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Prosodic encoding of contrastive topic in Czech

Prozodické vyjádření kontrastivního topiku v češtině

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Prohlášení

Prohlašuji, že jsem diplomovou práci vypracovala samostatně, že jsem řádně citovala všechny použité prameny a literaturu a že práce nebyla využita v rámci jiného vysokoškolského studia či k získání jiného nebo stejného titulu.

V Praze dne 22. 7. 2025

Daniela Kořánová

Abstract

The presented master's thesis investigates the notion of contrastive topic in Czech, especially the way it is prosodically encoded. Contrastive topic is understood as a topic – denoting what the utterance is about – which at the same time contrasts with contextual or implied alternatives. Contrastive topics have a tendency to appear at the beginning of an utterance and are generally associated with the so-called hat-contour – an intonational contour of an utterance that rises on the contrastive topic constituent and falls on the focus constituent. While previous research on the Czech contrastive topic has verified this tendency, the conditions under which the hat contour is used or even required remain poorly understood. This thesis used a controlled experimental design to test whether prosody interacts with two factors. One of them is the type of contrastive topic (plain x it-cleft). There has yet been no attention given to structures with topic particle *to* ('it', so-called *it*-cleft), e.g., *Řidič utrpěl jen lehká zranění. To [motorkq]$_{CT}$ dopadla znatelně hůře*. ('The driver suffered minor injuries. *To* motorbike ended up noticeably worse.', adapted from SYN 2020). Furthermore, the explicitness of alternatives for the target contrastive topic and its effect on the intonational contour was tested – explicit: *Na tom filmu dělal zkušený režisér a kameraman. [Režisér]$_{CT}$ vyhrál Oscara*. ('An experienced director and cameraman worked on the film. The director won an Oscar') x implicit: *Na tom filmu dělal tým zkušených filmařů. [Režisér]$_{CT}$ vyhrál Oscara*. ('An experienced team of filmmakers worked on the film. The director won an Oscar'). The results suggest that the hat-contour intonation is optional even for the it-cleft structures and the prosody does not interact with the explicitness of the alternatives.

Key words:

Contrastive topic, information structure, prosody, experiment

Abstrakt

Tato diplomová práce se zabývá kontrastivním topikem v češtině, konkrétně jeho prozodickým vyjádřením. Kontrastivní topik je chápán jako set alternativ, které tvoří téma promluvy, resp. označuje to, o čem daná promluva je. Kontrastivní topik se zpravidla objevuje na začátku věty / promluvy a bývá spojován s tzv. *hat-contour* intonací, tj. intonační průběh promluvy, který stoupá na konstituentu s kontrastivním topikem a klesá na fokusovaném konstituentu. Předchozí výzkum kontrastivního topiku ukázal tyto tendence i na češtině. Co ale zatím zůstávalo stranou pozornosti, jsou konstrukce s topikalizační částicí *to* (tzv. *it-cleft*), např *Řidič utrpěl jen lehká zranění. To [motorkq]$_{CT}$ dopadla znatelně hůře*. (upraveno z korpusu SYN2020). Pro účely této práce byla vytvořena experimentální studie, která měla zodpovědět na dvě základní otázky – jak prozódie interaguje s typem kontrastivního topiku (s částicí *to* x bez částice) a zda má na prozodické vyjádření vliv explicitnost výběru alternativ, které mohou být kontrastivním topikem (explicitní: *Na tom filmu dělal zkušený režisér a kameraman. [Režisér]$_{CT}$ vyhrál Oscara*. X implicitní: *Na tom filmu dělal tým zkušených filmařů. [Režisér]$_{CT}$ vyhrál Oscara*.). Výsledky ukazují, že použití hat-contour intonace není povinné ani pro promluvy s částicí to a že prozódie neinteraguje s explicitností alternativ.

Klíčová slova:

Kontrastivní topik, informační struktura, prozódie, experiment

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List of abbreviations

ACC	Accusative (case)*
AUX	Auxiliary*
CG	Common Ground
CT	Contrastive topic
F	Female (gender)*
F	Focus
INSTR	Instrumental (case)*
H	High tone (ToBI)
L	Low tone (ToBI)
LOC	Locative (case)*
M	Masculine (gender)*
N	Neuter (gender)*
NEG	Negation*
NOM	Nominative (case)*
PDT	Prague Dependency Treebank
PL	Plural*
PPA	Possible Pragmatic Assertions
REFL	Reflective*
RFR	Rise-fall-rise (intonation)
SG	Singular*
SVO	Subject Object Verb (word order)

*Abbreviations marked with * were used for glossing of non-English material*

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1 Introduction

The presented master's thesis concentrates on the notion of contrastive topic and its prosodic encoding in Czech.

Contrastive topic (CT) as a notion of information structure has been studied in multiple languages. The CT constituent represents one alternative taken from a set of alternatives which can serve as a theme of an utterance, i.e., what the utterance is about (Büring 2003, Krifka 2008). For example, in the sentence *Fred ate the beans and Mary ate the eggplant*. (adapted from Büring 2003) the subjects *Fred* and *Mary* are the alternatives for each of the activities (here the activity of eating). From the perspective of prosody, contrastive topic is associated with a rising intonation (Jackendoff 1972). Together with a focused constituent (i.e., the part of the utterance that is rhematic) that has a falling intonation, the CT forms a so-called hat-contour intonation. This intonational pattern is attested for English (Büring 2008, Constant 2012) and German (Büring 2006, Féry 2007).

Although contrastive topic in Czech has been investigated (e.g., Hajičová & Sgall 2004, Veselá 2007, Sturgeon 2006), there is no study concerning the use of the topic particle *to* (so-called *it*-cleft contrastive topic), an example of such structure is in (1). More importantly, a naturalness rating experiment of the prosodic encoding of such structures has yet not been done.

(1) adapted from SYN2020 (corpora of written Czech, Křen et al. 2020)

Řidič	při	nehodě	utrpěl	jen	lehká	zranění.
driver.NOM	at	accident.LOC	suffered	only	minor	injuries
To	[motorka]$_{CT}$	dopadla	znatelně	hůře.		
to	motorbike.NOM	ended_up	noticeably	worse		

'The driver suffered only minor injuries in the accident. The motorbike ended up noticeably worse.'

To look more closely at structures with contrastive topics in Czech, an experimental study was conducted. The main goal of this study is to establish whether the type of contrastive topic (plain or *it*-cleft) interacts with the way it is prosodically encoded. The hypotheses are the following: first, the structures with *it*-cleft CTs seem to require the hat-contour intonation more mandatorily than the structures with plain CTs where the hat-contour is optional, and second, the explicitness of CT alternatives is predicted to also interact with the prosody.

The structure of this thesis is as follows: Chapters 2 and 3 will introduce the notion of topic in the context of information structure. The emphasis will be put specifically on the contrastive topic and the relevant literature concerning this phenomenon. The theories of the

use of contrastive topic, its position in an utterance, and its prosodical encoding will be discussed. Chapter 2 will be based mainly on the well-studied languages English and German. Chapter 3 will be about contrastive topics in Czech specifically. The last sub-chapter will deal with the Czech topic particle *to*.

The fourth chapter presents an experimental study that was conducted for the purpose of this thesis. A perception-based experiment was created to test the interaction of different types of contrastive topics and prosody in Czech. The design of the study and the hypothesis will be introduced. Lastly, the results will be presented and discussed.

2 Theoretical background

The main focus of this thesis is the contrastive topic in Czech. Before discussing this particular phenomenon, I will first introduce information structure and prosody in general, as well as a brief background to focus, which also plays a role in the experiment (see Chapter 4). Contrastive topic will be discussed generally, based on research on English and German. Lastly, I will review the findings of the Czech data that have been discovered until now.

2.1 Information structure

Information structure is the way information is encoded in an utterance, depending on the discourse pragmatic status of the information. It is tightly connected to the discourse setting and what the speaker intends to transmit to his hearer. As Lambrecht (1994) puts it, the information structure is "that component of sentence grammar in which propositions as conceptual representations of states of affairs are paired with lexicogrammatical structures in accordance with the mental states of interlocutors who use and interpret these structures as units of information in given discourse contexts." (Lambrecht 1994).

Another way of thinking about information structure is that of the view that it is a set of concepts, as in Büring (2006):

> Gemeint ist damit [Informationsstruktur] die Gliederung eines Satzes – oder die Markierung einzelner Konstituenten in einem Satz – als Fokus, Thema, Rhema, Kommentar oder Topik.
>
> What is meant [by information structure], is the division of a sentence – or the marking of individual constituents in a sentence – like focus, theme, rheme, comment or topic.
>
> (Büring 2006, p. 144, my translation)

These concepts share relevance to the morphosyntactic and prosodic structuring of an utterance. For the purpose of this thesis, only focus and topic will be further discussed.

2.2 Focus

Focus indicates the presence of alternatives that are relevant for the current discourse (Rooth 1992, Krifka 2008). The rest of the utterance, i.e., the part that is not focused, is called the background. Focus is the most informationally and prosodically prominent part of the utterance.

