benatar & Clifton, 2014). We believe that long-standing points of disagreement regarding focus and its realisations across languages can be resolved through careful and repeated experimental investigations, ultimately advancing the field of information structure as a whole. Although the present dissertation does not contribute to focus research in a language like, for example, English, we consider it to be such an effort to resolve a persistent point

of disagreement in Turkish focus research in the form of the syntactic means of focus realisation and the supposed immediately preverbal focus position.

In the course of this dissertation, we have highlighted multiple open questions to be addressed in future research on Turkish. While we have investigated the interchangeability of focus-bearing constructions regarding focus type in chapter 4, an important question that has received little experimental attention is whether broad and narrow object foci are also interchangeable. In other words, it is to be determined whether the acoustic correlates of focus size observed in chapter 3 of this dissertation are (categorically) perceivable by listeners. Another issue that we have raised are the roles of word order and givenness in thematic role assignment. While it was speculated that the use of reversible transitive verbs might lead to a preference for the given-new order that, in turn, might be confused as evidence for the supposed immediately preverbal focus position, further research on this question is needed. There is evidence suggesting that word order and givenness, both of which are of importance to focus positioning, to be involved in thematic role assignment with reversible (complex) SOV, OVS, and complex OSV structures (see Batmanian & Stromswold, 2020; Kahraman & Hirose, 2018). However, it remains unclear whether the same applies to simple (i.e., without embedded structures) SOV and OSV structures such as the ones applied throughout this dissertation. Lastly, it was left unclear to which degree givenness is involved in Turkish focus processing. Thus, one aspect to be investigated is the disentanglement of focus and givenness by future investigations, for example, following the experimental paradigm by Benatar and Clifton (2014).

Besides the remaining questions mentioned above, we identified some limitations of the presented experiments that future research should address. First and foremost, the present dissertation only investigated transitive answers without postverbal elements. This limited our conclusions, especially regarding the postfocal deaccentuation as presumed by Özge and Bozşahin (2010). Another aspect limiting the generalisability of our findings is that our materials were always overtly marked for case. In Turkish, the object of a verb may lack case marking, rendering it a so-called *bare object*. Bare objects in Turkish are necessarily non-specific and do not establish discourse reference (see Özsoy, 2019 and citations therein). Most importantly in relation to word order and this dissertation, bare objects are not as free regarding movement as are case-marked objects. While it has been demonstrated that bare objects may also occur ex-situ (i.e., out of the immediately preverbal position), this appears to be highly context-specific, rendering bare objects generally in-situ (see Gračanin-Yüksek & İşsever, 2011). Given this behaviour, specific patterns of focus realisation in word order may arise when

### 6.3. *Limitations and future directions*

bare objects are involved (e.g., a subject focus may be required to remain in-situ when contained in a sentence with a bare object because the bare object may be necessarily in the immediately preverbal position). As such, our results should only be understood in the restricted syntax investigated. Given the restrictions regarding in-person testing during the creation of this dissertation, the perception and processing experiments in chapters 4 and 5 had to be conducted over the internet. In-lab verification of these results is needed considering the unsupervised nature of our experiments. In general, limitations arising from the need to conduct the experiments over the internet restricted possibilities, particularly regarding the processing experiment. Although at the cost of naturalness, more sensitive methodologies such as eye-tracking are needed to determine the presence or absence of finer-grained effects of focus position, focus type, focus target, and syntactic function.

In summary, this dissertation presents experimental data to the advancement of focus research in Turkish, providing no evidence for the assumption of an immediately preverbal focus position. Furthermore, this is the first systematic experimental investigation to include focus type as a focal dimension in order to resolve the questions surrounding the dual assumption of focus realisation in Turkish, ultimately providing no evidence for any syntactic realisation of focus type. Conducted in parallel but without direct interaction during the conduction of this dissertation's experiments, Uzun and colleagues (2021) tackled many of the questions raised in this dissertation, displaying that these issues require experimental contributions. Especially considering that we observed divergent results in acceptability and processing of syntactically variable Turkish foci in chapters 4 and 5 compared to Uzun et al.'s work, there is a clear need for further data. We hope this dissertation encourages further experimental work on the issue of focus in Turkish, as well as potential investigations in other IS aspects.



# Summary

The main goal of this dissertation is to experimentally investigate how focus is realised, perceived, and processed by native Turkish speakers, independent of preconceived notions of positional restrictions. Specifically, we were interested in how the focus dimensions such as *focus size* (comparing narrow constituent and broad sentence focus), *focus target* (comparing narrow subject and narrow object focus) and *focus type* (comparing new-information and contrastive focus) affect Turkish focus realisation and, in turn, focus comprehension when speakers are provided syntactic freedom to position focus as they see fit. To provide data on these core goals, we presented three behavioural experiments during this dissertation: (i) a production task with trigger *wh*-questions and contextual animations manipulated to elicit the focus dimensions of interest, (ii) a timed acceptability judgment task in listening to the recorded answers in our production task, and (iii) a self-paced reading task to gather on-line processing data.

**Chapter 1** presents the general introduction to this dissertation, outlining the existing issues and scientific debates surrounding focus in the Turkish language that motivated this project. In particular, it is argued that two factors led to the stagnant literature on focus in Turkish: the lack of clearly defined, modern understandings of information structure and its fundamental notion of focus, and the ongoing and ill-defined debate surrounding the question of whether there is an immediately preverbal focus position in Turkish. These issues also gave rise to specific research questions addressed across our three experiments, which are gathered in the general introduction. Finally, the structure of this dissertation was presented.

**Chapter 2** describes a systematic framework of information structure and its notions. Drawing primarily from the foundational work by Krifka and Musan (2012) and the understanding of information structure based on Chafe (1976), the basic notions of focus, topic, and givenness are defined and illustrated in examples. Cross-linguistic prosodic, syntactic, and morphological patterns of realisation for each of these notions are presented, with an emphasis on (i) the underdefined means of realisation, and (ii) the realisation of focus in its dimensions of focus size, focus target, and focus type. Based on the work of Samek-Lodovici (2018), the framework was further extended by incorporating the notion

of contrast as defined by Neeleman and Vermeulen (2013), which differs from the framework of Krifka and Musan in terms of the consideration of closed *wh*-questions to trigger contrastive foci akin to corrective exchanges, rather than a distinct focus type based on alternative set size.

**Chapter 3** represents a production study with native speakers of Turkish, eliciting focus-bearing answers to manipulated *wh*-questions and contextual animations. While general patterns of focus realisation are outlined in chapter 2, the literature on the means of focus realisation in Turkish is reviewed in the introduction of chapter 3. This chapter highlights the lingering question of whether the immediately preverbal position in Turkish is a strict focus position, a general focally loaded position, a focus type loaded position, or whether no syntactic strategies are involved in Turkish focus realisation. As such, this study aimed to investigate how native speakers realise focus (type) when provided with structural freedom, given the pragmatically driven and highly variable word order of Turkish. The second aim of the production experiment was to investigate prosodic focus realisation in Turkish by analysing the acoustic correlates in fundamental frequency and intensity in the recorded answers and contributing data to the few existing experimental investigations presented in the literature review of chapter 3. The results of the production experiment showed that there is **no strict restriction of focus to the immediately preverbal position** and **no effect of focus type on word order in Turkish**. While narrow object focus is correlated with the immediately preverbal position, it was argued that this is a canonicity effect, with no grounds to assume an underlying syntactic focus strategy. Prosodically, this experiment is the first of its kind to find **systematic acoustic correlates of focus size**. This study also provides **systematic acoustic correlates of focus target in Turkish**. In line with the literature, **no systematic acoustic effects of focus type** were observed. Ultimately, it was argued that perception and processing studies are needed to validate observed syntactic and prosodic effects, or their absence, in focus realisation, especially when considering them as preferences (i.e., loaded constructions) rather than syntactic necessities.

Given the need for perception studies on syntactically variable focus realisation in Turkish raised in chapter 3, **chapter 4** aimed to investigate the perception in listening to the focus-bearing answers recorded in the production study. A timed yes/no acceptability judgment task in listening was conducted over the internet. The perception experiment revolved around three predictions: (i) if the immediately preverbal position in Turkish is focally loaded, focus realised at other positions should lead to perception cost in the form of lower judgments and/or judgment speeds, (ii) if the immediately preverbal position in Turkish

is preferred for new-information focus, peripherally realised new-information foci should cause perception cost, and (iii) if focus type in Turkish is realised prosodically, question-answer pairs mismatched for focus type should lead to perception costs. Our results showed that **focus at the peripheral position is not judged as less acceptable or is accepted slower than immediately preverbal focus in Turkish**, providing evidence against the consideration of an immediately preverbal focally loaded position. Similarly, **new-information focus at the peripheral position was not judged as less acceptable or was accepted slower than new-information focus at the immediately preverbal position**, lending evidence against the assumption that focus type realisation in Turkish involves syntactic means. Lastly, **focus type mismatch did not lead to reduced acceptability judgments or judgment speeds**, confirming the assumption that focus type is not perceivably realised in prosody. Additionally, a preference for contrastive focus through quicker judgments speeds was observed when compared to new-information focus. This was attributed to the confounding factor of givenness in closed *wh*-questions triggered by contrastive focus. Preference for narrow subject focus over object focus in acceptability judgments was considered attributable to the crucial role word order plays in Turkish thematic role assignment.

To investigate how syntactically variable focus-bearing structures are processed at each element, **chapter 5** comprehends a self-paced reading experiment. Building on the only study of its kind by Uzun and colleagues (2021), the prediction was that processing cost in the form of longer reading times are to be expected if the immediately preverbal position is focally loaded. As the first study to do so, the processing study presented here extended the design by Uzun et al. to incorporate focus type, comparing non-given new-information focus and given contrastive focus elicited by closed *wh*-questions. Akin to the perception study in chapter 4, our results did not display processing disruptions in (new information) focus at the peripheral position, providing evidence against the assumption of a focally loaded or focus type loaded position in Turkish. A facilitating effect of given contrastive focus was observed only in the spill-over region of the verb. Contrary to the perception study in chapter 4, given contrastive foci also had a higher probability of being judged as acceptable in addition to being judged as acceptable faster compared to non-given new-information foci. Considering that givenness was controlled in chapter 5 by eliciting contrastive foci through closed questions only, this lends further evidence for the assumption that it is the givenness that facilitates the processing of the contrastive foci rather than focus type itself.

**Chapter 6** concluded this dissertation by elaborating on its major findings from each of the experiments. Firstly, this dissertation demonstrated empirically that there is no focus position in Turkish, neither in the sense of a strict focus position language nor as a focally loaded position facilitating focus perception and/or processing. While focus is, in fact, syntactically variable in the Turkish preverbal area, this is a consequence of movement triggered by other IS aspects like topicalisation and backgrounding, and the observational markedness of narrow subject focus compared to narrow object focus. As for focus type in Turkish, this dimension is not associated with word order in production, perception, or processing. Significant acoustic correlates of focus size (broad sentence focus vs narrow constituent focus) and focus target (narrow subject focus vs narrow object focus) were observed in fundamental frequency and intensity, representing focal boost, (postfocal) deaccentuation, and the presence or absence of a phrase-final rise in the prenucleus, while the perceivability of these effects remains to be investigated. In contrast, no acoustic correlates of focus type in simple, three-word transitive structures were observed, with focus types being interchangeable in mismatched question-answer pairs. Overall, the findings of this dissertation highlight the need for experimental investigations regarding focus in Turkish, as theoretical predictions do not necessarily align with experimental data. As such, the fallacy of implying causation from correlation should be strictly kept in mind, especially when constructions coincide with canonical structures, such as the immediately preverbal position in narrow object foci. Finally, numerous open questions remain to be explored, especially as focus and word order in Turkish are multifaceted. As shown, givenness is a confounding factor when investigating focus types, while thematic role assignment potentially confounds word order preferences. Further research based on established, modern information structure frameworks is needed, with chapter 5 concluding with specific recommendations for such future research.



# Deutsche Zusammenfassung

Das Hauptziel dieser Dissertation war die experimentelle Untersuchung, wie Muttersprachler des Türkischen Fokus realisieren, wahrnehmen und sprachlich verarbeiten, unabhängig von vorgefassten Meinungen betreffend Positionsbeschränkungen. Insbesondere lag das Interesse darauf, wie die Fokusdimensionen *Fokusgröße*, der Vergleich von schmalem Fokus (narrow focus) auf der Konstituente und breitem, projiziertem Fokus (broad focus) auf dem Satz, *Fokusziel*, der Vergleich von schmalem Subjektfokus und Objektfokus, und *Fokustyp*, der Vergleich von Fokus auf neuer Information (new-information focus) und Kontrastfokus, die Fokusrealisierung und -wahrnehmung im Türkischen beeinflussen, wenn den Sprechern syntaktische Freiheit gegeben wird Fokus nach Belieben im Satz zu positionieren. Im Rahmen dieser Dissertation wurden drei Verhaltensexperimente präsentiert, um Daten zu diesen Kernzielen vorzulegen: (i) ein Produktionsexperiment mit Fragen und kontextbezogenen Animationen als Trigger manipuliert, um die obengenannten Fokusdimensionen zu untersuchen, (ii) ein zeitlich gemessenes Akzeptanzexperiment (timed acceptability judgment task) beim Anhören der Antworten aufgezeichnet in unserem Produktionsexperiment und (iii) ein selbstbestimmtes Leseexperiment (self-paced reading task) zur Untersuchung der sprachlichen Verarbeitung (on-line language processing).

**Kapitel 1** präsentierte die allgemeine Einführung zu dieser Dissertation und skizzierte die bestehenden Probleme und Debatten rund um Fokus im Türkischen, die dieses Projekt motivierten. Insbesondere haben wir hier argumentiert, dass zwei Faktoren zu der stagnierenden Forschung zum Thema Fokus im Türkischen beitrugen: Das Fehlen eines klar definierten modernen Verständnisses der Informationsstruktur und ihres grundlegenden Begriffs von Fokus und die anhaltende und unklare Debatte um die Frage, ob es im Türkischen eine unmittelbar präverbale Fokusposition gibt. Diese Fragen führten auch zu den jeweiligen Forschungsfragen, die in den drei Experimenten behandelt wurden und die in der allgemeinen Einführung zusammengefasst wurden. Abschließend wurde der Aufbau dieser Dissertation vorgestellt.

**Kapitel 2** präsentierte einen systematischen theoretischen Rahmen der Informationsstruktur und ihrer Begriffe. Ausgehend von den Grundlagenarbeiten von Krifka und Musan (2012) und dem Verständnis der Informationsstruktur nach

Chafe (1976) wurden die Grundbegriffe Fokus, Topik und Gegebenheit (engl. *givenness*) definiert und an Beispielen illustriert. Sprachübergreifend wurden die prosodischen, syntaktischen und morphologischen Realisierungsmechanismen dieser Begriffe vorgestellt, mit Schwerpunkt auf (i) der Ambiguität dieser Realisierungsmuster und (ii) der Realisierung Fokusdimensionen in Fokusgröße, Fokusziel und Fokustyp. Basierend auf der Arbeit von Samek-Lodovici (2018) wurde dieser theoretische Rahmen mit dem Kontrastbegriff nach Neeleman und Vermeulen (2013) erweitert. Dieser Zugang zu Kontrast(-fokus) beschreibt geschlossene Alternativfragen als Auslöser für Kontrastfokus, ähnlich korrigierender Austausch, während Fokuse in Antworten zu geschlossenen Fragen im theoretischen Rahmen von Krifka und Musan einen bestimmten Fokustyp basierend auf Alternativsetgröße darstellen.

**Kapitel 3** präsentierte eine Produktionsstudie mit türkischen Muttersprachlern, in der fokusbeinhaltende Antworten durch manipulierte Fragen und kontextbezogene Animationen ausgelöst wurden. Während in Kapitel 2 das allgemeine Muster der Fokusrealisierung skizziert wurde, wird die Literatur zu den Mitteln der Fokusrealisierung im Türkischen in der Einleitung von Kapitel 3 rezensiert. Dabei wurde die nach wie vor offene Frage hervorgehoben, ob die unmittelbar präverbale Position im Türkischen eine strikte Fokusposition, eine allgemein fokal geladene Position oder eine Fokustyp geladene Position, ist oder ob keine syntaktischen Strategien in der Fokusrealisierung im Türkischen involviert sind. Als solches zielte diese Studie darauf ab, zu untersuchen, wie Muttersprachler des Türkischen strukturell freien Fokus(typ) realisieren, in Anbetracht der pragmatisch getriebenen und sehr variablen Wortstellung im Türkischen. Das zweite Ziel des Produktionsexperiments war es, die prosodische Fokusrealisierung im Türkischen durch die Analyse der aufgezeichneten Antworten betreffend der akustischen Korrelate in Grundfrequenz und Intensität zu untersuchen. Dadurch sollten Daten zu den wenigen existierenden experimentellen Untersuchungen beigetragen werden, die in der Literaturübersicht von Kapitel 3 vorgestellt wurden. Die Ergebnisse des Produktionsexperiments zeigten, dass es keine strikte Beschränkung des Fokus auf die unmittelbar präverbale Position und keinen Einfluss des Fokustyps auf die Wortstellung im Türkischen gibt. Während schmaler Objektfokus mit der unmittelbar präverbalen Position korreliert ist, wurde argumentiert, dass dies ein Kanonizitätseffekt ist und kein Grund zur Annahme einer zugrunde liegenden syntaktischen Fokusstrategie vorliegt. Prosodisch ist dieses Experiment das erste seiner Art, das systematische akustische Korrelate der Fokusgröße aufweist und auch systematische akustische Korrelate des Fokusziels im Türkischen liefert. In Übereinstim-

mung mit der existierenden Literatur wurden keine systematischen akustischen Korrelate des Fokustyps beobachtet. Letztlich wurde jedoch argumentiert, dass Wahrnehmungs- und Verarbeitungsstudien erforderlich sind, um die beobachteten syntaktischen und prosodischen Effekte beziehungsweise ihr Fehlen in türkischer Fokusrealisierung zu validieren, insbesondere wenn diese Effekte als Präferenzen (fokal geladene Konstruktionen) und nicht als syntaktische Notwendigkeiten betrachtet werden.

Angesichts des in Kapitel 3 angesprochenen Bedarfs nach Wahrnehmungsstudien in syntaktisch variablen Fokusrealisierung im Türkischen zielte **Kapitel 4** darauf ab, die Wahrnehmung beim Hören der in der Produktionsstudie aufgezeichneten fokustragenden Antworten zu untersuchen. Ein Ja/Nein-Akzeptanzexperiment mit Zeitmessung beim Zuhören wurde über das Internet durchgeführt. Das Wahrnehmungsexperiment drehte sich um drei Vorhersagen: (i) wenn die unmittelbar präverbale Position im Türkischen fokal geladen/prädestiniert ist, sollte Fokus an anderen Positionen Wahrnehmungskosten in Form von geringerer Akzeptanz und/oder tieferen Akzeptanzgeschwindigkeiten führen, (ii) wenn die unmittelbar präverbale Position im Türkischen für Fokus auf neuer Information bevorzugt wird, sollte peripher realisierte Fokus auf neuer Information Wahrnehmungskosten verursachen, und (iii) wenn Fokustyp im Türkischen prosodisch realisiert wird, sollten Frage-Antwort-Paare, die für Fokustyp nicht übereinstimmen, zu Wahrnehmungskosten führen. Die Ergebnisse zeigten, dass Fokus an der peripheren Position im Türkischen nicht als weniger akzeptabel oder langsamer als akzeptabel beurteilt wird, verglichen mit unmittelbar präverbalem Fokus, was gegen das Verständnis einer unmittelbar präverbalen fokal belasteten Position spricht. Ebenfalls wurde Fokus auf neuer Information an der peripheren Position nicht als weniger akzeptabel oder langsamer als akzeptabel beurteilt verglichen mit Fokus auf neuer Information in der unmittelbar präverbalen Position, was gegen die Annahme spricht, dass die Realisierung des Fokustyps im Türkischen syntaktische Mittel erfordert. Schließlich führten Frage-Antwort-Paare mit nicht übereinstimmendem Fokustyp nicht zu verringerter Akzeptanz oder langsameren Akzeptanzgeschwindigkeiten, was mit der Annahme übereinstimmt, dass der Fokustyp prosodisch nicht wahrnehmbar realisiert wird. Darüber hinaus wurde eine Präferenz für Kontrastfokus durch schnellere Akzeptanzgeschwindigkeiten verglichen mit Fokus auf neuer Information beobachtet. Dies wurde der Gegebenheit von Kontrastfokus zugeschrieben, wenn geschlossene Alternativfragen diesen Kontrastfokus auslösen. Eine weitere Präferenz für schmalen Subjektfokus gegenüber Objektfokus in Akzeptanz wurde der Rolle der Wortstellung im Türkischen bezüglich thematischer Rollen zugeschrieben.

Um zu untersuchen, wie syntaktisch variable, fokustragende Strukturen per Wort verarbeitet werden, präsentierte **Kapitel 5** ein selbstbestimmtes Leseexperiment. Aufbauend auf der einzigen Studie dieser Art von Uzun et al. (2021) wurde prognostiziert, dass eine fokal geladene unmittelbar präverbale Position zu Verarbeitungskosten in Form längerer Lesezeiten führen sollte. Die hier vorgestellte Verarbeitungsstudie ist die erste ihrer Art, die den Faktor Fokustyp in das Design von Uzun et al. integriert. Als solches wurde nicht gegebener Fokus auf neuer Information mit gegebenem Kontrastfokus in Antworten zu geschlossenen Alternativfragen verglichen. Ähnlich der Wahrnehmungsstudie in Kapitel 4 zeigten die Ergebnisse keine Verarbeitungsbeeinträchtigungen für Fokus (neuer Information) an der peripheren Position, was weitere Beweise gegen die Annahme einer fokus- oder fokustypgeladenen Position im Türkischen liefert. Eine präferenzielle Wirkung in Kontrastfokus wurde in der Spillover-Region des Verbs beobachtet. Im Gegensatz zur Wahrnehmungsstudie in Kapitel 4 hatte gegebener Kontrastfokus auch eine höhere Wahrscheinlichkeit, als akzeptabel beurteilt zu werden, und sie wurden im Vergleich zu nicht gegebenem Fokus auf neuer Information schneller als akzeptabel beurteilt. Wenn man bedenkt, dass Gegebenheit in Kapitel 5 dadurch kontrolliert wurde, dass Kontrastfokuse nur durch geschlossene Fragen hervorgebracht wurden, liefert dies weitere Beweise für die Annahme, dass es Gegebenheit ist, die die sprachliche Verarbeitung in Kontrastfokus erleichtert und nicht Fokustyp selbst.

**Kapitel 6** schloss diese Dissertation mit der Ausarbeitung der wichtigsten Ergebnisse für jedes der Experimente ab. Diese Dissertation hat zum einen empirisch nachgewiesen, dass es im Türkischen keine Fokusposition gibt, weder im Sinne einer strikten Fokusposition noch als fokal geladene Position, die die Fokuswahrnehmung und/oder -verarbeitung erleichtert. Während Fokus im türkischen präverbalen Bereich tatsächlich syntaktisch variabel ist, ist dies eine Folge syntaktischer Strategien anderer IS-Aspekte, wie etwa Topikalisierung und Hintergrundbildung (backgrounding), wie auch die additive Kennzeichnung schmaler Subjektfokuse im Vergleich zum Objektfokus. Was Fokustyp im Türkischen betrifft, ist diese Fokusdimension nicht mit Wortstellung in Produktion, Wahrnehmung oder Verarbeitung assoziiert. Signifikante akustische Korrelate der Fokusgröße (breiter Satz- vs. schmalen Konstituentenfokus) und Fokusziel (schmaler Subjekt- vs. schmalen Objekt-) in Grundfrequenz und Intensität in Form von Fokusverstärkung (focal boost), (postfokaler) Deakzentuierung und dem Vorhandensein oder Fehlen eines phrasenfinalen Anstiegs im Pränukleus wurden beobachtet, während die Wahrnehmbarkeit dieser Effekte noch zu untersuchen ist. Im Gegensatz dazu wurden keine akustischen Korrelate für Fokustyp in sim-

plen transitiven Dreiwortstrukturen beobachtet, wobei Fokustypen in nicht übereinstimmenden Frage-Antwort-Paaren austauschbar waren. Insgesamt unterstreichen die oben skizzierten Ergebnisse dieser Dissertation die Notwendigkeit experimenteller Untersuchungen zu Fokus im Türkischen, da theoretische Vorhersagen nicht immer mit experimentellen Daten übereinstimmen. Der Trugschluss, dass Korrelation Kausalität impliziert, sollte strikt im Auge behalten werden, insbesondere wenn Konstruktionen mit kanonischen Strukturen übereinstimmen, wie etwa die unmittelbar präverbale Position in schmalen Objektfokussen. Schließlich sind noch zahlreiche offene Fragen zu klären, zumal Fokus und Wortstellung im Türkischen vielfältig sind. Wie in dieser Dissertation gezeigt wurde, ist Gegebenheit ein Störfaktor in der Untersuchung von Fokustypen. Ebenfalls ist zu vermuten, dass thematische Rollenzuweisung im Türkischen Präferenzen in Wortstellung hervorrufen können, die als Fokuseffekte fehlinterpretiert werden könnten. Weitere Forschung auf der Grundlage etablierter theoretischer Informationsstrukturrahmen ist erforderlich. Kapitel 5 schließt mit konkreten Empfehlungen für solche zukünftigen Untersuchungen ab.



# Appendix A

## Appendices from chapter 3

### A.1 Experimental questions

BROAD FOCUS QUESTION(S) (N = 24)

(3.1) *Animasyonda ne oluyor?* 'What is happening in the animation?'

NEW-INFORMATION NARROW OBJECT FOCUS TARGET WITH  
IN-SITU SOV OPEN QUESTION (N = 6)

(3.2) *Kız neyi itiyor?* 'What is the girl pushing?'

(3.3) *Hizmetçi neyi dövüyor?* 'What is the maid beating?'

(3.4) *Ateş neyi sarıyor?* 'What is the fire enveloping?'

(3.5) *Kadın neyi sıvıyor?* 'What is the woman plastering?'

(3.6) *Aşçı neyi döküyor?* 'What is the chef pouring (away)?'

(3.7) *Çocuk neyi tanıyor?* 'What is the child familiar with?'

NEW-INFORMATION NARROW OBJECT FOCUS TARGET WITH  
EX-SITU OSV OPEN QUESTION (N = 6)

(3.8) *Neleri kız diziyor?* 'What is the girl arranging?'

(3.9) *Neyi tamirci kısıyor?* 'What is the mechanic turning down?'

(3.10) *Neyi kadın açıyor?* 'What is the woman opening?'

(3.11) *Neyi çocuk dinliyor?* 'What is the child listening to?'

(3.12) *Neyi adam asıyor?* 'What is the man hanging up?'

(3.13) *Neyi köpek dağıtıyor?* 'What is the dog disarranging?'

Appendix A. Appendices from chapter 3

NEW-INFORMATION NARROW SUBJECT FOCUS TARGET WITH  
IN-SITU SOV OPEN QUESTION (N = 6)

- (3.14) *Kim bıçağı biliyor?* 'Who is sharpening the knife?'  
(3.15) *Kim ilanı yazıyor?* 'Who is writing the ad/announcement?'  
(3.16) *Kim yayı geriyor?* 'Who is stretching the spring?'  
(3.17) *Kim otoyolu kapatıyor?* 'Who is closing the motorway?'  
(3.18) *Kim koyunu kırıyor?* 'Who is sheering the sheep?'  
(3.19) *Kim aileyi kurtarıyor?* 'Who is rescuing the family?'

NEW-INFORMATION NARROW SUBJECT FOCUS TARGET WITH  
EX-SITU OSV OPEN QUESTION (N = 6)

- (3.20) *Gazeteyi kim okuyor?* 'Who is reading the newspaper?'  
(3.21) *Havayı ne bozuyor?* 'What is turning the weather/air bad?'  
(3.22) *Ayasofya'yı kim çiziyor?* 'Who is drawing the Ayasofya?'  
(3.23) *Kapıyı kim siliyor?* 'Who is wiping the door?'  
(3.24) *Tosbağayı ne yeniyor?* 'What is beating the tortoise?'  
(3.25) *Cevizi ne kırıyor?* 'What is breaking the walnut?'

CONTRASTIVE NARROW OBJECT FOCUS TARGET WITH  
IN-SITU SOV CORRECTIVE QUESTION (N = 6)<sup>52</sup>

- (3.26) *Otobüs neyi eziyor? Telefonu mu veya karıncaları mı?*  
'What is the bus crushing? The telephone or the ants?'  
(3.27) *Kadın neyi deniyor? Çayı mı veya üzümle mi?*  
'What is the woman trying? The tea or the grapes?'  
(3.28) *Alman neyi süzüyor? Pirinç mi veya salatayı mı?*  
'What is the German draining? The rice or the salad?'  
(3.29) *Çiftçi neyi besliyor? Domuzu mu veya tavuğu mu?*  
'What is the farmer feeding? The pig or the chicken?'  
(3.30) *Tırtıl neyi deliyor? Çileği mi veya şeftalini mi?*  
'What is the caterpillar piercing (through)?  
The strawberry or the peach?'

<sup>52</sup> For clarification, the animation in trials with corrective questions indicated an answer **not** involving any of the provided alternatives.



(3.31) *Müzisyen neyi çalıyor? Gitarı mı veya klarneti mi?*  
'What is the musician playing? The guitar or the clarinet?'

CONTRASTIVE NARROW OBJECT FOCUS TARGET WITH  
EX-SITU OSV CORRECTIVE QUESTION (N = 6)

(3.32) *Neyi postacı iletiyor? Kartı mı veya mektubu mu?*  
'What is the postman delivering? The card or the letter?'

(3.33) *Neyi adam soyuyor? Havucu mu veya salatalığı mı?*  
'What is the man peeling? The carrot or the cucumber?'

(3.34) *Neyi bebek beğeniyor? Oyunaçtı mı veya resimi mi?*  
'What is the baby liking? The toy or the picture?'

(3.35) *Neyi köpek duyuyor? Rüzgârı mı veya treni mi?*  
'What is the dog hearing? The wind or the train?'

(3.36) *Neyi fare içiyor? Sütü mü veya Kola'yı mı?*  
'What is the mouse drinking? The milk or the cola?'

(3.37) *Neyi kadın örtüyor? Kapıyı mı veya camı mı?*  
'What is the woman covering? The door or the window?'

CONTRASTIVE NARROW SUBJECT FOCUS TARGET WITH  
IN-SITU SOV CORRECTIVE QUESTION (N = 6)

(3.38) *Kim hapı yutuyor? Hemşire mi veya çocuk mu?*  
'Who is swallowing the pill? The nurse or the child?'

(3.39) *Kim çadırı buluyor? Geyik mi veya at mı?*  
'Who is finding the tent? The deer or the horse?'