Through the concept of alternatives (Rooth 1992), a phrase with focus has an additional semantic value. What is meant by that can be illustrated on the utterances in (2).

(2) adapted from Rooth (1992)

a Mary likes [Sue]$_F$.

b [Mary]$_F$ likes Sue.

By marking *Sue* as the focus in the utterance in (2a), a set of alternatives is made. This set contains all possible entities that could be liked by *Mary* – apart from *Sue*, *Mary* can like *Benjamin*, another alternative is *Mary likes Sarah.*, and so on. All of these alternatives are possible answers to the question *Who is liked by Mary?*. The utterance in (2b), on the other hand, has the focus on *Mary*. The set of alternatives is thus created for entities that like *Sue*. The alternatives can be for example the following: *Benjamin likes Sue*., *Sarah likes Sue.*, or *My boss likes Sue*. All of these alternatives can be used to answer the question *Who likes Sue?*. The ordinary semantic value is the same for both utterances in (2) (i.e., there are two entities – *Mary* and *Sue* – and the first entity likes the second entity), the focus semantic value differs based on the entity that is in focus. The mentioned questions – *Who is liked by Mary?* and *Who likes Sue?* – can be answered by the utterances (2a) and (2b) respectively, otherwise the answers would not be congruent.

Focus can be used in pragmatically different situations – based on this, different kinds of focus can be distinguished (Krifka 2008). The first type is answerhood as exemplified in (3a). The focused constituent in the reply – indicated by the subscript F - contains the answer to the given *wh*-question, or rather the focus *a detective story* constitutes one of the alternatives – possible answers – raised by the question word *what* in the question. The second type is contrastive (correctional) focus as in (3b). Here, by contrasting *Sophia* with *Luisa*, B corrects A's statement. Focus can also be used to highlight parallel alternatives in interpretations (3c).

(3) (a) A: What is Sophia reading?
B: Sophia is reading [a detective story]$_F$.

(b) A: Luisa is reading a detective story.
B: [Sophia]$_F$ is reading a detective story.

(c) Luisa is reading a horror story and Sophia is reading a [detective]$_F$ story.

Focus can also be used for semantic (truth-conditional or presuppositional) purposes, for example, in association with focus-sensitive particles (example in 4) or negation.

(4) Only [Sophia]$_F$ is reading a detective story.

Czech focus-sensitive particles are, for example, *jenom, jen, pouze* ('only'), *také/taky* ('also'). Below in (5) are examples of focus in Czech. Particles *jenom* and *taky* are used in one of the sub-experiments of my experimental study, more on the position of Czech focus-sensitive particles and the relation to information structure in Hajičová (1995).

(5) (a) A: Sofie čte jenom [detektivky]$_F$.
B: Také [Marek]$_F$ čte detektivky.

(b) Sofie čte jenom detektivky.
Sofie.NOM reads only detective_stories.ACC

'Sofie reads only detective stories.'

Také Marek čte detektivky.
also Marek.NOM reads detective_stories.ACC
'Marek also reads detective stories.'

In B's reply in (5), *Marek* is a contrastive focus (contrasted with *Sofie*) – this shows that the contrastive focus does not have to be strictly corrective, but also additive in the sense that it brings another element making the background true. The semantic effect of a focus can be illustrated with the utterances in (6).

(6) (a) Jenom [Sofie]$_F$ čte detektivky.

'Only Sofie reads detective stories.'

(b) Sofie čte jenom [detektivky]$_F$.

'Sofie reads only detective stories.'

(c) Také [Marek]$_F$ čte detektivky.

'Marek also reads detective stories.'

(d) Marek čte také [detektivky]$_F$.

'Marek reads also detective stories.'

(6a) has focus on *Sofie*, (6b) on *detektivky*. Although the two utterances look similar, they have different truth conditions due to the position of focus. For (a), there exists nobody else who reads detective stories except for Sofie; for (b), it is true that there is nothing else that Sofie reads except for detective stories. The utterances in (c) and (d) have the same truth conditions, but they differ in their presuppositions. (c) presupposes that there are some other individuals who read detective stories other than Marek. The utterance in (d), on the other hand, presupposes that Marek reads not only detective stories, but something else, too.

The concept of the contrastive focus will also be key for the understanding of the notion of contrastive topic, since structures with contrastive topic also contain contrastive focus in order to be natural.

Focus in the sense of alternative semantics (Rooth 1992) is formally encoded by prosodic prominence. It is the constituent that is the locus of the so-called nuclear or sentence stress (Kügler & Calhoun 2020). Jackendoff (1972) associates focus with a A-accent, i.e., a

falling intonational pattern. The prosodic prominence of focus is also attested for focus in Czech (Daneš 1957, Veselá 2007, Šimík 2024).

2.3 Topic

2.3.1 (Aboutness) topic

Topic, also referred to as theme, contains the information what the utterance is about (Lambrecht 1994, Tomioka 2021). It is complemented by a comment, which provides more information about the topic. A comment is the part of the utterance that is, in most cases, new information to the hearer. An example can be seen in (7).

(7) (a) preceding context: talking about relatives
My brother bought a house last year.

(b) [My brother]$_{\text{Topic}}$ [bought a house last year]$_{\text{Comment}}$.

In section 2.2, the notion of focus was discussed. But what is its relation to the notions of topic or comment? It may seem that the comment is identical to the focus, but it does not have to be. In (8), there are examples of different focus – comment combinations for the sentence in (7a).

(8) (a) A: What did your brother do last year?
B: [He]$_{\text{Topic}}$ [[bought a house]$_{\text{F}}$ last year]$_{\text{Comment}}$.

(b) A: What did your brother buy last year?
B: [He]$_{\text{Topic}}$ [bought [a house]$_{\text{F}}$ last year]$_{\text{Comment}}$.

(c) A: When did your brother buy a house?
B: [He]$_{\text{Topic}}$ [bought it [last year]$_{\text{F}}$]$_{\text{Comment}}$.

(d) A: What about your brother? What has he been up to?
B: [He]$_{\text{Topic}}$ [[bought a house last year]$_{\text{F}}$]$_{\text{Comment}}$.

Reinhart (1981) addresses the notion of topic with the metaphor of library catalogue filing – the topic serves as a marker of which "file card" the information provided belongs to, or rather, the topic is chosen from an already existing "file card" or (if the topic is new) a new "file card" is created for this topic. This means that there are multiple sets of assertions from which the speaker can choose the topic of a target utterance based on the preceding context – Reinhart calls these Possible Pragmatic Assertions (PPA). For example, when talking about relatives and asking about someone's brother (as in 8), there is a PPA set with the element "brother". The answer to A's question in (8) has a subject that corresponds to this element in the PPA set, thus, this concrete PPA set was chosen, and the subject will be the topic of the sentence. However, if the subject is the new information and the object (or other non-subject) old information, the object is the topic of the utterance. Reinhart argues that there is a tendency for topics to be old information, but the topic should not be characterized only as a bearer of

old information. For instance, the utterance (7b) can mention the brother for the first time in the discourse; its topical status is accommodated thanks to the aforementioned relatives, to whom the brother belongs.

Krifka (2008) also points out that topic constituents do not have to deducible from context, but they can also be newly introduced, as in (9), where *a good friend of mine* is introduced to the common ground (CG) content (though, Krifka does not give us the preceding context of this utterance, so it is not quite clear why the target phrase should be marked as topic). The CG content consists of entities that have already been introduced to the common ground (similarly to the way assertions form the PPA set) and also contains a set of propositions presumed to be mutually accepted.

(9) [A good friend of mine]$_{\text{Topic}}$ [married Britney Spears last year]$_{\text{Comment}}$. Krifka (2008)

Since the topic itself does not have a dedicated prosodic encoding, it is sometimes argued that there is no informational structural category of topic (e.g., Büring 2006, 2016, Šimík 2024). The problematic use of topic as a category also reflects differences of supposed topic constituents in different languages (Büring 2016).

The category of a contrastive topic, on the other hand, seems unproblematic in the view of information structure.

2.3.2 Contrastive topic

As previously shown, the topic is something the utterance is about. In section 2.2, I also mentioned the existence of contrastive focus. Similarly to that, topic can as well be contrastive. To demonstrate what is meant by contrastive topic, let's look at examples in (10).

(10) (a) Clara played the saxophone and Joe played the trombone.
[Clara]$_{\text{Topic}}$ [played [the saxophone]$_{\text{F}}$]$_{\text{Comment}}$ and [Joe]$_{\text{Topic}}$ [played [the trombone]$_{\text{F}}$]$_{\text{Comment}}$.

(b) A: Who prepared what?
B: I prepared the salad and my friend prepared the cake.
[I]$_{\text{Topic}}$ [prepared [the salad]$_{\text{F}}$]$_{\text{Comment}}$ and [my friend]$_{\text{Topic}}$ [prepared [the cake]$_{\text{F}}$]$_{\text{Comment}}$.

(c) A: Bart has almost been kicked out of high school.
B: I heard that his sister Lisa graduated with honours.

A: [Bart]$_{\text{Topic}}$ [[has almost been kicked out of high school]$_{\text{F}}$]$_{\text{Comment}}$.
B: (I heard that) [his sister Lisa]$_{\text{Topic}}$ [[graduated with honours]$_{\text{F}}$]$_{\text{Comment}}$.

(d) Clara and Peter played the saxophone, Joe played the trombone (…) and Stephanie played the French horn.

[Clara and Peter]$_{\text{Topic}}$ [played [the saxophone]$_{\text{F}}$]$_{\text{Comment}}$, [Joe]$_{\text{Topic}}$ [played [the trombone]$_{\text{F}}$]$_{\text{Comment}}$ (…) and [Stephanie]$_{\text{Topic}}$ [played [the French horn]$_{\text{F}}$]$_{\text{Comment}}$.

In (10a), *Clara* and *Joe* are topics that are put together side by side, thus contrasted with each other. What's more, the foci used in this utterance (*the saxophone* and *the trombone*) are also contrastive. (10b) is an example of an answer to a question, where the topic *I* is contrasted with the topic *my friend*. Whether the topics are in one utterance or in multiple ones in order to be contrastive is irrelevant, as (10c) shows. The number of topics in contrast also does not matter (10d).

Now that we know what contrastive topics can look like, in the following section, I will present a more theoretical view on what contrastive topics are.

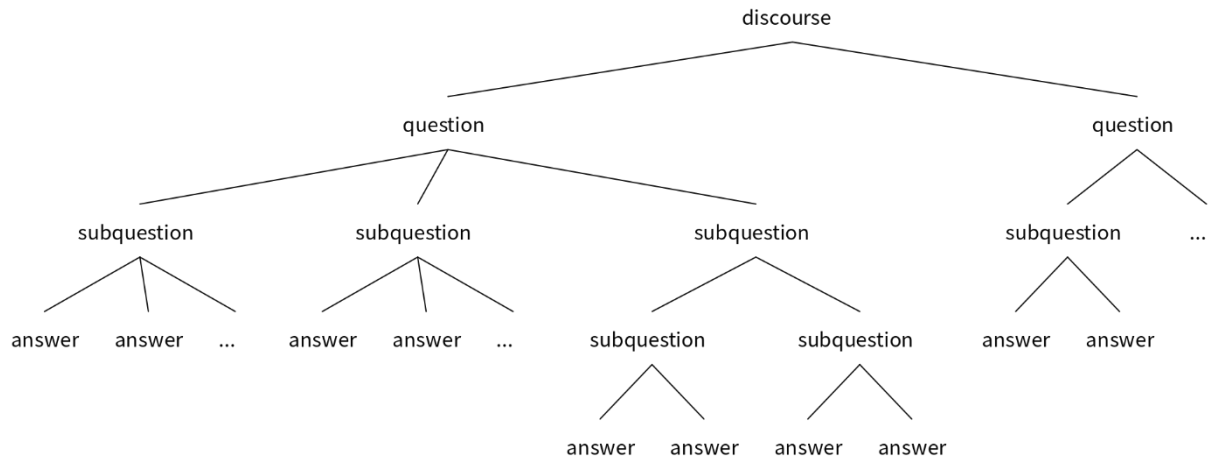
2.3.2.1 Prosody

Jackendoff (1972), following Bolinger (1965), establishes two types of accent – A- and B-accent. A is identified as a falling pattern, B by a rising pattern. A-accent marks focus, B-accent seems typical for contrastive topics. When combined in the order contrastive topic – focus, these accents form the so-called hat-contour (due to its shape).

2.3.2.2 Büring's approach to CTs

Büring (2003) maps CTs onto a discourse tree (Roberts 2012). Discourse trees are a way to visualise the mutual relations of utterances (or potential – implicit – utterances) – also called "moves" – in a discourse. Figure 1 shows a generalized discourse tree – it consists of questions and subquestions which are represented by moves (nodes). A subquestion can be further developed by another subquestion. The combination of a question and its subquestion(s) is called a strategy.

Figure 1 – General discourse tree



An important relation (that will be key for contrastive topic) is the direct domination of one move over a lower move. Büring calls it a question under discussion. In Figure 1, the leftmost subquestion is the question under discussion for its connected answer. In order to be relevant, the subordinate move has to answer (or further develop) the dominating question under discussion in some way.

Utterance containing a contrastive topic can be represented as a strategy with more than one question, these questions are all subordinate to the same question. In other words, an utterance containing a contrastive topic implies a set of alternative questions and, because a question is represented as a set of alternative answers, such utterance imply a set of sets of propositional alternatives. To demonstrate it, Büring's CT-value formation (as represented in (11)) will provide us with a clearer picture.

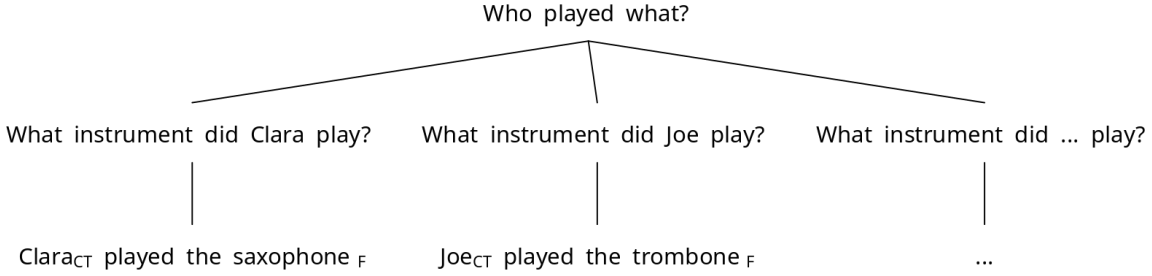
(11) CT-value formation Büring (2003)
step 1: Replace the focus with a *wh*-word and front the latter; if focus marks the finite verb or negation, front the finite verb instead.
step 2: Form a set of questions from the result of step 1 by replacing the contrastive topic with some alternative to it.

For our example in (12), I will use the utterance from (10a) as the base. *The saxophone* is the focused constituent of the utterance, to replace it with a *wh*-word, the phrase *what instrument* is used. In the second step, alternatives to the topic *Clara* are formed.

(12) $[\text{Clara}]_{CT}$ played $[\text{the saxophone}]_{F}$.
CT-value formation:
step 1: What instrument did Clara play?
step 2: What instrument did Clara play?
What instrument did Joe play?
What instrument did Stephanie play?
What instrument did … play?

Clara, Joe, and Stephanie all form potential contrastive topics. The questions in step 2 ultimately develop a bigger question *Who played what?*, as can be seen in the discourse tree in Figure 2.

Figure 2 – Discourse tree representing utterances with contrastive topic, order CT-F

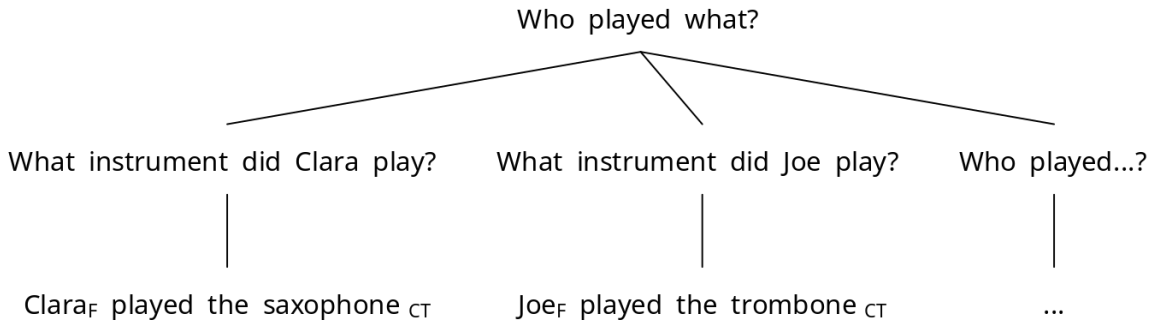


The questions and subquestions do not have to be explicit in the discourse. It is the ability to reconstruct these questions that gives us the alternatives, and thereby the contrastive topics.

For English, Büring (2003) also acknowledges the fact that one sentence can have two different intonational variants correlating with either the order contrastive topic followed by a focus (CT-F), or focus followed by contrastive topic (F-CT). For the sentence in (12), there is an option to utter it in a way shown in (13). The CT-value formation and the discourse tree (Figure 3) would then be different for this F-CT order from the order in (12) CT-F.

(13) [Clara]$_F$ played [the saxophone]$_{CT}$.
CT-value formation:
step 1: Who played the saxophone?
step 2: Who played the saxophone?
Who played the trombone?
Who played the French horn?
Who played …?