(3.40) *Kim faturayı belirliyor? Aşçı mı veya kadın mı?*  
'Who is determining the bill? The chef or the woman?'

(3.41) *Kim arabayı yıkıyor? Adam mı veya kadın mı?*  
'Who is washing the car? The man or the woman?'

(3.42) *Ne muzuyu yiyor? Papağan mı veya filmi mi?*  
'What is eating the banana? The parrot or the elephant?'

(3.43) *Kim pastayı bölüyor? Anneanne mi veya dede mi?*  
'Who is dividing the cake? The grandmother or the grandfather?'

CONTRASTIVE NARROW SUBJECT FOCUS TARGET WITH  
EX-SITU OSV CORRECTIVE QUESTION (N = 6)

- (3.44) *Evlere kim sayıyor? Polis mi veya mimar mı?*  
'Who is counting the houses? The policeman or the architect?'
- (3.45) *Torbayı kim taşıyor? Bahçıvan mı veya şoför mü?*  
'Who is carrying the sack? The gardener or the driver?'
- (3.46) *Adaleti kim savunuyor? Avukat mı veya raportör mü?*  
'Who is defending (the) justice? The lawyer or the reporter?'
- (3.47) *Çantayı kim unutuyor? Adam mı veya nine mi?*  
'Who is forgetting the bag? The man or the granny?'
- (3.48) *Susuzluğu ne gideriyor? Süt mü veya kahve mi?*  
'What is quenching (the) thirst? (The) milk or (the) coffee?'
- (3.49) *Dolabı kim ölçüyor? Eleman mı veya çocuk mu?*  
'Who is measuring the drawer? The clerk or the child?'

CONTRASTIVE NARROW OBJECT FOCUS TARGET WITH  
IN-SITU SOV CLOSED QUESTION (N = 12)

- (3.50) *Kedi neyi yalıyor? Camı mı veya patisini mi?*  
'What is the cat licking? The window or its paw?'
- (3.51) *Sınıf neyi izliyor? Belgeseli mi veya çocuğu mu?*  
'What is the class watching? The documentary or the child?'
- (3.52) *Çocuk neyi istiyor? Kavunu mu veya kurabiyeyi mi?*  
'What does the child want? The melon or the cookie?'
- (3.53) *Grup neyi basıyor? Lokantayı mı veya bakkalı mı?*  
'What is the group raiding? The restaurant or the general store?'
- (3.54) *Kunduz neyi kazıyor? Ağacı mı veya yeri mi?*  
'What is the beaver scraping off? The tree or the ground?'
- (3.55) *Çocuk neyi kaldırıyor? Ayıcığı mı veya kutuyu mu?*  
'What is the child lifting? The teddy bear or the box?'
- (3.56) *Adam neyi kuruyor? Yatağı mı veya sandalyeyi mi?*  
'What is the man assembling? The bed or the chair?'
- (3.57) *Komsu neyi yakıyor? Mangalı mı veya yaprakları mı?*  
'What is the neighbour lighting up? The barbeque or the leaves?'
- (3.58) *Aşçı neyi sıkıyor? Limonu mu veya portakalı mı?*  
'What is the chef squeezing? The lemon or the orange?'

(3.59) *Kadın neyi sürüyor? Bisikleti mi veya motosikleti mi?*  
'What is the woman driving? The bicycle or the motorbike?'

(3.60) *Şoför neyi seçiyor? Arabayı mı veya yolu mu?*  
'What is the driver selecting? The car or the road/path?'

(3.61) *Bahçıvan neyi biçiyor? Ekini mi veya çimeni mi?*  
'What is the gardener cutting? The crop or the grass?'

CONTRASTIVE NARROW OBJECT FOCUS TARGET WITH  
EX-SITU OSV CLOSED QUESTION (N = 12)

(3.62) *Kimi çocuk öpüyor? Bebeyi mi veya babasını mı?*  
'Whom is the child kissing? The baby or his/her father?'

(3.63) *Neyi çocuk atıyor? Topu mu veya frizbi'yi mi?*  
'What is the child throwing? The ball or the frisbee?'

(3.64) *Neyi yıkıcı söküyor? Camı mı veya rafı mı?*  
'What is the demolisher taking down? The window or the shelf?'

(3.65) *Neyi bankacı öneriyor? Lira'yı mı veya Avro'yu mu?*  
'What does the banker suggest? The Lira or the Euro?'

(3.66) *Neyi horoz yiyor? Elmayı mı veya fıncığı mı?*  
'What is the rooster eating? The apple or the peanut?'

(3.67) *Neyi çitici inceliyor? Domatesi mi veya marulu mu?*  
'What is the farmer inspecting? The tomato or the lettuce?'

(3.68) *Neyi dede seriyor? Kabloyu mu veya örtüyü mü?*  
'What is the grandfather spreading out? The cable or the quilt?'

(3.69) *Neleri çoban ayırıyor? Koyunları mı veya keçileri mi?*  
'What is the shepherd separating? The sheep or the goats?'

(3.70) *Neyi hindi arıyor? Palamut mu veya mısırı mı?*  
'What is the turkey searching? The acorn or the corn?'

(3.71) *Neyi adam yıkıyor? Binayı mı veya istasyonu mu?*  
'What is the man demolishing? The building or the station?'

(3.72) *Neyi kadın takıyor? Altını mı veya gümüşü mü?*  
'What is the woman putting on? The gold or the silver (bracelet)?'

(3.73) *Nelerini badici kasıyor? Bacaklarını mı veya pazılarını mı?*  
'What is the bodybuilder contracting?  
His/her legs or his/her biceps?'

CONTRASTIVE NARROW SUBJECT FOCUS TARGET WITH  
IN-SITU SOV CLOSED QUESTION (N = 12)

- (3.74) *Kim bulmacayı çözüyor? Öğrenci mi veya öğretmen mi?*  
'Who is solving the crossword puzzle? The student or the teacher?'
- (3.75) *Ne boğayı ısırıyor? Aslan mı veya timsah mı?*  
'What is biting the bull? The lion or the alligator?'
- (3.76) *Kim boruyu kesiyor? Astronot mu veya robot mu?*  
'Who is cutting the pipe? The astronaut or the robot?'
- (3.77) *Kim caddeyi geçiyor? Adam mı veya çocuk mu?*  
'Who is crossing the street? The man or the child?'
- (3.78) *Ne balığı tutuyor? Akbaba mı veya leylek mi?*  
'What is catching/holding the fish? The vulture or the stork?'
- (3.79) *Kim eti ödüyor? Adam mı veya kadın mı?*  
'Who is paying for the meat? The man or the woman?'
- (3.80) *Ne sineği yakalıyor? Örümcek mi veya kurbağa mı?*  
'What is catching the fly? The spider or the frog?'
- (3.81) *Ne kelebeği kovuyor? Ari mi veya çekirge mi?*  
'What is fending off the butterfly? The bee or the grasshopper?'
- (3.82) *Kim fidanı ekiyor? Korucu mu veya kadın mı?*  
'Who is planting the sapling? The ranger or the woman?'
- (3.83) *Ne başını eğiyor? Kurt mu veya tilki mi?*  
'What is tilting its head? The wolf or the fox?'
- (3.84) *Kim maçı düşünüyor? Antrenör mü veya oyuncu mu?*  
'Who is thinking about the game? The trainer or the player?'
- (3.85) *Kim tekerleği söküyor? Tamirci mi veya kadın mı?*  
'Who is detaching the tire? The mechanic or the woman?'

CONTRASTIVE NARROW SUBJECT FOCUS TARGET WITH  
EX-SITU OSV CLOSED QUESTION (N = 12)

- (3.86) *Uçağı kim görüyor? Kadın mı veya adam mı?*  
'Who is seeing the aeroplane? The woman or the man?'
- (3.87) *Eşığı kim seviyor? Çocuk mu veya kadın mı?*  
'Who is petting the donkey? The child or the woman?'
- (3.88) *Kaşığı kim büküyor? Goril mi veya sihirbaz mı?*  
'Who is bending the spoon? The gorilla or the magician?'

## A.1. Experimental questions

- (3.89) *Ođlanı kim uyarıyor? Annesi mi veya babası mı?*  
'Who is warning the boy? His mother or his father?'
- (3.90) *Kutuyu ne çeviriyor? Makina mı veya adam mı?*  
'What is turning the box over? The machine or the man?'
- (3.91) *Arabayı ne çekiyor? Traktör mi veya kamyon mu?*  
'What is pulling the car? The tractor or the truck?'
- (3.92) *Yunusu kim çağırıyor? Araştırmacı mı veya bakıcı mı?*  
'Who is calling for the dolphin? The researcher or the caretaker?'
- (3.93) *Ayvayı ne yarıyor? Maymun mu veya panda mı?*  
'What is splitting the quince? The monkey or the panda?'
- (3.94) *Takımı kim yoruyor? Kadın mı veya antrenör mü?*  
'Who is tiring the team out? The woman or the coach?'
- (3.95) *Elbiseyi kim dikeyor? Adam mı veya terzi mi?*  
'Who is sewing the dress? The man or the tailor?'
- (3.96) *Fıstığı ne gömüyor? Kirpi mi veya sincap mı?*  
'What is burying the peanut? The hedgehog or the squirrel?'
- (3.97) *Köpeđi kim üzüyor? Aile mi veya fırtına mı?*  
'Who is upsetting the dog? The family or the storm?'

## A.2 Model summaries

TABLE A.1: Summary of generalised additive model 2s.S.i on transformed and trimmed maximum f0 in broad and subject focus SOV answers' accented syllables.

Parametric effects	Estimate	SE	t-value	P-value
(Intercept)	0.4780	0.0294	16.2497	< .001 ***
W.object	-0.1494	0.0241	- 6.2033	< .001 ***
W.verb	-0.3522	0.0241	- 14.6319	< .001 ***
W.subject:FS.narrow	-0.0546	0.0118	- 4.6437	< .001 ***
W.object:FS.narrow	-0.1130	0.0118	- 9.5949	< .001 ***
W.verb:FS.narrow	-0.0086	0.0118	- 0.7300	.465
Smooth terms	edf	Ref.df	F-value	P-value
s(participant)	19.7356	24.000	144431.8717	< .001 ***
s(trial)	37.5989	69.000	122.35	< .001 ***
s(participant,W)	49.7472	72.000	22315.3441	.096
s(participant,FS)	21.1605	48.000	1761.9115	.051
Adjusted R <sup>2</sup>	0.674	ML-score		-2252.9
Deviance explained	57.20%	n		3611
<b>Note.</b> * Significant P-value (<.05); ** Significant P-value (<.01); *** Significant P-value (<.001); W = word; FS = focus size.				

TABLE A.2: Summary of generalised additive model 2s.S.ii on transformed and trimmed minimum f0 in broad and subject focus SOV answers' accented syllables.

Parametric effects	Estimate	SE	t-value	P-value
(Intercept)	0.2014	0.0178	11.2864	< .001 ***
W.object	-0.0130	0.0173	- 0.7531	.451
W.verb	-0.1618	0.0173	- 9.3708	< .001 ***
W.subject:FS.narrow	0.0027	0.0069	0.3850	.700
W.object:FS.narrow	-0.0707	0.0069	- 10.1916	< .001 ***
W.verb:FS.narrow	0.0052	0.0069	0.7441	.457
Smooth terms	edf	Ref.df	F-value	P-value
s(participant)	17.8321	24.000	82181.39	< .001 ***
s(trial)	40.7908	69.000	142.1030	< .001 ***
s(participant,W)	51.9817	72.000	24206.13	.071
s(participant,FS)	18.4896	48.000	595.8732	.034
Adjusted R <sup>2</sup>	0.566	ML-score		-3632.9
Deviance explained	49.5%	n		3607
<b>Note.</b> * Significant P-value (<.05); ** Significant P-value (<.01); *** Significant P-value (<.001); W = word; FS = focus size.				

TABLE A.3: Summary of generalised additive model 2o.S.i on transformed and trimmed maximum f0 in broad and object focus SOV answers' accented syllables.

Parametric effects	Estimate	SE	t-value	P-value
(Intercept)	0.4823	0.0318	15.144	< .001 ***
W.object	-0.1447	0.0271	-5.3460	< .001 ***
W.verb	-0.3568	0.0271	-13.1883	< .001 ***
W.subject:FS.narrow	-0.0031	0.0083	-0.3726	.710
W.object:FS.narrow	-0.0453	0.0083	-5.4512	< .001 ***
W.verb:FS.narrow	-0.0192	0.0083	-2.3205	.020 *
Smooth terms	edf	Ref.df	F-value	P-value
s(participant)	20.0778	24.000	299629.1	< .001 ***
s(trial)	47.2667	70.000	203.8604	< .001 ***
s(participant,W)	50.8011	72.000	49308.66	.381
s(participant,FS)	15.266	48.000	1116.945	< .001 ***
Adjusted R <sup>2</sup>	0.685	ML-score		-3086.9
Deviance explained	59.3%	n		4849

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FS = focus size.

TABLE A.4: Summary of generalised additive model 2o.S.ii on transformed and trimmed minimum f0 in broad and object focus SOV answers' accented syllables.

Parametric effects	Estimate	SE	t-value	P-value
(Intercept)	0.2033	0.0195	10.4428	< .001 ***
W.object	-0.0076	0.0194	-0.3903	.696
W.verb	-0.1652	0.0194	-8.5131	< .001 ***
W.subject:FS.narrow	0.0052	0.005	1.0366	.300
W.object:FS.narrow	-0.0124	0.005	-2.4656	.014 *
W.verb:FS.narrow	-0.0055	0.005	-1.1036	.270
Smooth terms	edf	Ref.df	F-value	P-value
s(participant)	17.9731	24.000	194495.1	< .001 ***
s(trial)	47.6014	70.000	180.7374	< .001 ***
s(participant,W)	53.0986	72.000	53238.85	.385
s(participant,FS)	7.1287	48.000	104.7345	.090
Adjusted R <sup>2</sup>	0.587	ML-score		-4987.5
Deviance explained	52.6%	n		4838

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FS = focus size.

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TABLE A.5: Summary of generalised additive model 2X.S.i on transformed and trimmed maximum f0 in narrow focus SOV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	0.4821	0.0307	15.7094	< .001 ***
W.object	- 0.2099	0.0265	- 7.9317	< .001 ***
W.verb	- 0.3696	0.0265	- 13.9673	< .001 ***
W.subject:FT.subject	- 0.0538	0.0129	- 4.1714	< .001 ***
W.object:FT.subject	- 0.0645	0.0129	- 4.9948	< .001 ***
W.verb:FT.subject	0.0061	0.0129	0.4761	.634
W.subject:FY.contrastive	0.0020	0.0069	0.2829	.777
W.object:FY.contrastive	- 0.0011	0.0070	- 0.1522	.879
W.verb:FY.contrastive	- 0.0025	0.007	- 0.3550	.723
W.subject:QO.OSV	- 0.0084	0.0063	- 1.3421	.180
W.object:QO.OSV	0.0332	0.0063	5.2945	< .001 ***
W.verb:QO.OSV	- 0.0089	0.0063	- 1.4139	.157
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	18.8793	24.000	331593.7	< .001 ***
s(trial)	50.2271	93.000	165.2314	< .001 ***
s(participant,W)	50.9259	72.000	55007.8	.154
s(participant,FS)	23.3161	48.000	17267.3	< .001 ***
Adjusted R <sup>2</sup>	0.675	ML-score		-3280.8
Deviance explained	57.70%	n		5168
<b>Note.</b> * Significant P-value (<.05); ** Significant P-value (<.01); *** Significant P-value (<.001); W = word; FT = focus target; FY = focus type; QO = question order.				