Figure 3 – Discourse tree representing structures with contrastive topic, order F-CT



Büring concludes this with the following: "A contrastive topic indicates that the sequence is part of a larger discourse which, since it is not part of the actual example, the competent speaker can only guess at, using the information provided by the location of the contrastive topic and focus in the sentence." (Büring 2003, p. 524). In other words, when a structure with the contrastive topic is heard, the speaker can infer a discourse structure (tree) in which the information is relevant (i.e., chooses the fitting discourse tree to convey the target meaning).

The cases of purely implicational topics are also discussed in Büring's work. What is meant by that is exemplified in (14). Büring classifies the structures containing this kind of topic as a rhetorical device. By answering the question in A's utterance with a contrastive topic, speaker B suggests that the bigger question is Where were the others (at the time of the murder)? – and thus creates a discourse where the speaker is just one of the alternatives (and that it would probably be more important to ask this question to someone else who is more suspicious).

(14) Adapted from Büring (2006)

A: Where were you (at the time of the murder)?
B: [I]$_{CT}$ was at [home]$_{F}$.

Up until this point, everything was based on English. Büring (2006) took this notion of thinking about contrastive topics and analysed German CTs. What's perhaps more important is that Büring discusses topicalization (*Topikalisierung*).

In German, the first position of a sentence with canonical word order can be occupied by the subject, expletive *es* ('it') or an adverbial. But there are also sentences with non-canonical word order (see example in (15)) where this tendency is not fulfilled.

(15) Büring (2006)

(a)	Der Klassenlehrer DET.NOM teacher	muss must	die Eltern DET.ACC parents	anrufen. to_call	canonical word order
(b)	Die Eltern DET.ACC parents	muss must	der Klassenlehrer DET.NOM teacher	anrufen. to_call	non-canonical word order

,The teacher must call the parents.'

The word order in (15b) does not correlate with one function of information structure, but it leaves two possible structures shown in (16). The phrase *die Eltern* either functions as a narrow focus (in a) or as a contrastive topic (in b).

(16) (a) A: Who does the teacher have to call?
B: [Die Eltern]$_{F}$ muss der Klassenlehrer anrufen.

(b) Who has to call the parents? / Who has to call the children? / Who has to call …?
[Die Eltern]$_{CT}$ muss [der Klassenlehrer]$_{F}$ anrufen.

Furthermore, Büring notes that the first position of the sentence is substantial for the contrastive topic since there are structures like those in (17b). If the adjective *karierte* is to be the focused constituent (for example if it is talked about bamboo socks with multiple patterns in the preceding context), there is a way of separating the noun phrase so that the focused element is at the end of the utterance and the contrastive topic at the beginning (i.e., topicalization of only part of a phrase), thus creating non-projective structure. This way, the word order contrastive topic – focus is kept, making it more natural in German.

(17) adapted form Büring (2006)

a Wir haben nur karierte Wollsocken.
[Wollsocken]$_{CT}$ haben wir nur [karierte]$_{F}$.

Wir	haben	nur	karierte	Wollsocken.
we	have.PL.1SG	only	checkered	wool_socks

'We have only checkered wool socks.'

b Wollsocken haben wir nur karierte.

wool_socks have.PL.1SG we only checkered

'As for the wool socks, we have them only checkered.'

2.3.2.3 RFR intonation versus hat-contour íntonation

Following Büring's theory, Constant (2012) discusses the difference between Rise-Fall-Rise (RFR) intonation and CT intonation. Constant describes the accents for English as indicated in (18) using ToBI notation (Silverman et al. 1992), where L stands for low tone, H for high tone, * signifies a pitch accent, – marks the right boundary of a phrase, % the boundary of an intonation phrase/utterance. The hat-contour that is typical for contrastive topic consists of the accent on the constituent containing CT and the constituent containing focus.

(18) adapted from Constant (2012)

CT = (L+)H* L –H%
F = H* L – L%

If there is a contrastive topic present in a German utterance, it needs to be completed with a focus. In English, there are certain structures without the focused constituent. In these cases, the so-called rise-fall-rise intonation (in the form presented in (19)) can be used. An example of this case is in (20) in B's reply.

(19) adapted from Constant (2012)
RFR = L*+H L – H%

(20) A: Can Elizabeth and Persephone come over tomorrow? Constant (2012)
B: [Elisabeth]$_{CT}$ can…
C: (a) #[Persephone]$_{CT}$ can…
(b) #[Persephone]$_{CT}$ can too…
(c) [Persephone]$_{CT}$ can [too]$_{F}$…

The use of RFR intonation becomes problematic in the third and final reply. The only possible option is the one indicated in (c), where the contrastive topic is followed by focus. In other words, C must reply with the hat-contour, not with RFR. Based on this, Constant concludes that the use of RFR intonation is restricted to cases that answer only a subquestion, not the whole "big" question of a discourse tree. In the case of (20), there would be two subquestions – *Can Elizabeth come over?* and *Can Persephone come over?* – B can answer partially for one of the subquestions (and thus the use of RFR is permitted), C's reply will conclude the question in A's utterance and must use the hat-contour.

2.3.2.4 Féry optimality-theoretic view on CTs

Another view on topicalization in German is that of Féry (2007). This optimality-theoretic approach builds on a series of constraints that can be used to describe a construction (including its prosody). The constraints have a certain hierarchy by which we can determine the optimal variant of a certain structure. An overview of the constraints relevant to topicalization structures, including their ranking (as established for English in Féry & Samek-Lodovici 2006), is presented in (21).

(21) adapted from Féry & Samek-Lodovici (2006) and Féry (2007)

1	ST	= Stress Topic; A topic phrase has the highest prosodic prominence in its topic domain
2	StressXP	Each lexically headed XP must contain (maximally) one phrasal stress (= head of a P-Phrase)
3	*P-Phrase	No phonological phrase
4	HI HP	Alignment of the right boundary of every I-phrase with its head Alignment of the right boundary of every P-phrase with its head
5	*I-Phrase	No intonation phrase

To topicalize the phrase *seiner Tochter* in (22), there are 4 different possible variations to consider, all are shown in Tableau 1.

(22)

Mein	Bruder	hat	seiner	Tochter	neue	Schuhe	gekauft.
my	brother	has	his.DAT	daughter	new	shoes	bought

'My brother has bought new shoes to his daughter.'

Due to the phrase being a contrastive topic, the phrase has to have a prosodic prominence to satisfy the ST constraint. There are multiple ways to potentially encode this structure with a contrastive topic. Tableau 1 shows four candidates on the left side, and on the right side, there are all of the constraints mentioned above.

Tableau 1 – Possible candidates of structures with the topic phrase *seiner Tochter* Féry (2007)

		ST	StrXP	*P-Phr	HI	HP	*I-Phr
☞	(x) (x) I (x) (x) (x) P a. Seiner Tochter hat mein Bruder neue Schuhe gekauft			***		*	**
	(x) I (x) (x) (x) P b. Seiner Tochter hat mein Bruder neue Schuhe gekauft	*!		***		*	*
	(x x) I (x) (x) (x) P c. Seiner Tochter hat mein Bruder neue Schuhe gekauft			***	*!	*	*
	(x) (x) (x) I (x) (x) (x) P d. Mein Bruder hat seiner Tochter neue Schuhe gekauft			***		*	***!

The asterisks in Table 1 signify a violation of the given constraint. Phonological and intonational phrases are marked using brackets, each X in a bracket marks a stress prominence (placed over the stressed syllable). For *P-Phrase and *I-Phrase, the number of asterisks equals the number of phonological or intonational phrases, respectively. Since the ideal is no phrases, the smaller the number of asterisks, the better (more optimal). All four candidates follow the StressXP constraint – all have 3 lexical heads of phrases that contain phrasal stress (an X in each of the phrases in P row). All candidates also have the same number of P-Phrases (three). The last common thing for the candidates is the violation of the HP constraint, which is caused by the need to put the participle *gekauft* at the end of the sentence. This participle does not carry the stress prominence that is carried by *Schuhe* as the head of the phrase. The P-Phrase thus does not meet the requirement to align the right border of the phrase with its head.

The symbol (☞) marks the optimal variant. The exclamation marks next to some asterisks indicate a violation that is key in finding the optimal variant. The optimal candidate (a) has more Intonational phrases than candidates (b) and (c), yet these two violate a higher-ranked constraint. The variant in (d) contains more I-Phrases (violation of *I-Phr constraint) than the rest, thus ruling itself out of potentially being the optimal candidate. (c) violates the HI constraint, due to the fact that there are two points of stress prominence and the rule of the right boundary alignment of the I-phrase is realized only once. The candidate in (b) does not fulfil the Stress Topic constraint because there is no prominence on the topic phrase on the I row.

The candidate in (a) is thus selected as the optimal variant. The topic phrase is moved to the first position, similarly to the observation in (16b), and has its own stress prominence.

The second prominence is then on the focused phrase. The reason why the topic phrase has to be moved to the front and the option in (23) is not possible lies in, yet another, constraint.

(23) (x) (x) I
Mein Bruder hat seiner Tochter neue Schuhe gekauft

The constraint NoClash forbids the adjacency of two equally strong accents, which do appear next to each other in (23). Furthermore, the first I-Phrase in (23) does not correspond with a syntactic phrase, thus making it less optimal than the candidate (a) in Table 1.

2.3.2.5 Summary

To conclude the discussed findings, the most important characteristics of the contrastive topic seem to be specific prosody and its position. Utterances with contrastive topic are represented as set of sets of alternative propositions and are accompanied by a rising intonation on the topic. In combination with the focused constituent, which has a falling intonation, the intonational curve can be described as a hat-contour (*Hut-Kontur*) – contrastive topic shows a tendency to appear at the beginning of the utterance, leaving the focused constituent at the end of the utterance.

3 Contrastive topic in Czech

In this chapter, I will discuss the notion of contrastive topic in Czech.

3.1 Examples

The structure of utterances with contrastive topics in Czech corresponds to the ones found in English and German, as will be discussed below. To get a better gist of what Czech contrastive topics look like, below are some examples. In (24a), the *guest team* is contrasted with the *home team* from the first part of the sentence. The example in (24b) contrasts two choices of food to eat – *bread* or *potato cakes*. Lastly, in (24c), *Korea* (previously mentioned) is contrasted with *Mexico*.

(24) a adapted from SYN2020 (Czech National Corpora)
Domácí zpevnili defenzivu díky volnému přecházení do systému se třemi stopery, [hosté]$_{CT}$ umně reagovali nasazením druhého forvarda

Domácí	zpevnili	defenzivu	díky	volnému	
home(_team).NOM	strengthened.PL	defensive.ACC	thanks_to	free.DAT	
přecházení	do	systému	se	třemi	stopery,
traversing.DAT	in	system.GEN	with	three.INSTR	sweepers.INSTR
[hosté]$_{CT}$	umně	reagovali	nasazením	druhého	forvarda.
guests.NOM	skilfully	reacted.PL	fielding.INSTR	second.GEN	forward.GEN

'Thanks to the free traversing into the system with free sweepers, the home team strengthened the defensive; the guest team skilfully reacted by fielding of the second forward.'

b adapted from Ortofon v3 (corpora of spoken Czech)
preceding context: deciding what to eat for dinner

Tak to vypadá na chleba. [Bramboráčky]$_{CT}$ si můžem dát zítra.

Tak	to	vypadá	na	chleba.	Bramboráčky	si můžem
so	it	looks	on	bread.ACC	potato_cake.ACC	REFL can.1SG.PL
dát	zítra.					
give.INF	tomorrow					

'It looks like (we are having) the bread. We can eat the potato cake tomorrow.'

c adapted from Veselá (2007)
Dalšími uchazeči o pořadatelství světového šampionátu v roce 2002 jsou Korejská republika a Mexiko, přičemž [Korea]$_{CT}$ již svou žádost předložila.

Dalšími	uchazeči		o	pořadatelství	světového		
next.INSTR	contenders.INSTR		about	organization	world.GEN		
šampionátu	v	roce	2002	jsou	Korejská	republika	
championship.GEN	in	year.LOC	2002	are	Korean.NOM	republic.NOM	

a Mexiko, přičemž Korea již svou
and Mexico.NOM whilst Korea.NOM already its_own.ACC

žádost předložila.
application.ACC submitted.F

'The next contenders for the organization of the world championship in the year 2002 are the Republic of Korea and Mexico; Korea has already submitted its application.'

All three examples show the tendency to appear at the beginning of the sentence / utterance – (25a) and (b) directly at the beginning, (c) after the conjunction *přičemž*. Both (a) and (c) have the contrastive topics in the syntactic role of subjects, (b) in the role of an object.

3.2 TFA theory

The research of contrastive topics in Czech was mostly carried out within the Topic-Focus Articulation (TFA) theory and on the empirical basis of the Prague Dependency Treebank (PDT). The TFA theory (represented by Hajičová, Partee & Sgall 1998) connects contrastive topic with focus-sensitive particles associated with topics (see example in 26), later the concept is broadened to cases like the example in (27).

(26) adapted from Hajičová & Sgall (2004)
preceding context: Who criticized even the Pope as a tool of the capitalists?

I papeže kritizoval $[\text{Martin}]_{F}$.
even Pope.ACC criticized Martin.NOM
'Martin criticized even the Pope.'

(27) adapted from Veselá et al. (2003)

(a) *preceding context*: Is Czech spoken in Czechia or in Slovakia?
$[\text{Česky}]_{CT}$ se mluví v $[\text{Česku}]_{F}$, $[\text{na Slovensku}]_{CT}$ se mluví $[\text{slovensky}]_{F}$.

(b) Česky se mluví v Česku, na Slovensku se mluví slovensky.
Czech REFL speaks in Czechia in Slovakia REFL speaks Slovak
'Czech is spoken in Czechia, Slovak is spoken in Slovakia.'

Contrastive topic (*kontrastivní základ*) is defined as contextually bounded and characterised semantically as an option from a larger set of alternatives. Veselá (2007) in her master's thesis distinguishes several types of contrastive topics based on the size[1] and explicitness of the set of

[1] Veselá claims that the range of size can be from one to infinity, regardless of their explicitness. As an example of the former, she gives example (i) (for our purpose shortened):

i Jan nám řekl, že on osobně v trezoru několikrát byl.
Jan.NOM us.DAT said that he personally in vault.LOC multiple_times was
'John told us that he himself has been multiple times in the vault.'

alternatives from which the target constituent is chosen. If all possible alternatives are mentioned in the discourse, the set is explicit; if only some are mentioned, the set is implicit.

Based on this, every contrastive topic can be placed on a scale of the strength of the contrast. The smaller and more explicit the set of alternatives is, the stronger the strength of the contrast.

The corpus data also support the observation valid in other languages, esp. German, that the contrastive topic has the tendency to appear at the beginning of the utterance, especially in the first position. This can also lead to non-projective structures (see also section 2.3.2.2).

To test the hypothesis about the intonation (i.e., the rising intonation of the contrastive topic), three monological recordings were analysed. For this analysis (presented both in Veselá 2007 and Veselá et al. 2003), the contrastive topic was divided into three types based on the previously mentioned strength of contrast. I find the division of these types quite problematic due to similarities between the types and unclear motivation for the choices made. The first category represents the alternative that was used in the preceding context (example in 24c, repeated in 28a), the second category is the alternatives mentioned as the first (example in 28b), revealing the information about the nature of other alternatives. The third category is selected from the 'hyper-topic'[2] and is supposedly not derivable from the context (example in (28c).

(28) adapted from Veselá (2007)

(a) Dalšími uchazeči o pořadatelství světového šampionátu v roce 2002 jsou Korejská republika a Mexiko, přičemž [Korea]$_{CT}$ již svou žádost předložila.

'The next contenders for the organization of the world championship in the year 2002 are the Republic of Korea and Mexico; Korea has already submitted its application.'

(b) preceding contex: the whole class went on a trip.

[Učitel]$_{CT}$ připravil itinerář, [kluci]$_{CT}$ stavěli stany, [dívky]$_{CT}$ vařily.

Učitel	připravil	itinerář,	kluci	stavěli	stany,
teacher.NOM	prepared	itinerary	boys.NOM	were_building	tents.ACC
dívky	vařily.				
girls.nom	cooked.F				

'The teacher prepared the itinerary, the boys were building tents, the girls cooked.'

(c) preceding context: We renovated the house last year.

John/he himself is given as a contrastive topic of the size of one, but I would argue that *he himself* is contrasted with everybody else (referred to as *us*), thus making the size of the set bigger than three.

[2] Also referred to as 'hyper-theme', it is the topic of the broader discourse, formed by the whole text or conversation.

[Omítku]$_{CT}$ jsme natřeli na žluto, [střechu]$_{CT}$ jsme taky vyspravili, [všechna okna]$_{CT}$ jsme vyměnili za dvojitá.

Omítku jsme natřeli na žluto, střechu jsme

plaster.ACC AUX painted.PL.1SG on yellow roof.ACC AUX

taky vyspravili, všechna okna jsme vyměnili za

also fixed.PL.1SG all windows AUX changed.PL.1SG for

dvojitá.

double(_ones).ACC

'We painted the plaster yellow, we also fixed the roof, we switched all windows for double ones.'

Although Veselá has a thorough categorization of contrastive topics and their strength of contrast, it is less clear how the mentioned categories actually differ in their strength. Overall, the results of the analysis were unified for all these types. The reason I am commenting on this point is that the taxonomy based on the contrast strength will be relevant to my experiment (see section 3.1.2).

What is of importance is the overall results of the prosodic characteristics of contrastive topic and focus. Table 2 summarises the values of F0 for (aboutness) topic, three types of contrastive topic and three types of focus which were analysed. As is evident from the last column, these three notions are indeed different in the way they prosodically behave. The (aboutness) topic shows a stable, constant F0 for its duration (see the discussion in 2.3.1). The group of contrastive topics exhibits a rising intonation, the group of foci, on the other hand, exhibits a falling intonation.