TABLE A.6: Summary of generalised additive model 2X.S.ii on transformed and trimmed minimum f0 in narrow focus SOV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	0.2142	0.0186	11.4922	< .001 ***
W.object	-0.0415	0.0183	-2.2670	.023 *
W.verb	-0.1842	0.0183	-10.0693	< .001 ***
W.subject:FT.subject	-0.0080	0.0066	-1.2062	.228
W.object:FT.subject	-0.0548	0.0066	-8.2481	< .001 ***
W.verb:FT.subject	0.0108	0.0066	1.6253	.104
W.subject:FY.contrastive	0.0066	0.0048	1.3831	.167
W.object:FY.contrastive	0.0014	0.0048	0.3016	.763
W.verb:FY.contrastive	0.0039	0.0048	0.8088	.419
W.subject:QO.OSV	-0.0163	0.0043	-3.7843	< .001 ***
W.object:QO.OSV	0.0063	0.0043	1.4661	.143
W.verb:QO.OSV	-0.0004	0.0043	-0.0914	.927
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	17.6017	24.000	186483	< .001 ***
s(trial)	52.8185	93.000	170.8852	< .001 ***
s(participant,W)	52.6946	72.000	52500.95	.146
s(participant,FS)	20.9007	48.000	4192.063	< .001 ***
Adjusted R <sup>2</sup>	0.566	ML-score		-5264.4
Deviance explained	50.20%	n		5160

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; FY = focus type; QO = question order.

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TABLE A.7: Summary of generalised additive model 2X.O.i on transformed and trimmed maximum f0 in narrow focus OSV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	0.4316	0.0366	11.7876	< .001 ***
W.subject	-0.1870	0.0379	-4.9412	< .001 ***
W.verb	-0.3418	0.0380	-8.9958	< .001 ***
W.object:FT.subject	0.0029	0.0210	0.1377	.891
W.subject:FT.subject	0.1170	0.0207	5.6634	< .001 ***
W.verb:FT.subject	0.0062	0.0209	0.2950	.768
W.object:FY.contrastive	-0.0030	0.0149	-0.2027	.839
W.subject:FY.contrastive	-0.0381	0.0149	-2.5565	.011 *
W.verb:FY.contrastive	-0.0077	0.0149	-0.5135	.608
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	19.2271	24.000	18904.47	< .001 ***
s(trial)	35.6185	66.000	294.2498	< .001 ***
s(participant,W)	48.7178	72.000	4592.954	.449
Adjusted R <sup>2</sup>	0.686	ML-score		-836.49
Deviance explained	59.80%	n		1476

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; FY = focus type.

TABLE A.8: Summary of generalised additive model 2X.O.ii on transformed and trimmed minimum f0 in narrow focus OSV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	0.1468	0.0232	6.3331	< .001 ***
W.subject	- 0.0926	0.0271	- 3.4164	< .001 ***
W.verb	- 0.1208	0.0271	- 4.4497	< .001 ***
W.object:FT.subject	0.0225	0.0133	1.6891	.091
W.subject:FT.subject	0.0867	0.0132	6.5494	< .001 ***
W.verb:FT.subject	- 0.0029	0.0134	- 0.2154	.830
W.object:FY.contrastive	0.0371	0.0086	4.3026	< .001 ***
W.subject:FY.contrastive	- 0.0079	0.0087	- 0.9083	.364
W.verb:FY.contrastive	- 0.0008	0.0086	- 0.0968	.923
W.object:QO.OSV	0.0408	0.0098	4.1538	< .001 ***
W.subject:QO.OSV	0.0248	0.0099	2.5049	.012 *
W.verb:QO.OSV	0.0007	0.0098	0.0753	.940
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	17.1007	24.000	9216.862	< .001 ***
s(trial)	20.6709	65.000	61.6311	< .001 ***
s(participant,W)	49.8481	72.000	3239.916	.276
s(participant,QO)	3.402	40.000	16.4892	.775
Adjusted R <sup>2</sup>	0.595	ML-score		-1389.5
Deviance explained	52.50%	n		1480

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; FY = focus type; QO = question order.

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TABLE A.9: Summary of generalised additive model 2Y.S.i on transformed and trimmed maximum f0 in contrastive focus SOV answers' accented syllables.

Parametric effects	Estimate	SE	t-value	P-value
(Intercept)	0.4697	0.0303	15.5156	< .001 ***
W.object	-0.1965	0.0259	-7.5910	< .001 ***
W.verb	-0.3578	0.0259	-13.8219	< .001 ***
W.subject:FT.subject	-0.0567	0.0143	-3.9544	< .001 ***
W.object:FT.subject	-0.0774	0.0143	-5.4021	< .001 ***
W.verb:FT.subject	0.0066	0.0143	0.4585	.647
W.subject:QY.corrective	0.0378	0.0078	4.8358	< .001 ***
W.object:QY.corrective	0.0103	0.0078	1.3196	.187
W.verb:QY.corrective	-0.0090	0.0078	-1.1584	.247
W.subject:QO.OSV	-0.0018	0.0076	-0.2368	.813
W.object:QO.OSV	0.0268	0.0077	3.4995	< .001 ***
W.verb:QO.OSV	-0.0044	0.0076	-0.5745	.566
Smooth terms	edf	Ref.df	F-value	P-value
s(participant)	18.6331	24.000	167507.2	< .001 ***
s(trial)	39.0701	69.000	137.7095	< .001 ***
s(participant,W)	50.5319	72.000	28029.12	.131
s(participant,FT)	23.1451	48.000	11547.38	< .001 ***
Adjusted R <sup>2</sup>	0.677	ML-score		-2341.8
Deviance explained	57.50%	n		3830

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; QY = question type; QO = question order.

TABLE A.10: Summary of generalised additive model 2Y.S.ii on transformed and trimmed minimum f0 in contrastive focus SOV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	0.2120	0.0186	11.3965	< .001 ***
W.object	-0.0477	0.0182	-2.6215	.009 **
W.verb	-0.1762	0.0182	-9.6832	< .001 ***
W.subject:FT.subject	-0.0002	0.0081	-0.0186	.985
W.object:FT.subject	-0.0462	0.0081	-5.7188	< .001 ***
W.verb:FT.subject	0.0119	0.0081	1.4713	.141
W.subject:QO.OSV	-0.0091	0.0049	-1.8549	.064
W.object:QO.OSV	0.0128	0.0049	2.6173	.009 **
W.verb:QO.OSV	-0.0028	0.0049	-0.5769	.564
W.subject:FT.object:QY.corr.	0.0066	0.0070	0.9374	.349
W.object:FT.object:QY.corr.	0.0178	0.0070	2.543	.011 *
W.verb:FT.object:QY.corr.	-0.0038	0.0070	-0.5412	.588
W.subject:FT.subject:QY.corr.	0.0096	0.0083	1.1545	.248
W.object:FT.subject:QY.corr.	-0.0112	0.0083	-1.3427	.179
W.verb:FT.subject:QY.corr.	-0.0049	0.0084	-0.5919	.554
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	17.2465	24.000	113499.46	< .001 ***
s(trial)	36.8212	68.000	117.0093	< .001 ***
s(participant,W)	52.4723	72.000	32983.221	.102
s(participant,FT)	20.4043	48.000	2941.2449	< .001 ***
s(participant,QY)	13.3747	48.000	494.7494	< .001 ***
Adjusted R <sup>2</sup>	0.571	ML-score		-3908.1
Deviance explained	51.20%	n		3825

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; QY = question type; QO = question order; corr. = corrective.

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TABLE A.11: Summary of generalised additive model 2Y.O.i on transformed and trimmed maximum f0 in contrastive focus OSV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	0.4343	0.0393	11.0547	< .001 ***
W.subject	-0.2415	0.0429	-5.6335	< .001 ***
W.verb	-0.3509	0.0429	-8.172	< .001 ***
W.object:FT.subject	-0.0092	0.0259	-0.3556	.722
W.subject:FT.subject	0.1242	0.0255	4.8614	< .001 ***
W.verb:FT.subject	-0.0017	0.0256	-0.0681	.946
W.object:QY.corrective	0.0340	0.0161	2.1178	.034 *
W.subject:QY.corrective	0.0240	0.0160	1.4995	.134
W.verb:QY.corrective	0.0166	0.0160	1.0325	.302
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	18.9909	24.000	11476.887	< .001 ***
s(trial)	24.786	48.000	169.223	< .001 ***
s(participant,W)	47.7835	72.000	2976.9704	.383
Adjusted R <sup>2</sup>	0.682	ML-score		-601.65
Deviance explained	60.10%	n		1120

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; QY = question type.

TABLE A.12: Summary of generalised additive model 2Y.O.ii on transformed and trimmed minimum f0 in contrastive focus OSV answers' accented syllables.

Parametric effects	Estimate	SE	t-value	P-value
(Intercept)	0.2055	0.0261	7.8696	< .001 ***
W.subject	-0.1686	0.0312	-5.4124	< .001 ***
W.verb	-0.1811	0.0311	-5.8174	< .001 ***
W.object:FT.subject	0.0087	0.0171	0.5093	.611
W.subject:FT.subject	0.0880	0.0168	5.2359	< .001 ***
W.verb:FT.subject	-0.0038	0.0168	-0.2238	.823
W.object:QY.corrective	-0.0614	0.0105	-5.8584	< .001 ***
W.subject:QY.corrective	0.0174	0.0105	1.6672	.096
W.verb:QY.corrective	0.0077	0.0104	0.7423	.458
W.object:QO.OSV	0.0534	0.011	4.8398	< .001 ***
W.subject:QO.OSV	0.0319	0.0111	2.8782	.004 **
W.verb:QO.OSV	0.0011	0.011	0.1010	.920
Smooth terms	edf	Ref.df	F-value	P-value
s(participant)	16.6371	24	5765.164	.002 **
s(trial)	17.192	47	69.5262	< .001 ***
s(participant,W)	49.1089	72	2253.1311	.282
s(participant,QY)	7.8321	48	82.2353	.017 *
Adjusted R <sup>2</sup>	0.614	ML-score		-1023.7
Deviance explained	55.10%	n		1122

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; QY = question type; QO = question order.

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TABLE A.13: Summary of generalised additive model 3s.S.i on centred and trimmed max. intensity in broad and subject focus SOV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	15.4840	0.4615	33.5487	< .001 ***
W.object	- 1.4991	0.2850	- 5.2598	< .001 ***
W.verb	- 5.2257	0.2850	- 18.3333	< .001 ***
W.subject:FS.narrow	- 0.2356	0.3918	- 0.6014	.548
W.object:FS.narrow	- 1.4326	0.3917	- 3.6576	< .001 ***
W.verb:FS.narrow	- 2.1260	0.3918	- 5.4266	< .001 ***
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	21.1106	24.000	8043.6242	< .001 ***
s(trial)	63.5502	69.000	1422.9262	< .001 ***
s(participant,W)	42.8503	72.000	1061.3818	.030 *
Adjusted R <sup>2</sup>	0.635	ML-score		8737
Deviance explained	59.70%	n		3619

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FS = focus size.

TABLE A.14: Summary of generalised additive model 3s.S.ii on centred and trimmed min. intensity in broad and subject focus SOV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	- 24.3284	0.8806	- 27.6273	< .001 ***
W.object	8.8652	0.7104	12.4793	< .001 ***
W.verb	1.4496	0.7105	2.0402	.041 *
W.subject:FS.narrow	2.3679	0.7817	3.0293	.003 **
W.object:FS.narrow	- 0.2094	0.7815	- 0.2679	.789
W.verb:FS.narrow	- 1.0907	0.7819	- 1.3949	.163
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	18.958	24	1361.504	< .001 ***
s(trial)	55.9679	69	422.9774	< .001 ***
s(participant,W)	39.9307	72	388.25	.005 **
Adjusted R <sup>2</sup>	0.326	ML-score		12742
Deviance explained	32.10%	n		3639

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FS = focus size.



TABLE A.15: Summary of generalised additive model 3o.S.i on centred and trimmed max. intensity in broad and object focus SOV answers' accented syllables.

Parametric effects	Estimate	SE	t-value	P-value
(Intercept)	15.4936	0.4473	34.6379	< .001 ***
W.object	- 1.5053	0.2847	- 5.2871	< .001 ***
W.verb	- 5.2201	0.2848	- 18.3318	< .001 ***
W.subject:FS.narrow	- 1.2814	0.3795	- 3.3764	< .001 ***
W.object:FS.narrow	0.3477	0.3795	0.9162	.360
W.verb:FS.narrow	- 0.8591	0.3795	- 2.2639	.024 *
Smooth terms	edf	Ref.df	F-value	P-value
s(participant)	20.5837	24.000	9567.5326	< .001 ***
s(trial)	65.1677	69.000	1294.8281	< .001 ***
s(participant,W)	43.7563	72.000	1142.2128	.065
s(participant,FS)	13.872	48.000	205.4729	.008 **
Adjusted R <sup>2</sup>	0.561	ML-score		12001
Deviance explained	53.00%	n		4874

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FS = focus size.

TABLE A.16: Summary of generalised additive model 3o.S.ii on centred and trimmed min intensity in broad and object focus SOV answers' accented syllables.

Parametric effects	Estimate	SE	t-value	P-value
(Intercept)	- 24.0597	0.9031	- 26.6423	< .001 ***
W.object	8.6347	0.7017	12.3047	< .001 ***
W.verb	1.1731	0.7019	1.6714	.095
W.subject:FS.narrow	- 1.066	0.8057	- 1.3230	.186
W.object:FS.narrow	1.9982	0.8058	2.4796	.013 *
W.verb:FS.narrow	- 0.2922	0.8062	- 0.3624	.717
Smooth terms	edf	Ref.df	F-value	P-value
s(participant)	19.1072	24.000	2212.6171	< .001 ***
s(trial)	62.387	69.000	688.5496	< .001 ***
s(participant,W)	42.7799	72.000	605.8898	.007 **
Adjusted R <sup>2</sup>	0.404	ML-score		17069
Deviance explained	39.40%	n		4915

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FS = focus size.

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TABLE A.17: Summary of generalised additive model 3X.S.i on centred and trimmed maximum intensity in narrow focus SOV answers' accented syllables.

Parametric effects	Estimate	SE	t-value	P-value
(Intercept)	13.9493	0.5184	26.9095	< .001 ***
W.object	0.5347	0.3111	1.7187	.086
W.verb	- 4.4547	0.3109	- 14.3300	< .001 ***
W.subject:FT.subject	1.7596	0.4298	4.0941	< .001 ***
W.object:FT.subject	- 1.4337	0.4298	- 3.3355	< .001 ***
W.verb:FT.subject	- 0.9963	0.4298	- 2.3177	.021 *
W.subject:FY.contrastive	- 0.2335	0.3532	- 0.6613	.508
W.object:FY.contrastive	- 0.3265	0.3533	- 0.9243	.355
W.verb:FY.contrastive	- 0.1185	0.3532	- 0.3357	.737
W.subject:FT.object: QO.OSV	0.8998	0.4238	2.1234	.034 *
W.object:FT.object: QO.OSV	0.1974	0.4239	0.4656	.642
W.verb:FT.object: QO.OSV	- 0.0307	0.4238	- 0.0725	.942
W.subject:FT.subject: QO.OSV	- 0.7300	0.4580	- 1.5938	.111
W.object:FT.subject: QO.OSV	- 0.5019	0.4580	- 1.0958	.273
W.verb:FT.subject: QO.OSV	- 0.3437	0.4583	- 0.7501	0.453
Smooth terms	edf	Ref.df	F-value	P-value
s(participant)	21.364	24.000	11485.884	< .001 ***
s(trial)	83.3689	91.000	1566.2428	< .001 ***
s(participant,W)	43.0933	72.000	1163.1055	.048 *
s(participant,FT)	8.4337	48.000	38.2849	.261
Adjusted R <sup>2</sup>	0.607	ML-score		12714
Deviance explained	57.8%	n		5198
<b>Note.</b> * Significant P-value (<.05); ** Significant P-value (<.01); *** Significant P-value (<.001); W = word; FS = focus size.				