Table 2 – The results of the study of recordings in Veselá (2007), adapted

Type of sector	# of occurrences	beginning (F0)	end (F0)	difference (F0)
Topic	97	134,31	135,91	1,61
contrast1	31	123,86	142,39	18,53
contrast2	30	137,06	156,43	19,37
contrast3	50	122,65	142,48	19,83
Focus1	32	129,92	115,50	-14,42
Focus2	83	136,21	122,03	-14,18
SFocus	25	139,25	126,12	-13,13

These results go hand in hand with the claims for the prosodic encoding of contrastive topic in other languages.

3.3 CLD and topicalization

Sturgeon (2006) in her dissertation discusses the phenomenon of Contrastive Left Dislocation (CLD) as reminiscent of contrastive topics in Czech, an example of such a structure is in (29a). The main difference between CLD and (contrastive) topicalization (as suggested by Sturgeon) is the CLD's establishment of a connection between the contextually salient set and a part of that set. Another difference between the two is the demonstrative pronoun that refers to the dislocated constituent – in the utterance in (29a), the demonstrative is in bold, (29c) exemplifies a similar utterance with topicalization so that the difference is shown. Topicalization can then refer to this established set.

(29) adapted from Sturgeon (2006)

(a) [Tu tašku]$_{CT}$, **tu** si koupila [Hana]$_{F}$, ale [tu peněženku]$_{CT}$, tu si koupila [Jana]$_{F}$.

(b) Tu tašku, tu si koupila Hana, ale tu
that.ACC bag.ACC that.ACC REFL bought Hana but that.ACC

peněženku, tu si koupila Jana.
wallet.ACC that.ACC REFL bought Jana

'That bag, Hana bought it and that wallet, Jana bought it.'

(c) [Tu tašku]$_{CT}$ si koupila [Hana]$_{F}$, ale [tu peněženku]$_{CT}$ si koupila [Jana]$_{F}$.

Although CLD and topicalization are in some aspects different, the notion of contrastive topic is the same for both. Sturgeon builds on the notion of contrastive topic as being part of a set of alternatives. The notion of familiarity is also highlighted in the sense that the CT constituent has to be related to the preceding context in some way. Like Büring, Sturgeon also claims that a contrastive topic is followed by a focused constituent.

3.4 Particle *to*

As discussed, topicalization is key for structures with a contrastive topic. The tendency of the CT constituent to stand in the first position is present in Czech. For Czech, however, there is another strategy of topicalization, using the topicalization particle *to* (literally 'it/that') and often considered a subtype of an *it*-cleft construction, as seen in (30). Although the particle has the shape of a demonstrative pronoun, it cannot be inflected, retaining the form of a singular neuter nominative/accusative demonstrative, irrespective of the topic it associats with. This is evident in (30), where *to* associates with a masculine plural noun *hokejisté* ('hockey players').

(30) Adapted from the Czech national corpus SYN2020

(a) [FIFA]$_{CT}$ nazve onen gól slovem „zlatý". To [hokejisté]$_{CT}$ říkají všerozhodující brance mnohem příznačněji „náhlá smrt".

(b) FIFA nazve onen gól slovem zlatý.
FIFA calls that.ACC goal word.INSTR gold

To hokejisté říkají všerozhodující brance mnohem
to hockey_players.NOM call all-decisive goal more

příznačněji náhlá smrt.
characteristically sudden death

'FIFA calls that goal 'golden'. Hockey players call the all-decisive goal much more characteristically 'sudden death'.'

The particle *to* can also be used for focus, as in (31), this use can also be seen in Russian (Shipova 2023). Veselá (2007) discusses rhematizers (~ focus particles) and their relation to contrastive topics in Czech. After reviewing cases with focus particles (or "rhematizers", as per the Czech linguistic terminology) in PDT, Veselá concludes that the particles either signalize focus (almost 92 percent of occurrences) or contrastive topic. From the percentage, Veselá suggests that the function of a rhematizer is to signal the distinction between topic and focus, the signalization of contrastive topic is then secondary. This can also be the case of the particle *to*.

(31)[3] (a) A: Vypadá to, že Honza už odnesl odpadky.
B: To [já]$_F$ jsem odnesla odpadky.

(b) Vypadá to, že Honza už odnesl odpadky.
looks it that Honza.NOM already took_out trash
'It seems that Honza has already taken the trash out.'

To já jsem odnesla odpadky.
to I AUX took_out trash
'It was me who took the trash out.'

As indicated in example (32), the *it*-clefted contrastive topic appears in combination with contrastive focus, the former being at the beginning of the utterance, the latter remaining at the end of the utterance. *Saša* is contrasted with *Petr,* and *chléb s máslem* is contrasted with *fazole*.

(32) (a) [Saša]$_{CT}$ snědl [chléb s máslem]$_F$. To [Petr]$_{CT}$ snědl [fazole]$_F$.

(b) Saša snědl chléb s máslem.
Sasha.NOM ate bread with butter.INSTR
'Sasha ate the bread with butter.'

To Petr snědl fazole.
to Peter.NOM ate beans
'Peter ate the beans.'

[3] Thanks to Tereza Pavlíková for this example during discussion at the Student linguistic workshop Žďárek in May 2025.

It seems that the contrastively topical use of this particle has not yet been researched. Based on examples from corpora (like the one in (30)) and from day-to-day linguistic soundscape (e.g., in sports commentaries), it appears that the rising intonation or hat-contour of the contrastive topic is obligatory, more so than for the plain contrastive topic.

3.5 Summary

Based on the presented research, the Czech contrastive topic seems to follow the tendencies found in other languages. The first position in an utterance is typical for contrastive topics, as well as the tendency to encode contrastive topic with a rising intonation, and more specifically the hat-contour. This intonational pattern appears to be optional for plain contrastive topics, but much more obligatory for structures with the under-researched topic particle *to*.

4 Experimental study

To test the claims found in the literature, an experimental study was designed. In this chapter, I will firstly discuss the experimental design, then I will present the predictions for all sub-experiments. Both will be illustrated with items from the actual experiment. Lastly, the results will be analysed and further discussed.

4.1 Design

A naturalness rating experimental study was designed. It consists of 1 main experiment, 4 filler experiments[4], and 1 set of filler stimuli. Due to prosody being a critical factor in the study, the stimuli were presented auditorily to the participants in a pseudorandomized order, respecting the standard Latin Square design applied per experiment. Every item for all sub-experiments has the same basic structure – two utterances in a dialogue. To better understand the structure, I will demonstrate the parts in example (33):

(33)

A:	Tahle	restaurace	má	dobré	recenze.	Nepamatuješ si,	
	this.NOM	restaurant.NOM	has	good.ACC	reviews.ACC	NEG.remember.2SG REFL	
	jaké	jídlo	tu	doporučoval	ten	známý	kritik?
	which.ACC	food.ACC	here	recommended	the	famous.NOM	critic.NOM

'This restaurant has good reviews. Do you remember which dish did the famous critic recommend here?'

B:	Ten	kritik	doporučoval	fazole.
	the	critic.NOM	recommended	beans.ACC

'The critic recommended the beans.'

The utterance A gives a brief context to which the utterance B reacts. The utterance A consists of two sentences (or one longer sentence), while B is always just one simple sentence. The utterances in this form were recorded separately (A by a woman, B by a man)[5] and later cut together to form the dialogues.

4.1.1 Procedure and participants

Altogether, there were 96 items, i.e., dialogues (+ 2 example items, one of them presented in (33)), which were pseudo-randomized. The study was conducted online on the L-Rex platform. Participants were instructed to rate the naturalness of speaker B's utterance (response) in the

[4]A filler experiment is an experiment with less statistical power whose stimuli function as fillers/distractors for the main experiment, while at the same time addressing related research questions.
[5] Special thanks to Adléta Hanžlová and Radek Šimík for recording.

context of speaker A's utterance. The participants chose the level of naturalness on a scale from 1 to 7, where 1 = completely not natural and 7 = completely natural.

The participants were recruited via the LABELS pool, in which university (not only philology) students participate in experiments in exchange for credits. For this study, a total sum of 102[6] responses from participants were collected in a time span of one week. To ensure that the participants would hear the recordings clearly, they were instructed to take the experiment in a quiet place or with headphones on. As mentioned, firstly, the participants were shown instructions and 2 examples – one natural and one unnatural. These had the same basic form as the other items but did not reveal the shape of the stimuli from the main experiment.

In the following sections, I will discuss the design of the experiments used in the study one by one. Below are shown only a couple of examples, all experimental stimuli are presented in the Appendix.