TABLE A.18: Summary of generalised additive model 3X.S.ii on centred and trimmed minimum intensity in narrow focus SOV answers' accented syllables.

Parametric effects	Estimate	SE	t-value	P-value
(Intercept)	-25.6722	1.0764	-23.8491	< .001 ***
W.object	13.5327	0.8108	16.6898	< .001 ***
W.verb	2.3180	0.8115	2.8565	.004 **
W.subject:FT.subject	2.5670	0.9348	2.7461	.006 **
W.object:FT.subject	-1.0767	0.9346	-1.152	.249
W.verb:FT.subject	-0.6189	0.9351	-0.6618	.508
W.subject:FY.contrastive	1.9563	0.7817	2.5026	.012 *
W.object:FY.contrastive	-2.5614	0.7816	-3.2771	.001 **
W.verb:FY.contrastive	0.2362	0.7822	0.3020	.763
W.subject:FT.object: QO.OSV	-2.1025	0.9261	-2.2702	.023 *
W.object:FT.object: QO.OSV	1.3134	0.9261	1.4181	.156
W.verb:FT.object: QO.OSV	-0.0021	0.9271	-0.0023	.998
W.subject:FT.subject: QO.OSV	-0.3104	1.0481	-0.2962	.767
W.object:FT.subject: QO.OSV	-1.4026	1.0466	-1.3402	.180
W.verb:FT.subject: QO.OSV	-0.0905	1.0475	-0.0864	.931
Smooth terms	edf	Ref.df	F-value	P-value
s(participant)	19.7132	24.000	2571.8283	< .001 ***
s(trial)	77.8749	91.000	775.889	< .001 ***
s(participant,W)	41.9372	72.000	597.3577	.010 *
Adjusted R <sup>2</sup>	0.403	ML-score		18203
Deviance explained	38.80%	n		5224
<b>Note.</b> * Significant P-value (<.05); ** Significant P-value (<.01); *** Significant P-value (<.001); W = word; FT = focus target; FY = focus type; QO = question order.				

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TABLE A.19: Summary of generalised additive model 3X.O.i on centred and trimmed maximum intensity in narrow focus OSV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	16.7771	0.7024	23.8853	< .001 ***
W.subject	- 4.0789	0.6209	- 6.5696	< .001 ***
W.verb	- 8.9469	0.6213	- 14.3994	< .001 ***
W.object:FT.subject	- 2.1798	0.5935	- 3.6726	< .001 ***
W.subject:FT.subject	1.3495	0.5928	2.2764	.023 *
W.verb:FT.subject	- 0.0636	0.5932	- 0.1072	.915
W.object:FY.contrastive	- 0.6651	0.5246	- 1.2678	.205
W.subject:FY.contrastive	- 0.1001	0.5227	- 0.1914	.848
W.verb:FY.contrastive	0.8082	0.5236	1.5435	.123
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	19.9889	24.000	1251.1423	< .001 ***
s(trial)	54.4366	66.000	936.3685	< .001 ***
s(participant,W)	33.2607	72.000	203.3807	.088
Adjusted R <sup>2</sup>	0.651	ML-score		3615
Deviance explained	61.50%	n		1506

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; FY = focus type.

TABLE A.20: Summary of generalised additive model 3X.O.ii on centred and trimmed minimum intensity in narrow focus OSV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	- 20.1079	1.6075	- 12.5089	< .001 ***
W.subject	- 1.5168	1.7971	- 0.8440	.399
W.verb	- 3.0514	1.7988	- 1.6964	.090
W.object:FT.subject	- 1.7489	1.4532	- 1.2035	.229
W.subject:FT.subject	1.5739	1.4515	1.0844	.278
W.verb:FT.subject	0.2115	1.4525	0.1456	.884
W.object:FY.contrastive	1.5880	1.1298	1.4055	.160
W.subject:FY.contrastive	2.2016	1.1211	1.9638	.050 *
W.verb:FY.contrastive	- 0.8999	1.1266	- 0.7988	.424
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	18.7457	24.000	273.5752	< .001 ***
s(trial)	40.9774	66.000	226.7157	< .001 ***
s(participant,W)	16.2828	72.000	34.0389	.008 **
Adjusted R <sup>2</sup>	0.270	ML-score		5239.1
Deviance explained	30.00%	n		1510

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; FY = focus type.

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TABLE A.21: Summary of generalised additive model 3Y.S.i on centred and trimmed maximum intensity in contrastive focus SOV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	14.007	0.4721	29.6679	< .001 ***
W.object	0.6010	0.2832	2.1225	.034 *
W.verb	- 4.8963	0.2833	- 17.2851	< .001 ***
W.subject:FT.subject	0.6840	0.4419	1.5480	.122
W.object:FT.subject	- 2.1304	0.4417	- 4.8233	< .001 ***
W.verb:FT.subject	- 1.1065	0.4416	- 2.5056	.012 *
W.subject:QO.OSV	0.2539	0.3586	0.7079	.479
W.object:QO.OSV	- 0.2944	0.3586	- 0.8207	.412
W.verb:QO.OSV	- 0.0171	0.3587	- 0.0476	.962
W.subject:FT.object: QY.corr.	0.2269	0.5193	0.4369	.662
W.object:FT.object: QY.corr.	- 0.8055	0.5195	- 1.5507	.121
W.verb:FT.object: QY.corr.	0.8445	0.5195	1.6254	.104
W.subject:FT.subject: QY.corr.	1.0786	0.5502	1.9603	.050 *
W.object:FT.subject: QY.corr.	0.6226	0.5504	1.1312	.258
W.verb:FT.subject: QY.corr.	0.6025	0.5507	1.0940	.274
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	21.518	24.000	5459.3558	< .001 ***
s(trial)	61.2266	67.000	1210.9237	< .001 ***
s(participant,W)	40.4254	72.000	599.6874	.032 *
Adjusted R <sup>2</sup>	0.607	ML-score		9365.6
Deviance explained	58.30%	n		3844

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; QO = question order; QY = question type; corr. = corrective.

TABLE A.22: Summary of generalised additive model 3Y.S.ii on centred and trimmed minimum intensity in contrastive focus SOV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	- 24.1031	0.9427	- 25.5679	< .001 ***
W.object	9.6634	0.7284	13.2658	< .001 ***
W.verb	0.8402	0.7286	1.1532	.249
W.subject:FT.subject	3.0882	0.7963	3.8781	< .001 ***
W.object:FT.subject	- 1.6180	0.7957	- 2.0336	.042 *
W.verb:FT.subject	- 0.5496	0.7964	- 0.6901	.490
W.subject:QY.corrective	0.8130	0.8241	0.9866	.324
W.object:QY.corrective	- 2.5213	0.8239	- 3.0602	.002 **
W.verb:QY.corrective	0.2645	0.8252	0.3205	.749
W.subject:QO.OSV	- 1.7640	0.7899	- 2.233	.026 *
W.object:QO.OSV	2.5287	0.7894	3.2032	.001 **
W.verb:QO.OSV	- 0.1275	0.7904	- 0.1613	.872
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	19.4894	24.000	1468.4945	< .001 ***
s(trial)	57.581	68.000	579.1347	< .001 ***
s(participant,W)	39.2677	72.000	362.7269	.005 **
Adjusted R <sup>2</sup>	0.390	ML-score		13425
Deviance explained	38.10%	n		3861

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; QO = question order.

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TABLE A.23: Summary of generalised additive model 3Y.O.i on centred and trimmed maximum intensity in contrastive focus OSV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	16.9603	0.8569	19.7936	< .001 ***
W.subject	- 3.2483	0.8272	- 3.9271	< .001 ***
W.verb	- 7.1111	0.827	- 8.5992	< .001 ***
W.object:FT.subject	- 2.7073	0.6819	- 3.9699	< .001 ***
W.subject:FT.subject	1.0482	0.6819	1.5370	.124
W.verb:FT.subject	- 0.7135	0.6819	- 1.0463	.295
W.object:QY.corrective	1.1374	0.5077	2.2402	.025 *
W.subject:QY.corrective	0.4339	0.5083	0.8536	.393
W.verb:QY.corrective	0.9861	0.5077	1.9421	.052
W.object:QO.OSV	- 1.3419	0.5461	- 2.4573	.014 *
W.subject:QO.OSV	- 1.5860	0.5467	- 2.9011	.004 **
W.verb:QO.OSV	- 1.5493	0.5461	- 2.8371	.005 **
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	19.2641	24.000	1004.9162	< .001 ***
s(trial)	36.524	47.000	497.1992	< .001 ***
s(participant,W)	32.657	72.000	196.5801	.036 *
Adjusted R <sup>2</sup>	0.651	ML-score		2722.1
Deviance explained	61.70%	n		1142

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; QO = question order; QY = question type.



TABLE A.24: Summary of generalised additive model 3Y.O.ii on centred and trimmed minimum intensity in contrastive focus OSV answers' accented syllables.

<b>Parametric effects</b>	<b>Estimate</b>	<b>SE</b>	<b>t-value</b>	<b>P-value</b>
(Intercept)	- 22.1462	2.1452	- 10.3234	< .001 ***
W.subject	1.8743	2.4806	0.7556	.450
W.verb	- 1.5472	2.4813	- 0.6235	.533
W.object:FT.subject	0.0396	1.8012	0.0220	.982
W.subject:FT.subject	2.0057	1.8012	1.1136	.266
W.verb:FT.subject	- 0.2649	1.8012	- 0.1471	.883
W.object:QY.corrective	- 3.2303	1.1988	- 2.6946	.007 **
W.subject:QY.corrective	- 0.1938	1.1988	- 0.1616	.872
W.verb:QY.corrective	1.4754	1.2014	1.2280	.219
W.object:QO.OSV	4.3318	1.2858	3.3689	< .001 ***
W.subject:QO.OSV	1.0942	1.2858	0.8510	.395
W.verb:QO.OSV	- 0.1076	1.289	- 0.0835	.934
<b>Smooth terms</b>	<b>edf</b>	<b>Ref.df</b>	<b>F-value</b>	<b>P-value</b>
s(participant)	18.7331	24.000	138.7398	< .001 ***
s(trial)	27.52	47.000	139.0288	< .001 ***
Adjusted R <sup>2</sup>	0.265	ML-score		3982.4
Deviance explained	30.20%	n		1145

**Note.** \* Significant P-value (<.05); \*\* Significant P-value (<.01); \*\*\* Significant P-value (<.001); W = word; FT = focus target; QO = question order; QY = question type.



## Appendix B

### Appendices from chapter 4

#### B.1 Experimental questions

FALSE IDENTITY DISTRACTOR QUESTIONS (N = 24)

(4.1) *Kadın neyi giyiyor?* 'What is the woman putting on?'

(4.2) *Kadın ne koyuyor?* 'What is the woman (pouring)?'

(4.3) *Neyi kadın suluyor?* 'What is the woman watering?'

(4.4) *Neyi adam siliyor?* 'What is the man wiping?'

(4.5) *Kim ip atlıyor?* 'Who is jumping rope?'

(4.6) *Kim resim yapıyor?* 'Who is drawing a picture?'

(4.7) *Elmayı kim kesiyor?* 'Who is cutting the apple?'

(4.8) *Sandviçi kim yiyor?* 'Who is eating the sandwich?'

(4.9) *Kim fotoğraf çekiyor? Adam mı, çocuk mu?*

'Who is taking a photo? The man or the child?'

(4.10) *Kim saksofon çalıyor? Dede mi, yetişkin mi?*

'Who is playing the saxophone? The grandfather or the teenager?'

(4.11) *Kim patates soyuyor? Aşçı mı, çocuk mu?*

'Who is peeling potatoes? The chef or the child?'

(4.12) *Kim su içiyor? Adam mı, kadın mı?*

'Who is drinking water? The man or the woman?'

(4.13) *Neyi adam sayıyor? Paraları mı, kitapları mı?*

'What is the man counting? The money or the books?'

(4.14) *Neyi doktor inceliyor? Hastayı mı, röntgeni mi?*

'What is the doctor studying? The patient or the x-ray?'

(4.15) *Neyi adam boyuyor? Duvarı mı, dolabı mı?*

'What is the man painting? The wall or the drawer?'

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(4.16) *Neyi kadın ölçüyor? Masayı mı, sandalyeyi mi?*

'What is the woman measuring? The table or the chair?'

(4.17) *Kadın neyi açıyor? Raflı mı, kutuyu mu?*

'What is the woman opening? The shelf or the box?'

(4.18) *Kadın neyi boşaltıyor? Çöpü mü, kâseyi mi?*

'What is the woman emptying? The garbage or the bowl?'

(4.19) *Adam neyi çalıyor? Kemanı mı, klarneti mi?*

'What is the man playing? The violin or the clarinet?'

(4.20) *Adam neyi kazıyor? Taşı mı, tüneli mi?*

'What is the man scraping? The stone or the tunnel?'

(4.21) *Çöpü kim atıyor? Kadın mı, adam mı?*

'Who is throwing away the garbage? The woman or the man?'

(4.22) *Hazineyi kim buluyor? Nine mi, çocuk mu?*

'Who is finding the treasure? The granny or the child?'

(4.23) *Dergiyi kim okuyor? Nine mi, dede mi?*

'Who is reading the magazine? The granny or the grandfather?'

(4.24) *Bisikleti kim onarıyor? Çocuk mu, yetişkin mi?*

'Who is fixing the bicycle? The child or the teenager?'

NEW-INFORMATION NARROW OBJECT FOCUS TARGET WITH  
IN-SITU SOV OPEN QUESTION (N = 6)<sup>53</sup>

(4.25) *Kız neyi itiyor? 'What is the girl pushing?'*

(4.26) *Hizmetçi neyi dövüyor? 'What is the maid beating?'*

(4.27) *Ateş neyi sarıyor? 'What is the fire enveloping?'*

(4.28) *Komşu neyi yakıyor? <sub>FT</sub> 'What is the neighbour lighting up?'*

(4.29) *Aşçı neyi sıkıyor? <sub>FT</sub> 'What is the chef squeezing?'*

(4.30) *Şoför neyi seçiyor? <sub>FT</sub> 'What is the driver selecting?'*

NEW-INFORMATION NARROW OBJECT FOCUS TARGET WITH  
IN-SITU OSV OPEN QUESTION (N = 6)

(4.31) *Neleri kız diziyor? 'What is the girl arranging?'*

(4.32) *Neyi tamirci kısıyor? 'What is the mechanic turning down?'*

<sup>53</sup> Focus type incongruent trials are marked by subscript FT and contrastive sub-type incongruent trials are marked by CY subscript.

## B.1. Experimental questions

- (4.33) *Neyi kadın açıyor?* ‘What is the woman opening?’  
(4.34) *Neyi dede seriyor?*<sub>FT</sub> ‘What is the grandfather spreading out?’  
(4.35) *Neleri çoban ayırıyor?*<sub>FT</sub> ‘What is the shepherd separating?’  
(4.36) *Nelerini badici kasıyor?*<sub>FT</sub> ‘What is the bodybuilder contracting?’

### NEW-INFORMATION NARROW SUBJECT FOCUS TARGET WITH IN-SITU SOV OPEN QUESTION (N = 6)

- (4.37) *Kim bıçağı biliyor?* ‘Who is sharpening the knife?’  
(4.38) *Kim ilanı yazıyor?* ‘Who is writing the ad/announcement?’  
(4.39) *Kim yayı geriyor?* ‘Who is stretching the spring?’  
(4.40) *Ne sineği yakalıyor?*<sub>FT</sub> ‘What is catching the fly?’  
(4.41) *Kim fidanı ekiyor?*<sub>FT</sub> ‘Who is planting the sapling?’  
(4.42) *Ne başını eğiyor?*<sub>FT</sub> ‘What is tilting its head?’

### NEW-INFORMATION NARROW SUBJECT FOCUS TARGET WITH IN-SITU OSV OPEN QUESTION (N = 6)

- (4.43) *Gazeteyi kim okuyor?* ‘Who is reading the newspaper?’  
(4.44) *Havayı ne bozuyor?* ‘What is turning the weather/air bad?’  
(4.45) *Ayasofya’yı kim çiziyor?* ‘Who is drawing the Ayasofya?’  
(4.46) *Yunusu kim çağırıyor?*<sub>FT</sub> ‘Who is calling for the dolphin?’  
(4.47) *Takımı kim yoruyor?*<sub>FT</sub> ‘Who is tiring the team out?’  
(4.48) *Elbiseyi kim dikeyor?*<sub>FT</sub> ‘Who is sewing the dress?’

### CONTRASTIVE NARROW OBJECT FOCUS TARGET WITH IN-SITU SOV CORRECTIVE QUESTION (N = 6)

- (4.49) *Otobüs neyi eziyor? Telefonu mu, karıncaları mı?*  
‘What is the bus crushing? The telephone or the ants?’  
(4.50) *Kadın neyi deniyor? Çayı mı, üzümle mi?*  
‘What is the woman trying? The tea or the grapes?’  
(4.51) *Alman neyi süzüyor? Pirinçi mi, salatayı mı?*  
‘What is the German draining? The rice or the salad?’  
(4.52) *Adam neyi kuruyor? Dolabı mı, sandalyeyi mi?*<sub>CY</sub>  
‘What is the man assembling? The drawer or the chair?’

Appendix B. Appendices from chapter 4

(4.53) *Kadın neyi sürüyor? Bisikleti mi, arabayı mı?*<sub>CY</sub>

'What is the woman driving? The bicycle or the car?'

(4.54) *Bahçıvan neyi biçiyor? Buğdayı mı, mısırı mı?*<sub>CY</sub>

'What is the gardener cutting? The crop or the maize?'

CONTRASTIVE NARROW OBJECT FOCUS TARGET WITH  
EX-SITU OSV CORRECTIVE QUESTION (N = 6)

(4.55) *Neyi postacı iletiyor? Kartı mı, mektubu mu?*

'What is the postman delivering? The card or the letter?'

(4.56) *Neyi adam soyuyor? Havucu mu, salatalığı mı?*

'What is the man peeling? The carrot or the cucumber?'

(4.57) *Neyi bebek beğeniyor? Oyuncağı mı, resimi mi?*

'What is the baby liking? The toy or the picture?'

(4.58) *Neyi hindi arıyor? Palamuttu mu, armuttu mu?*<sub>CY</sub>

'What is the turkey searching? The acorn or the pear?'

(4.59) *Neyi adam yıkıyor? Kuleyi mi, istasyonu mu?*<sub>CY</sub>

'What is the man demolishing? The tower or the station?'

(4.60) *Neyi kadın takıyor? Kolyeyi mi, gümüşü mü?*<sub>CY</sub>

'What is the woman putting on? The necklace or the silver (bracelet)?'

CONTRASTIVE NARROW SUBJECT FOCUS TARGET WITH  
IN-SITU SOV CORRECTIVE QUESTION (N = 6)

(4.61) *Kim hapı yutuyor? Hemşire mi, çocuk mu?*

'Who is swallowing the pill? The nurse or the child?'

(4.62) *Ne çadırı buluyor? Geyik mi, at mı?*

'What is finding the tent? The deer or the horse?'

(4.63) *Kim faturayı belirliyor? Aşçı mı, kadın mı?*

'Who is determining the bill? The chef or the woman?'

(4.64) *Ne kelebeği kovuyor? Kuş mu, çekirge mi?*<sub>CY</sub>

'What is fending off the butterfly? The bird or the grasshopper?'

(4.65) *Kim maçı düşünüyor? Oyuncu mu, çocuk mu?*<sub>CY</sub>

'Who is thinking about the game? The player or the child?'

(4.66) *Kim tekerleği söküyor? Genç mi, dede mi?*<sub>CY</sub>

'Who is detaching the tire? The teenager or the woman?'

CONTRASTIVE NARROW SUBJECT FOCUS TARGET WITH  
EX-SITU OSV CORRECTIVE QUESTION (N = 6)

- (4.67) *Evlere kim sayıyor? Polis mi, mimar mı?*  
'Who is counting the houses? The policeman or the architect?'
- (4.68) *Torbayı kim taşıyor? Bahçıvan mı, şoför mü?*  
'Who is carrying the sack? The gardener or the driver?'
- (4.69) *Adaleti kim savunuyor? Avukat mı, muhabir mi?*  
'Who is defending (the) justice? The lawyer or the reporter?'
- (4.70) *Ayvayı ne yarıyor? Maymun mu, yılan mı? CY*  
'What is splitting the quince? The monkey or the snake?'
- (4.71) *Fıstığı ne gömüyor? Kirpi mi, kuş mu? CY*  
'What is burying the peanut? The hedgehog or the bird?'
- (4.72) *Köpeği kim üzüyor? Çocuklar mı, kadın mı? CY*  
'Who is upsetting the dog? The children or the woman?'

CONTRASTIVE NARROW OBJECT FOCUS TARGET WITH  
IN-SITU SOV CLOSED QUESTION (N = 12)

- (4.73) *Kedi neyi yalıyor? Camı mı, patisini mi?*  
'What is the cat licking? The window or its paw?'
- (4.74) *Sınıf neyi izliyor? Belgeseli mi, çocuğu mu?*  
'What is the class watching? The documentary or the child?'
- (4.75) *Çocuk neyi istiyor? Kavunu mu, kurabiyeyi mi?*  
'What does the child want? The melon or the cookie?'
- (4.76) *Grup neyi basıyor? Lokantayı mı, bakkalı mı?*  
'What is the group raiding? The restaurant or the general store?'
- (4.77) *Kunduz neyi kazıyor? Ağacı mı, yeri mi?*  
'What is the beaver scraping off? The tree or the ground?'
- (4.78) *Çocuk neyi kaldırıyor? Ayıcığı mı, kutuyu mu?*  
'What is the child lifting? The teddy bear or the box?'
- (4.79) *Çiftçi neyi besliyor? Kuşu mu, tavuğu mu? CY*  
'What is the farmer feeding? The bird or the chicken?'
- (4.80) *Tırtıl neyi deliyor? Çileği mi, yaprakları mı? CY*  
'What is the caterpillar piercing (through)? The strawberry or the leaves?'
- (4.81) *Müzisyen neyi çalıyor? Kemani mı, gitarı mı? CY*  
'What is the musician playing? The violoin or the guitar?'

Appendix B. Appendices from chapter 4

(4.82) *Kadın neyi sıvıyor? Tavanı mı, duvarı mı?*<sub>FT</sub>

'What is the woman plastering? The ceiling or the wall?'

(4.83) *Aşçı neyi döküyor? Yemeyi mi, kahveyi mi?*<sub>FT</sub>

'What is the chef pouring (away)? The food or the coffee?'

(4.84) *Çocuk neyi tanıyor? Müzisyeni mi, yüzücüyü mü?*<sub>FT</sub>

'What is the child familiar with? The musician or the swimmer?'

CONTRASTIVE NARROW OBJECT FOCUS TARGET WITH  
EX-SITU OSV CLOSED QUESTION (N = 12)

(4.85) *Kimi çocuk öpüyor? Bebeyi mi, babasını mı?*

'Whom is the child kissing? The baby or his/her father?'

(4.86) *Neyi çocuk atıyor? Topu mu, frizbi'yi mi?*

'What is the child throwing? The ball or the frisbee?'

(4.87) *Neyi yıkıcı söküyor? Camı mı, rafı mı?*

'What is the demolisher taking down? The window or the shelf?'

(4.88) *Neyi bankacı öneriyor? Lira'yı mı, Euro'yu mu?*

'What does the banker suggest? The Lira or the Euro?'

(4.89) *Neyi horoz yiyor? Elmayı mı, fındığı mı?*

'What is the rooster eating? The apple or the peanut?'

(4.90) *Neyi çitici inceliyor? Domatesi mi, marulu mu?*

'What is the farmer inspecting? The tomato or the lettuce?'

(4.91) *Neyi kadın örtüyor? Camı mı, kafesi mi?*<sub>CY</sub>

'What is the woman covering? The window or the cage?'

(4.92) *Neyi köpek duyuyor? Rüzgârı mı, çaydanlığı mı?*<sub>CY</sub>

'What is the dog hearing? The wind or the tea kettle?'

(4.93) *Neyi fare içiyor? Suyu mu, Kola'yı mı?*<sub>CY</sub>

'What is the mouse drinking? The water or the cola?'

(4.94) *Neyi çocuk dinliyor? Televizyonu mu, müziği mi?*<sub>FT</sub>

'What is the child listening to? The television or the music?'

(4.95) *Neyi adam asıyor? Montu mu, pantolonu mu?*<sub>FT</sub>

'What is the man hanging up? The coat or the pants?'

(4.96) *Neyi köpek dağıtıyor? Konteyneri mi, odayı mı?*<sub>FT</sub>

'What is the dog disarranging? The container or the room?'



CONTRASTIVE NARROW SUBJECT FOCUS TARGET WITH  
IN-SITU SOV CLOSED QUESTION (N = 12)

- (4.97) *Kim bulmacayı çözüyor? Öğrenci mi, öğretmen mi?*  
'Who is solving the crossword puzzle? The student or the teacher?'
- (4.98) *Ne boğayı ısırıyor? Aslan mı, timsah mı?*  
'What is biting the bull? The lion or the alligator?'
- (4.99) *Kim boruyu kesiyor? Astronot mu, robot mu?*  
'Who is cutting the pipe? The astronaut or the robot?'
- (4.100) *Kim caddeyi geçiyor? Yetişkin mi, çocuk mu?*  
'Who is crossing the street? The man or the child?'
- (4.101) *Ne balığı tutuyor? Akbaba mı, leylek mi?*  
'What is catching/holding the fish? The vulture or the stork?'
- (4.102) *Kim eti ödüyor? Adam mı, kadın mı?*  
'Who is paying for the meat? The man or the woman?'
- (4.103) *Kim arabayı yıkıyor? Yetişkin mi, çocuk mu?<sub>CY</sub>*  
'Who is washing the car? The teenager or the child?'
- (4.104) *Kim pastayı bölüyor? Anneanne mi, çocuk mu?<sub>CY</sub>*  
'Who is dividing the cake? The grandmother or the child?'
- (4.105) *Ne muzuyu yiyor? Rakun mu, fil mi?<sub>CY</sub>*  
'What is eating the banana? The raccoon or the elephant?'
- (4.106) *Kim otoyolu kapatıyor? Polis mi, işçi mi?<sub>FT</sub>*  
'Who is closing the motorway? The policeman or the worker?'
- (4.107) *Kim koyunu kırptıyor? Erkek mi, kadın mı?<sub>FT</sub>*  
'Who is sheering the sheep? The man or the woman?'
- (4.108) *Kim aileyi kurtarıyor? Asker mi, hemşire mi?<sub>FT</sub>*  
'Who is rescuing the family? The soldier or the nurse?'

CONTRASTIVE NARROW SUBJECT FOCUS TARGET WITH  
EX-SITU OSV CLOSED QUESTION (N = 12)

- (4.109) *Uçağı kim görüyor? Kadın mı, adam mı?*  
'Who is seeing the aeroplane? The woman or the man?'
- (4.110) *Eşığı kim seviyor? Çocuk mu, kadın mı?*  
'Who is petting the donkey? The child or the woman?'
- (4.111) *Kaşığı kim büküyor? Goril mi, sihirbaz mı?*  
'Who is bending the spoon? The gorilla or the magician?'

Appendix B. Appendices from chapter 4

- (4.112) *Ođlanı kim uyarıyor? Annesi mi, babası mı?*  
'Who is warning the boy? His mother or his father?'
- (4.113) *Kutuyu ne çeviriyor? Makina mı, adam mı?*  
'What is turning the box over? The machine or the man?'
- (4.114) *Arabayı ne çekiyor? Traktör mü, kamyon mu?*  
'What is pulling the car? The tractor or the truck?'
- (4.115) *Çantayı kim unutuyor? Kız mı, erkek mi?*<sub>CY</sub>  
'Who is forgetting the bag? The girl or the man?'
- (4.116) *Dolabı kim ölçüyor? Adam mı, çocuk mu?*<sub>CY</sub>  
'Who is measuring the drawer? The man or the child?'
- (4.117) *Susuzluğu ne gideriyor? Süt mü, limonata mı?*<sub>CY</sub>  
'What is quenching (the) thirst? (The) milk or (the) lemonade?'
- (4.118) *Kapıyı kim siliyor? Kadın mı, erkek mi?*<sub>FT</sub>  
'Who is wiping the door? The woman or the man?'
- (4.119) *Tosbađayı ne yeniyor? Kedi mi, tavşan mı?*<sub>FT</sub>  
'What is beating the tortoise? The cat or the rabbit?'
- (4.120) *Cevizi ne kırıyor? Kuş mı, çocuk mu?*<sub>FT</sub>  
'What is breaking the walnut? The bird or the child?'

## Appendix C

### Appendices from chapter 5

#### C.1 Experimental questions

INCORRECT DISTRACTOR TRIALS (N = 40)

- (5.1) **Q:** *Bahçede çiçeği kim suluyor?*  
'In the garden, who is watering the flower?'  
**A:** *Bahçede çiçeği adam suluyor.*  
'In the garden, the man is watering the flower.'
- (5.2) **Q:** *Okulda şarkıyı kim söylüyor?*  
'At school, who is singing the song?'  
**A:** *Okulda şarkıyı çocuk söylüyor.*  
'At school, the child is singing the song.'
- (5.3) **Q:** *Evde köpeği kim üzüyor, kız mı polis mi?*  
'At the house, who is upsetting the dog, the girl or the policeman?'  
**A:** *Evde köpeği kız üzüyor.*  
'At the house, the girl is upsetting the dog.'
- (5.4) **Q:** *Caddede traktör neyi çekiyor, arabayı mı kamyonu mu?*  
'On the street, what is the tractor pulling, the car or the truck?'  
**A:** *Caddede traktör kamyonu çekiyor.*  
'On the street, the tractor is pulling the truck.'
- (5.5) **Q:** *Mutfakta kadın neyi pişiriyor?*  
'In the kitchen, what is the woman cooking?'  
**A:** *Mutfakta kadın makarnayı pişiriyor.*  
'In the kitchen, the woman is cooking the pasta.'
- (5.6) **Q:** *Belgeselde kim tenekeyi eziyor, doktor mu kuaför mü?*  
'In the documentary, who is crushing the can, the doctor or the hairdresser?'