4.1.2 Main experiment

The main experiment is the most complex one – it has a 2x2x2 fully crossed design. It was created to give us a clearer picture of the need to mark plain and *it*-cleft contrastive topics with a hat-contour. The factors manipulated are the following:

- CT type: plain contrastive topic x *it*-cleft contrastive topic (i. e., *to* + contrastive topic)
- prosody: hat-contour x naturally declining
- CT alternatives: explicit x implicit group of constituents which could be potentially contrastive topics

The first two factors are quite straightforward, they were chosen to explore the perception of prosody of two (potentially different, see 3.2 for predictions) types of contrastive topics. The factor CT alternatives arose from Veselá (2007) and Veselá et al. (2003). Based on these 3 factors, we get these conditions:

a – plain CT + hat-contour prosody + explicit alternatives to CT

b – plain CT + hat-contour prosody + implicit alternatives to CT

c – plain CT + declining prosody + explicit alternatives to CT

d – plain CT + declining prosody + implicit alternatives to CT

e – *it*-cleft CT + hat-contour prosody + explicit alternatives to CT

f – *it*-cleft CT + hat-contour prosody + implicit alternatives to CT

g – *it*-cleft CT + declining prosody + explicit alternatives to CT

[6] 4 responses were excluded from the analysis since the participants did not fill out the experiment properly.

h – *it*-cleft CT + declining prosody + implicit alternatives to CT

Furthermore, one more factor was exploratorily manipulated between items – in half of the items, the CT was a subject, in the other half, an object. I will show an example from both categories. Together, there are 32 items in the main experiment. To understand how each factor was manipulated, let's look at the following sentences (34), which form one item presented in Table 3:

(34)

1a Na tom novém filmu dělal zkušený režisér,
on the new.LOC film.LOC worked experienced.NOM director.NOM
kameraman i zvukař.
cameraman.NOM and sound_engineer.NOM

'An experienced director, cameraman and sound engineer worked on the new film.'

1b Na tom novém filmu dělal tým zkušených
on the new.LOC film.LOC worked team.NOM experienced.GEN
filmařů.
film_makers.GEN

'An experienced team of filmmakers worked on the new film.'

1c Režisér získal Českého lva.
director.NOM got Czech lion.ACC

'The director won Český lev (lit. Czech lion).'[7]

2a Zvukař získal Oscara.
sound_engineer.NOM got Oscar.ACC

'The sound engineer won an Oscar.'

2b To zvukař získal Oscara.
it sound_engineer.NOM got Oscar.ACC

'The sound engineer won an Oscar.'

Table 3 – An example of an item from the main experiment with SVO word order

	speaker A	speaker B	prosody[8]
a	Na tom novém filmu dělal zkušený režisér, kameraman i zvukař. Režisér získal Českého lva.	[Zvukař]$_{CT}$ získal [Oscara]$_{F}$.	H
b	Na tom novém filmu dělal tým zkušených filmařů. Režisér získal Českého lva.	[Zvukař]$_{CT}$ získal [Oscara]$_{F}$.	H
c	Na tom novém filmu dělal zkušený režisér, kameraman i zvukař. Režisér získal Českého lva.	[Zvukař]$_{CT}$ získal [Oscara]$_{F}$.	D
d	Na tom novém filmu dělal tým zkušených filmařů. Režisér získal Českého lva.	[Zvukař]$_{ct}$ získal [Oscara]$_{F}$.	D

[7] Český lev is an academy award for best films and creators in the Czech Republic.

[8] Abbreviation H indicates the hat-contour, abbreviation D indicates naturally declining intonation (without hat-contour).

e	Na tom novém filmu dělal zkušený režisér, kameraman i zvukař. Režisér získal Českého lva.	To [zvukař]$_{CT}$ získal [Oscara]$_{F}$.	H
f	Na tom novém filmu dělal tým zkušených filmařů. Režisér získal Českého lva.	To [zvukař]$_{CT}$ získal [Oscara]$_{F}$.	H
g	Na tom novém filmu dělal zkušený režisér, kameraman i zvukař. Režisér získal Českého lva.	To [zvukař]$_{CT}$ získal [Oscara]$_{F}$.	D
h	Na tom novém filmu dělal tým zkušených filmařů. Režisér získal Českého lva.	To [zvukař]$_{CT}$ získal [Oscara]$_{F}$.	D

The first factor – CT type – is manipulated in the speaker B's target utterance. As can be seen in Table 3, the basic structure of this utterance is the contrastive topic followed by a verb and a focused constituent. The difference between the plain CT (2a in 34) and the *it*-cleft CT (2b in 34) is the presence of the particle *to* in the latter case. In the case of our example item, both cases are shown with the critical difference underlined in (35).

(35) a Zvukař získal Oscara. plain CT
b To zvukař získal Oscara. *it*-cleft CT

The lexical item *zvukař* is chosen from a set of alternatives found in speaker A's utterance. The way the set is presented corresponds to the second factor, CT alternatives. The alternatives of possible CTs are either introduced explicitly one by one (1a in 34) or implicitly with a group noun (1b in 34). In the presented item, the implicit variant is encoded under *tým zkušených filmařů*. We can include multiple professions under this term, e.g., director, cameraman, sound engineer, script writer, etc. To ensure that the explicit variant is not too long, the number of alternatives was set to three. This way, one option remains unused, since in her second sentence, speaker A also chooses one of the alternatives. Both variants for this factor are underlined in (36).

(36) a Na tom novém filmu dělal zkušený režisér, kameraman i zvukař. explicit group of alternatives
b Na tom novém filmu dělal tým zkušených filmařů. implicit group of alternatives

The order of the alternatives in the explicit variant is not strictly given and the three nouns are also in all cases referring to a certain profession or general label of relationship (e.g., *friend*). The three elements also refer to only one gender (half of the items refer to female, the rest to male, neuter nouns were excluded since the definite article has the same form as the topic particle).

The last factor is the prosody of speaker B's utterance. This was done by recording speaker B's utterance (with both CT types) in two ways – once using the hat-contour, once with an unmarked intonation pattern in which the F0 steadily declines after the initial pitch accent

on the topic. Upon hearing the two respective versions and visually inspecting the associated pitch contours (see Figures 4 and 5), we can be confident that the conditions are indeed reliably different from one another.

Figure 4 - Pitch lines of plain CTs with hat-contour (green line) and without hat-contour (red line) for the utterance Zvukař dostal Oscara. *(2a in (34))*

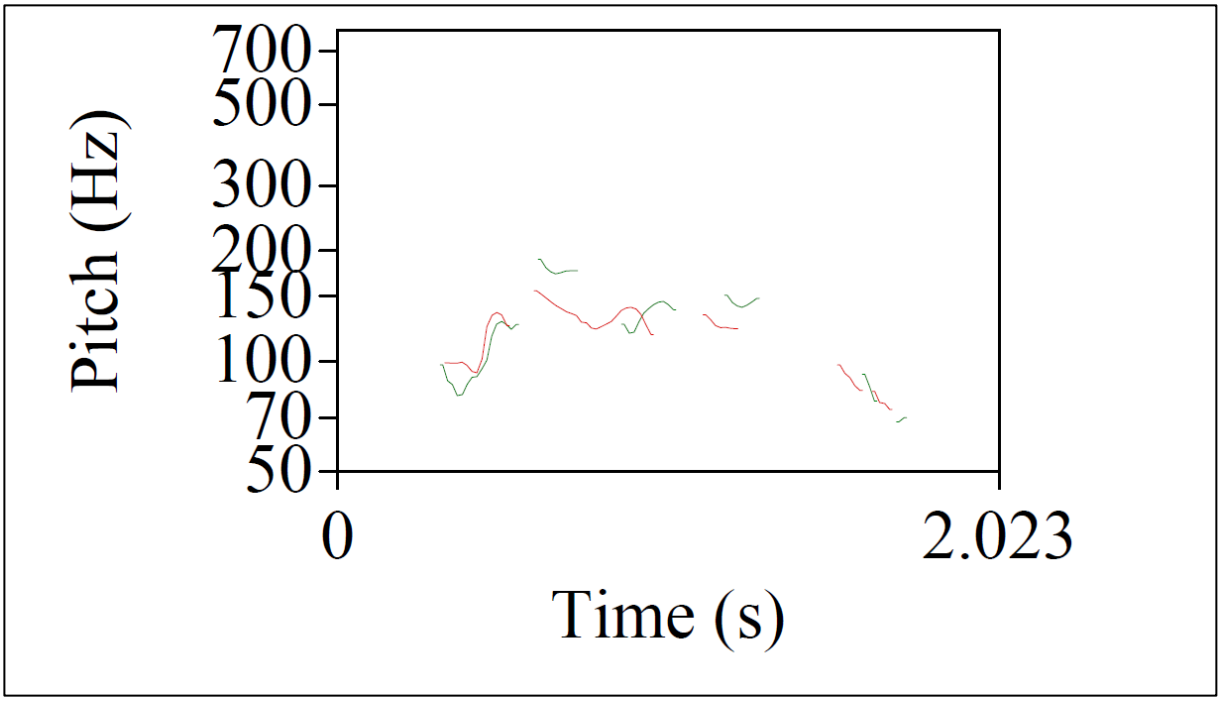
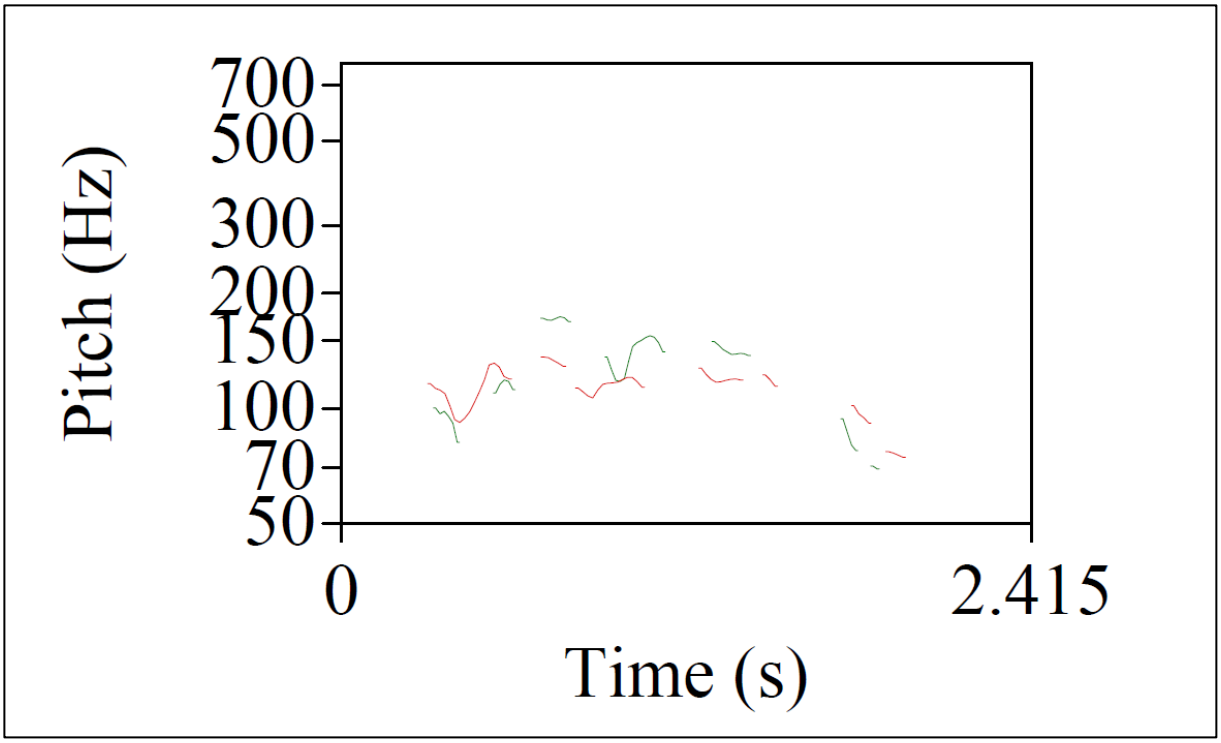