Appendix C. Appendices from chapter 5

- A:** *Belgeselde doktor tenekeyi eziyor.*  
'In the documentary, the doctor is crushing the can.'
- (5.7) **Q:** *Kasapta neyi kadın ödüyor?*  
'At the butcher, what is the woman paying for?'
- A:** *Kasapta eti kadın ödüyor.*  
'At the butcher, the woman is paying for the meat.'
- (5.8) **Q:** *Bahçede neyi kız bağlıyor, deveyi mi ineği mi?*  
'In the garden, what is the girl tying down, the camel or the cow?'
- A:** *Bahçede deveyi kız bağlıyor.*  
'In the garden, the girl is tying down the camel.'
- (5.9) **Q:** *Dağda kim çileği ısırıyor?*  
'On the mountain, who is biting (into) the strawberry?'
- A:** *Dağda hemşire çileği ısırıyor.*  
'On the mountain, the nurse is biting (into) the strawberry.'
- (5.10) **Q:** *Odada kim aynayı siliyor?*  
'In the room, who is wiping (down) the mirror?'
- A:** *Odada kız aynayı siliyor.*  
'In the room, the girl is wiping (down) the mirror.'
- (5.11) **Q:** *Odada resmi kim bitiriyor?*  
'In the room, who is finishing the painting?'
- A:** *Odada resmi kız bitiriyor.*  
'In the room, the girl is finishing the painting.'
- (5.12) **Q:** *Masada kim kurabiyeyi istiyor, kız mı dede mi?*  
'At the table, who wants the cookie, the girl or the grandfather?'
- A:** *Masada kız kurabiyeyi istiyor.*  
'At the table, the girl wants the cookie.'
- (5.13) **Q:** *Evde kim dolabı boyuyor?*  
'In the house, who is painting the drawer?'
- A:** *Evde kadın dolabı boyuyor.*  
'In the house, the woman is painting the drawer.'
- (5.14) **Q:** *Salonda kız neyi asıyor?*  
'In the hall, what is the girl hanging up?'
- A:** *Salonda kız montu asıyor.*  
'In the hall, the girl is hanging up the coat.'

- (5.15) **Q:** *Televizyonda neyi kadın sürüyor, treni mi kamyonu mu?*  
'On TV, what is the woman driving, the train or the truck?'  
**A:** *Televizyonda treni kadın sürüyor.*  
'On TV, the woman is driving the train.'
- (5.16) **Q:** *Yolda neyi kız küriyor?*  
'On the street, what is the girl shovelling up?'  
**A:** *Yolda karı kız küriyor.*  
'On the street, the girl is shovelling up the snow.'
- (5.17) **Q:** *Mutfakta aşçı neyi eritiyor, tereyağı mı dondurmaya mı?*  
'In the kitchen, what is the chef melting, the butter or the ice cream?'  
**A:** *Mutfakta aşçı tereyağı eritiyor.*  
'In the kitchen, the chef is melting the butter.'
- (5.18) **Q:** *Videoda kim ipliği geriyor, bebek mi kadın mı?*  
'In the video, who is stretching the yarn, the baby or the woman?'  
**A:** *Videoda bebek ipliği geriyor.*  
'In the video, the baby is stretching the yarn.'
- (5.19) **Q:** *Yemekte çayı kim içiyor, kadın mı çocuk mı?*  
'At the meal, who is drinking the tea, the woman or the child?'  
**A:** *Yemekte çayı kadın içiyor.*  
'At the meal, the woman is drinking the tea.'
- (5.20) **Q:** *Mutfakta domatesi kim doğruyor, nine mi aşçı mı?*  
'In the kitchen, who is chopping the tomato, the granny or the chef?'  
**A:** *Mutfakta domatesi aşçı doğruyor.*  
'In the kitchen, the chef is chopping the tomato.'
- (5.21) **Q:** *Parkta Ayasofya'yı kim çiziyor, çocuk mı ressam mı?*  
'In the park, who is drawing the Ayasofya, the child or the artist?'  
**A:** *Parkta Ayasofya'yı ressam çiziyor.*  
'In the park, the artist is drawing the Ayasofya.'
- (5.22) **Q:** *Köyde memur neyi ayırıyor?*  
'In the village, what is the officer separating?'  
**A:** *Köyde memur trafiği ayırıyor.*  
'In the village, the officer is separating the traffic.'
- (5.23) **Q:** *Tezgâhta neyi kadın oyuyor?*  
'At the counter, what is the woman sculpting?'

Appendix C. Appendices from chapter 5

- A: *Tezgâhta tahtayı kadın oyuyor.*  
'At the counter, the woman is sculpting the wood.'
- (5.24) Q: *Restoranda neyi çocuk deniyor, yemeği mi içeceği mi?*  
'At the restaurant, what is the child trying,  
the meal or the drink?'
- A: *Restoranda yemeği çocuk deniyor.*  
'At the restaurant, the child is trying the meal.'
- (5.25) Q: *Masada pastayı kim bölüyor?*  
'At the table, who is dividing the cake?'
- A: *Masada pastayı nine bölüyor.*  
'At the table, the granny is dividing the cake.'
- (5.26) Q: *Ormanda kim yuvayı buluyor?*  
'In the forest, who is finding the nest?'
- A: *Ormanda çiftçi yuvayı buluyor.*  
'In the forest, the farmer is finding the nest.'
- (5.27) Q: *Bahçede kim sıçanı kapıyor, memur mu çocuk mu?*  
'In the garden, who is catching the rat, the officer or the child?'
- A: *Bahçede çocuk sıçanı kapıyor.*  
'In the garden, the child is catching the rat.'
- (5.28) Q: *İnşaatta neyi işçi dolduruyor?*  
'At the construction site, what is the worker filling?'
- A: *İnşaatta deliği işçi dolduruyor.*  
'At the construction site, the worker is filling the hole.'
- (5.29) Q: *Fabrikada işçi neyi dokuyor?*  
'In the factory, what is the worker weaving?'
- A: *Fabrikada işçi halıyı dokuyor.*  
'In the factory, the worker is weaving the carpet.'
- (5.30) Q: *Bahçede kadın neyi görüyor, uçağı mı gemiyi mi?*  
'In the garden, what does the woman see, the aeroplane or the ship?'
- A: *Bahçede kadın uçağı görüyor.*  
'In the garden, the woman sees the aeroplane.'
- (5.31) Q: *Okulda kim cevabı biliyor?*  
'At school, who knows the answer?'

- A: *Okulda çocuk cevabı biliyor.*  
'At school, the child knows the answer.'
- (5.32) Q: *Okulda çocuk neyi yalıyor?*  
'At school, what is the child licking?'  
A: *Okulda çocuk lolipopu yalıyor.*  
'At school, the child is licking the lollipop.'
- (5.33) Q: *Masada bezelyeyi kim yiyor, kadın mı adam mı?*  
'At the table, who is eating the peas, the woman or the man?'  
A: *Masada bezelyeyi adam yiyor.*  
'At the table, the man is eating the peas.'
- (5.34) Q: *Şehirde neyi dede satıyor?*  
'In the city, what is the grandfather selling?'  
A: *Şehirde arabayı dede satıyor.*  
'In the city, the grandfather is selling the car.'
- (5.35) Q: *Trende neyi öğrenci unutuyor, defteri mi kitabı mı?*  
'On the train, what is the student forgetting, the notebook or the book?'  
A: *Trende kitabı öğrenci unutuyor.*  
'On the train, the student forgets the book.'
- (5.36) Q: *Televizyonda itfaiyeci neyi kurtarıyor, köpeği mi kediyi mi?*  
'On TV, what is the firefighter rescuing, the dog or the cat?'  
A: *Televizyonda itfaiyeci kediyi kurtarıyor.*  
'On TV, the firefighter is rescuing the cat.'
- (5.37) Q: *Sahada takımı kim yoruyor?*  
'On the pitch, who is tiring (out) the team?'  
A: *Sahada takımı antrenör yoruyor.*  
'On the pitch, the trainer is tiring (out) the team.'
- (5.38) Q: *Filmde kim eşeği seviyor, çocuk mu kadın mı?*  
'In the movie, who is petting the donkey, the child or the woman?'  
A: *Filmde kadın eşeği seviyor.*  
'In the movie, the woman is petting the donkey.'
- (5.39) Q: *Ormanda neyi korucu ekiyor, fidanı mı çiçeği mi?*  
'In the forest, what is the ranger planting, the sapling or the flower?'

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A: *Ormanda fidanı korucu ekiyor.*

'In the forest, the ranger is planting the sapling.'

(5.40) Q: *Filmde ajan neyi gizliyor, kamyonu mu arabayı mı?*

'In the movie, what is the agent surveying, the truck or the car?'

A: *Filmde ajan arabayı gizliyor.*

'In the movie, the agent is surveying the car.'

NEW-INFORMATION NARROW SUBJECT FOCUS TARGET AT  
PERIPHERAL POSITION (N = 10)

(5.41) Q: *Mutfakta kim yumurtayı çırpıyor?*

'In the kitchen, who is whisking the egg?'

A: *Mutfakta kız yumurtayı çırpıyor.*

'In the kitchen, the girl is whisking the egg.'

(5.42) Q: *Garajda kim koltuğu örtüyor?*

'In the garage, who is covering (up) the couch?'

A: *Garajda baba koltuğu örtüyor.*

'In the garage, the father is covering (up) the couch.'

(5.43) Q: *Depoda kim kartonu taşıyor?*

'In the warehouse, who is carrying the cardboard box?'

A: *Depoda bayi kartonu taşıyor.*

'In the warehouse, the seller is carrying the cardboard box.'

(5.44) Q: *Pistte kim yarıştı alkışlıyor?*

'On the track, who is applauding the race?'

A: *Pistte çocuk yarıştı alkışlıyor.*

'On the track, the child is applauding the race.'

(5.45) Q: *Mutfakta kim hamuru yoğuruyor?*

'In the kitchen, who is kneading the dough?'

A: *Mutfakta kadın hamuru yoğuruyor.*

'In the kitchen, the woman is kneading the dough.'

(5.46) Q: *Bankada kim parayı izliyor?*

'In the bank, who is watching the money?'

A: *Bankada haydut parayı izliyor.*

'In the bank, the bandit is watching the money.'



- (5.47) Q: *Laboratuvarda kim ocağı kısıyor?*  
'In the laboratory, who is turning down the cooker?'  
A: *Laboratuvarda adam ocağı kısıyor.*  
'In the laboratory, the man is turning down the cooker.'
- (5.48) Q: *Masada kim işdeyi kesiyor?*  
'At the table, who is cutting the silverberry?'  
A: *Masada garson işdeyi kesiyor.*  
'At the table, the waiter is cutting the silverberry.'
- (5.49) Q: *Uçakta kim kaçağı tutukluyor?*  
'On the aeroplane, who is arresting the fugitive?'  
A: *Uçakta pilot kaçağı tutukluyor.*  
'On the aeroplane, the pilot is arresting the fugitive.'
- (5.50) Q: *Çölde kim muzı gömüyor?*  
'In the desert, who is burying the banana?'  
A: *Çölde çocuk muzı gömüyor.*  
'In the desert, the child is burying the banana.'

NEW-INFORMATION NARROW OBJECT FOCUS TARGET AT  
PERIPHERAL POSITION (N = 10)

- (5.51) Q: *Mutfakta neyi anne kızartıyor?*  
'In the kitchen, what is the mother frying?'  
A: *Mutfakta patatesi anne kızartıyor.*  
'In the kitchen, the mother is frying the potato.'
- (5.52) Q: *Bahçede neyi kuş saklıyor?*  
'In the garden, what is the bird hiding?'  
A: *Bahçede pideyi kuş saklıyor.*  
'In the garden, the bird is hiding the flatbread.'
- (5.53) Q: *Bodrumda neyi fare duyuyor?*  
'In the basement, what is the mouse hearing?'  
A: *Bodrumda topu fare duyuyor.*  
'In the basement, the mouse hears the ball.'
- (5.54) Q: *Odada neyi çocuk sıçratıyor?*  
'In the room, what is the child splashing?'

Appendix C. Appendices from chapter 5

- A: *Odada bardağı çocuk sıçratıyor.*  
'In the room, the child is splashing the glass.'
- (5.55) Q: *Belgeselde neyi aslan avlıyor?*  
'In the documentary, what is the lion hunting?'
- A: *Belgeselde maymunu aslan avlıyor.*  
'In the documentary, the lion is hunting the monkey.'
- (5.56) Q: *Filmde neyi maymun tırmanıyor?*  
'In the movie, what is the monkey climbing?'
- A: *Filmde engeli maymun tırmanıyor.*  
'In the movie, the monkey is climbing the obstacle.'
- (5.57) Q: *Dükkânda neyi berber temizliyor?*  
'In the shop, what is the barber cleaning?'
- A: *Dükkânda şapkayı berber temizliyor.*  
'In the shop, the barber is cleaning the hat.'
- (5.58) Q: *Bankada neyi kuyumcu sayıyor?*  
'In the bank, what is the jeweller counting?'
- A: *Bankada parayı kuyumcu sayıyor.*  
'In the bank, the jeweller is counting the money.'
- (5.59) Q: *Depoda neyi polis koruyor?*  
'In the warehouse, what is the policeman protecting?'
- A: *Depoda rayı polis koruyor.*  
'In the warehouse, the policeman is protecting the railroads.'
- (5.60) Q: *Hapiste neyi suçlu sürüklüyor?*  
'In the prison, what is the offender dragging?'
- A: *Hapiste kabloyu suçlu sürüklüyor.*  
'In the prison, the offender is dragging the cable.'

NEW-INFORMATION NARROW SUBJECT FOCUS TARGET AT  
PREVERBAL POSITION (N = 10)

- (5.61) Q: *Videoda oteli kim süpürüyor?*  
'In the video, who is sweeping the hotel?'
- A: *Videoda oteli kadın süpürüyor.*  
'In the video, the woman is sweeping the hotel.'

- (5.62) **Q:** *Meydanda askeri kim selamlıyor?*  
'At the square, who is greeting/saluting the soldier?'  
**A:** *Meydanda askeri kız selamlıyor.*  
'At the square, the girl is greeting/saluting the soldier.'
- (5.63) **Q:** *Ormanda kurdu kim dövüyor?*  
'In the forest, who is beating up the wolf?'  
**A:** *Ormanda kurdu baba dövüyor.*  
'In the forest, the father is beating up the wolf.'
- (5.64) **Q:** *Sokakta topu kim onarıyor?*  
'At the street, who is fixing the ball?'  
**A:** *Sokakta topu çocuk onarıyor.*  
'At the street, the child is fixing the ball.'
- (5.65) **Q:** *Markette bozayı kim donduruyor?*  
'At the supermarket, who is freezing the boza?'  
**A:** *Markette bozayı bayi donduruyor.*  
'At the supermarket, the seller is freezing the boza.'
- (5.66) **Q:** *Kahvede minderi kim yayıyor?*  
'At the coffeehouse, who is spreading out mat?'  
**A:** *Kahvede minderi garson yayıyor.*  
'At the coffeehouse, the waiter is spreading out the mat.'
- (5.67) **Q:** *Filmde kibriti kim yakıyor?*  
'In the movie, who is lighting the match?'  
**A:** *Filmde kibriti nişancı yakıyor.*  
'In the movie, the (sharp)shooter is lighting the match.'
- (5.68) **Q:** *Videoda dükkânı kim yıkıyor?*  
'In the video, who is washing the store?'  
**A:** *Videoda dükkânı berber yıkıyor.*  
'In the video, the barber is washing the store.'
- (5.69) **Q:** *Çayırda çukuru kim kaplıyor?*  
'In the meadow, who is covering the hole?'  
**A:** *Çayırda çukuru çoban kaplıyor.*  
'In the meadow, the shepherd is covering the hole.'
- (5.70) **Q:** *Bahçede pili kim takıyor?*  
'In the garden, who is putting in the battery?'

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A: *Bahçede pili komşu takıyor.*

'In the garden, the neighbour is putting in the battery.'

NEW-INFORMATION NARROW OBJECT FOCUS TARGET AT  
PREVERBAL POSITION (N = 10)

(5.71) Q: *Sahilde kuş neyi arıyor?*

'At the shore, what is the bird searching (for)?'

A: *Sahilde kuş mağarayı arıyor.*

'At the shore, the bird is searching (for) the cave.'

(5.72) Q: *Kapıda anne neyi ilikliyor?*

'At the door, what is the mother buttoning up?

A: *Kapıda anne ceketini ilikliyor.*

'At the door, the mother is buttoning up the jacket.'

(5.73) Q: *Filmde eşek neyi aşıyor?*

'In the movie, is the donkey surpassing?'

A: *Filmde eşek ormanı aşıyor.*

'In the movie, the donkey is surpassing the forest.'

(5.74) Q: *Filmde gelin neyi gıcırdatıyor?*

'In the movie, what is the bride making squeak?'

A: *Filmde gelin parkeyi gıcırdatıyor.*

'In the movie, the bride is making the floor squeak.'

(5.75) Q: *Marinada çocuk neyi fırçalıyor?*

'At the marina, what is the child brushing (up)?'

A: *Marinada çocuk gemiyi fırçalıyor.*

'At the marina, the child is brushing (up) the ship.'

(5.76) Q: *Videoda dansöz neyi topluyor?*

'In the video, what is the bellydancer cleaning up?'

A: *Videoda dansöz büroyu topluyor.*

'In the video, the bellydancer is cleaning up the office.'

(5.77) Q: *Restoranda garson neyi silkeliyor?*

'At the restaurant, what is the waiter shaking off?'

A: *Restoranda garson tozu silkeliyor.*

'At the restaurant, the waiter is shaking off the dust.'

- (5.78) **Q:** *Evinde kadın neyi üflüyor?*  
'In her house, what is the woman blowing (out?)?'  
**A:** *Evinde kadın mumu üflüyor.*  
'In her house, the woman is blowing out the candle.'
- (5.79) **Q:** *Dükkânda çiçekçi neyi buduyor?*  
'At the shop, what is the florist pruning?'  
**A:** *Dükkânda çiçekçi gülü buduyor.*  
'At the shop, the florist is pruning the rose.'
- (5.80) **Q:** *Çiftlikte tavuk neyi koparıyor?*  
'At the farm, what is the chicken ripping off?'  
**A:** *Çiftlikte tavuk pamuğu koparıyor.*  
'At the farm, the chicken is ripping off the cotton.'

CONTRASTIVE NARROW SUBJECT FOCUS TARGET AT  
PERIPHERAL POSITION (N = 10)

- (5.81) **Q:** *Ormanda kim kışı düşünüyor, şair mi aile mi?*  
'In the forest, who is thinking about the winter, the poet or the family?'  
**A:** *Ormanda şair kışı düşünüyor.*  
'In the forest, the poet is thinking about the winter.'
- (5.82) **Q:** *Okulda kim valiyi gıdıklıyor, kız mı dede mi?*  
'At school, who is tickling the governor, the girl or the grandfather?'  
**A:** *Okulda kız valiyi gıdıklıyor.*  
'At school, the girl is tickling the governor.'
- (5.83) **Q:** *Dışarıda kim yağmuru dinliyor, esir mi kral mı?*  
'Outdoors, who is listening to the rain, the slave or the king?'  
**A:** *Dışarıda esir yağmuru dinliyor.*  
'Outdoors, the slave is listening to the rain.'
- (5.84) **Q:** *Garajda kim heykeli yontuyor, asker mi kadın mı?*  
'In the garage, who is sculpting the statue,  
the soldier or the woman?'  
**A:** *Garajda kadın heykeli yontuyor.*  
'In the garage, the woman is sculpting the statue.'
- (5.85) **Q:** *Otobüste kim kafesi deviriyor, çocuk mu pilot mu?*  
'On the bus, who is toppling the cage, the child or the pilot?'

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- A: *Otobüste pilot kafesi deviriyor.*  
'On the bus, the pilot is toppling the cage.'
- (5.86) Q: *Filmde kim altını tutuyor, berber mi haydut mı?*  
'In the movie, who is holding the gold, the barber or the bandit?'
- A: *Filmde haydut altını tutuyor.*  
'In the movie, the bandit is holding the gold.'
- (5.87) Q: *Kabinde kim faksı atıyor, seçmen mi garson mu?*  
'In the booth, who is throwing away the fax, the voter or the waiter?'
- A: *Kabinde seçmen faksı atıyor.*  
'In the booth, the voter is throwing away the fax.'
- (5.88) Q: *Mutfakta kim balı süzüyor, kadın mı çocuk mu?*  
'In the kitchen, who is straining the honey, the woman or the child?'
- A: *Mutfakta çocuk balı süzüyor.*  
'In the kitchen, the child is straining the honey.'
- (5.89) Q: *Postanede kim küpeyi gönderiyor, kuyumcu mu çiçekçi mi?*  
'At the post office, who is sending the earring, the jeweller or the florist?'
- A: *Postanede kuyumcu küpeyi gönderiyor.*  
'At the post office, the jeweller is sending the earring.'
- (5.90) Q: *Ormanda kim çadırı yırtıyor, kaçak mı çoban mı?*  
'In the forest, who is ripping (up) the tent, the fugitive or the shepherd?'
- A: *Ormanda çoban çadırı yırtıyor.*  
'In the forest, the shepherd is ripping (up) the tent.'

CONTRASTIVE NARROW OBJECT FOCUS TARGET AT  
PERIPHERAL POSITION (N = 10)

- (5.91) Q: *İskelede neyi kuş sarıyor, aynayı mı şişeyi mi?*  
'At the pier, what is the bird wrapping, the mirror or the bottle?'
- A: *İskelede şişeyi kuş sarıyor.*  
'At the pier, the bird is wrapping the bottle.'
- (5.92) Q: *Bijuteride neyi dede tartıyor, atkıyı mı küpeyi mi?*  
'At the bijouterie, what is the grandfather weighing, the scarf or the earring?'

- A: *Bijuteride küpeyi dede tartıyor.*  
'At the bijouterie, the grandfather is weighing the earring.'
- (5.93) Q: *Mutfakta neyi çocuk çalkalıyor, sütü mü sosu mu?*  
'In the kitchen, what is the child shanking (up), the milk or the sauce?'
- A: *Mutfakta sütü çocuk çalkalıyor.*  
'In the kitchen, the child is shaking (up) the milk.'
- (5.94) Q: *Belgeselde neyi deve geçiyor, arsayı mı dereyi mi?*  
'In the documentary, what is the camel passing, the field or the stream?'
- A: *Belgeselde dereyi deve geçiyor.*  
'In the documentary, the camel is passing the stream.'
- (5.95) Q: *Ahırda neyi kaçak öğütüyor, peyniri mi pirinci mi?*  
'At the stable, what is the fugitive grinding (up), the cheese or the rice?'
- A: *Ahırda pirinci kaçak öğütüyor.*  
'At the stable, the fugitive is grinding (up) the rice.'
- (5.96) Q: *Eğlencede neyi palyaço fişkırtıyor, çiçeği mi cihazı mı?*  
'At the party, what is the clown letting squirt, the flower or the device?'
- A: *Eğlencede çiçeği palyaço fişkırtıyor.*  
'At the party, the clown is letting the flower squirt.'
- (5.97) Q: *Tarlada neyi kuzgun sıyrıyor, yastığı mı zeytini mi?*  
'On the field, what is the raven tearing/scraping off, the pillow or the olive?'
- A: *Tarlada zeytini kuzgun sıyrıyor.*  
'On the field, the raven is tearing off the olive.'
- (5.98) Q: *Belgeselde neyi maymun yarıyor, inciri mi limonu mu?*  
'In the documentary, what is the monkey tearing in half, the fig or the lemon?'
- A: *Belgeselde inciri maymun yarıyor.*  
'In the documentary, the monkey is tearing the fig in half.'
- (5.99) Q: *Bahçede neyi köpek açıyor, balı mı buzunu mu?*  
'In the garden, what is the dog opening, the (jar of) honey or the ice?'
- A: *Bahçede balı köpek açıyor.*  
'In the garden, the dog is opening the (jar of) honey.'

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- (5.100) **Q:** *Tarlada neyi koyun kırıyor, çubuğu mu ağacı mı?*  
'On the field, what is the sheep breaking, the stick or the tree?'  
**A:** *Tarlada çubuğu koyun kırıyor.*  
'On the field, the sheep is breaking the stick.'

CONTRASTIVE NARROW SUBJECT FOCUS TARGET AT  
PREVERBAL POSITION (N = 10)

- (5.101) **Q:** *Tepede fırçayı kim fırlatıyor, anne mi kız mı?*  
'At the hill, who is throwing the brush, the mother or the girl?'  
**A:** *Tepede fırçayı kız fırlatıyor.*  
'At the hill, the girl is throwing the brush.'
- (5.102) **Q:** *Kitapta binayı kim tekmeliyor, kral mı vali mi?*  
'In the book, who is kicking the building, the king or the slave?'  
**A:** *Kitapta binayı kral tekmeliyor.*  
'In the book, the king is kicking the building.'
- (5.103) **Q:** *Odada tabağı kim kokluyor, dede mi anne mi?*  
'In the room, who is smelling the plate, the grandfather or the mother?'  
**A:** *Odada tabağı anne kokluyor.*  
'In the room, the mother is smelling the plate.'
- (5.104) **Q:** *Havalimanında uçuşu kim seçiyor, suçlu mu pilot mu?*  
'At the airport, who is picking the flight, the culprit or the pilot?'  
**A:** *Havalimanında uçuşu pilot seçiyor.*  
'At the airport, the pilot is picking the flight.'
- (5.105) **Q:** *Siperde pusuyu kim bekliyor, memur mu asker mi?*  
'In the trench, who is awaiting the ambush,  
the officer or the soldier?'  
**A:** *Siperde pusuyu asker bekliyor.*  
'In the trench, the soldier is awaiting the ambush.'
- (5.106) **Q:** *Ofiste işareti kim yazıyor, garson mu seçmen mi?*  
'At the office, who is writing the sign, the waiter or the voter?'  
**A:** *Ofiste işareti seçmen yazıyor.*  
'At the office, the voter is writing the sign.'
- (5.107) **Q:** *Salonda topu kim kaldırıyor, berber mi dansöz mü?*  
'In the hall, who is lifting the ball, the barber or the bellydancer?'



A: *Salonda topu berber kaldırıyor.*  
'In the hall, the barber is lifting the ball.'

(5.108) Q: *Bahçede sineği kim yakalıyor, çocuk mu gelin mi?*  
'In the garden, who is catching the fly, the child or the bride?'

A: *Bahçede sineği çocuk yakalıyor.*  
'In the garden, the child is catching the fly.'

(5.109) Q: *Parkta salatayı kim çalıyor, palyaço mu nişancı mı?*  
'In the park, who is stealing the salad,  
the clown or the (sharp)shooter?'

A: *Parkta salatayı palyaço çalıyor.*  
'In the park, the clown is stealing the salad.'

(5.110) Q: *Mutfakta narı kim rendeliyor kadın mı çocuk mu?*  
'In the kitchen, who is grating the pomegranate,  
the woman or the child?'

A: *Mutfakta narı kadın rendeliyor.*  
'In the kitchen, the woman is grating the pomegranate.'

CONTRASTIVE NARROW OBJECT FOCUS TARGET AT  
PREVERBAL POSITION (N = 10)

(5.111) Q: *Ormanda keçi neyi kazıyor, ağacı mı çukuru mu?*  
'In the forest, what is the goat scratching (off), the tree or the hole?'

A: *Ormanda keçi çukuru kazıyor.*  
'In the forest, the goat is scratching the hole.'

(5.112) Q: *Odada aile neyi okuyor, haritayı mı formülü mü?*  
'In the room, what is the family reading, the map or the formula?'

A: *Odada aile haritayı okuyor.*  
'In the room, the family is reading the map.'

(5.113) Q: *Evde kız neyi öpüyor, defteri mi mektubu mu?*  
'At the house, what is the girl kissing, the folder or the letter?'

A: *Evde kız mektubu öpüyor.*  
'At the house, the girl is kissing the letter.'

(5.114) Q: *Ofiste kadın neyi ölçüyor, ekranı mı kâğıdı mı?*  
'In the office, what does the woman measure, the screen or the paper?'

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A: *Ofiste kadın kâğıdı ölçüyor.*

'In the office, the woman measures the paper.'

(5.115) Q: *Çiftlikte horoz neyi döküyor, içkiyi mi parayı mı?*

'At the farm, what is the rooster spilling, the liquor or the money?'

A: *Çiftlikte horoz içkiyi döküyor.*

'At the farm, the rooster is spilling the liquor.'

(5.116) Q: *Odada dansöz neyi ütülüyor, atkıyı mı yamayı mı?*

'In the room, what is the bellydancer ironing, the scarf or the patch?'

A: *Odada dansöz atkıyı ütülüyor.*

'In the room, the bellydancer is ironing the patch.'

(5.117) Q: *Ormanda tavşan neyi kovalıyor, keçiyi mi fareyi mi?*

'In the forest, what is the rabbit chasing, the goat or the mouse?'

A: *Ormanda tavşan fareyi kovalıyor.*

'In the forest, the rabbit is chasing the mouse.'

(5.118) Q: *Dışarıda adam neyi yıkıyor, hastaneyi mi lokantayı mı?*

'Outdoors, what is the man tearing down,  
the hospital or the diner?'

A: *Dışarıda adam lokantayı yıkıyor.*

'Outdoors, the man is tearing down the diner.'

(5.119) Q: *Filmde memur neyi gösteriyor, tüpü mü kumu mu?*

'In the movie, what is the officer showing,  
the (gas) cylinder or the candle?'

A: *Filmde memur tüpü gösteriyor.*

'In the movie, the officer is showing the (gas) cylinder.'

(5.120) Q: *Televizyonda horoz neyi geziyor, mezarı mı limanı mı?*

'On TV, what is the rooster touring, the graveyard or the harbour?'

A: *Televizyonda horoz limanı geziyor.*

'On TV, the rooster is touring the harbour.'

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# Propositions

accompanying the dissertation

## **Production, perception, and processing of focus in Turkish**

by Atilla ATASOY

1. There is no focus position in Turkish, neither in the sense of a strict focus position language nor as a focally loaded position facilitating focus perception and/or processing.
2. The evident syntactic variability of focus in the Turkish preverbal area is a consequence of movement triggered by other IS aspects like topicalisation and backgrounding.
3. Focus type in Turkish, differentiating new-information focus and contrastive focus, is not associated with word order in production, perception, or processing. In particular, the peripheral position in Turkish is not restricted to nor preferred for contrastive focus.
4. Significant acoustic correlates of focus size (broad sentence focus vs narrow constituent focus) and focus target (narrow subject focus vs narrow object focus) in fundamental frequency and intensity were observed in the forms of focal boost, (postfocal) deaccentuation, and the presence or absence of a phrase-final rise in the sentence-initial word.
5. No acoustic correlates of focus type in simple, three-word transitive structures were observed. Furthermore, such focus type realisations proved interchangeable with mismatch not leading to lower judgment rates or processing speeds.
6. *Cum hoc non est propter hoc*: Correlation does not imply causation.
7. Scientific inquiry shouldn't stop just because a reasonable explanation has apparently been found.

— Neil deGrasse Tyson: *Death by Black Hole - and Other Cosmic Quandaries*