Figure 5 - Pitch lines of it-cleft CTs with hat-contour (green line) and without hat-contour (red line) for the utterance To zvukař dostal Oscara. *(2b in (34))*



The nature of the focused element was also accounted for even though it was not a manipulated factor. Based on a look at random examples from the Czech corpora, it was observed that the *it*-cleft CT structures tend to have the focused constituent on a certain scale. The latter uttered sentence contained a focused constituent that referred to an alternative that is located higher on some salient contextual scale than any of its relevant alternatives in the first sentence. To make sure that the items had the highest chance of being natural independently of the manipulated factors, the focused constituents were designed to be on this salient scale. In the example in (37), the scale is based on the status of film awards – on the one hand, we have *Český lev* as a lower national rank of an award, on the other hand, we have *Oscar* as the most prestigious international award. (37c) shows an example of such a saliency scale.

(37) a Režisér získal Českého lva. lower saliency
b Zvukař získal Oscara. higher saliency
c no award – student award – Český lev – Oscar

Other types of scales are based upon unusuality of the second alternative (e.g., being able to play on the guitar is more probable than knowing how to play on the organ), the scale can also go the other way around if the sentence is negated (e.g., if someone comes late, it is still better than if he does not come at all).

As mentioned above, half of the items in the main experiment follow the OVS structure in the utterance of speaker B. (38) shows glossed parts of the conditions (similar to (34)), which are then presented as the whole item in Table 4.

(38)

1a Říká se, že cellistka, houslistka a violistka
says REFL that cellist.NOM.F violinist.NOM.F and violist.NOM.F
z našeho orchestru měly skvělé učitele.
from our.GEN orchestra.GEN had.F.PL great.ACC teachers.ACC

'It is said that the female cellist, violinist, and violist from our orchestra had great teachers.'

1b Říká se, že hráčky na smyčcové nástroje
says REFL that players.NOM.F on bowed.ACC instruments.ACC
z našeho orchestru měly skvělé učitele.
from our.GEN orchestra.GEN had.F.PL great.ACC teachers.ACC

'It is said that the bowed instrument female players from our orchestra had great teachers.'

1c Cellistku učil ředitel konzervatoře
cellist.ACC.F taught.M director.NOM.M conservatoire.GEN

'The director of the conservatoire taught the female cellist.'

2a Violistku učil vídeňský filharmonik.
viollist.ACC.FEM taught.M viennese.NOM.M member_of_philharmonic.M

'A member of the Viennese Philharmonic taught the female violist.'

2b To violistku učil vídeňský filharmonik
it viollist.ACC.FEM taught.M Viennese.NOM.M member_of_philharmonic.M

'A member of the Viennese Philharmonic taught the female violist.'

Table 4 – An example of an item from the main experiment with OVS word order

	speaker A	speaker B	prosody
a	Říká se, že cellistka, houslistka a violistka z našeho orchestru měly skvělé učitele. Cellistku učil ředitel konzervatoře	[Violistku]$_{CT}$ učil [vídeňský filharmonik]$_{F}$.	H
b	Říká se, že hráčky na smyčcové nástroje z našeho orchestru měly skvělé učitele. Cellistku učil ředitel konzervatoře.	[Violistku]$_{CT}$ učil [vídeňský filharmonik]$_{F}$.	H
c	Říká se, že cellistka, houslistka a violistka z našeho orchestru měly skvělé učitele. Cellistku učil ředitel konzervatoře	[Violistku]$_{CT}$ učil [vídeňský filharmonik]$_{F}$.	D
d	Říká se, že hráčky na smyčcové nástroje z našeho orchestru měly skvělé učitele. Cellistku učil ředitel konzervatoře.	[Violistku]$_{CT}$ učil [vídeňský filharmonik]$_{F}$.	D
e	Říká se, že cellistka, houslistka a violistka z našeho orchestru měly skvělé učitele. Cellistku učil ředitel konzervatoře	To [violistku]$_{CT}$ učil [vídeňský filharmonik]$_{F}$.	H

f	Říká se, že hráčky na smyčcové nástroje z našeho orchestru měly skvělé učitele. Cellistku učil ředitel konzervatoře.	To [violistku]$_{CT}$ učil [vídeňský filharmonik]$_{F}$.	H
g	Říká se, že cellistka, houslistka a violistka z našeho orchestru měly skvělé učitele. Cellistku učil ředitel konzervatoře.	To [violistku]$_{CT}$ učil [vídeňský filharmonik]$_{F}$.	D
h	Říká se, že hráčky na smyčcové nástroje z našeho orchestru měly skvělé učitele. Cellistku učil ředitel konzervatoře.	To [violistku]$_{CT}$ učil [vídeňský filharmonik]$_{F}$.	D

The factor CT type is manipulated in the same way as for the item with SVO structure (Table 3), with the difference that the CT constituent is an object. The manipulation is indicated in (39).

(39) a Violistku učil vídeňský filharmonik. plain CT
b To violistku učil vídeňský filharmonik. *it*-cleft CT

The two variants of the CT alternatives factor are indicated in (40). In this item, the group of alternatives refers to women (in opposition to the item in Table 3).

(40) a Cellistka, houslistka a violistka z našeho orchestru měly skvělé učitele. explicit group of alternatives

b Hráčky na smyčcové nástroje z našeho orchestru měly skvělé učitele implicit group of alternatives

4.1.3. Filler experiment 1 – *zato* and *zatímco*

The first filler experiment follows the idea that a certain prosodic pattern may be connected to the position of the constituent. The items were based on a similar formula as the ones in the main experiment. Since the number of items is just 12, the design was reduced to 2x2. The manipulated factors are these:

- CT type: plain contrastive topic x *zato/zatímco* + contrastive topic
- prosody: hat-contour x naturally declining

Instead of the topic particle *to*, the first position for two conditions is occupied by a similar particle *zato* ('instead') and a conjunction *zatímco* ('meanwhile'). This factor was manipulated between items (6 items with *zato* and 6 with *zatímco*). The conditions are following:

a – plain CT + hat-contour prosody

b – plain CT + declining prosody

c – *zato/zatímco* CT + hat-contour prosody

d – *zato/zatímco* CT + declining prosody

The difference in prosody was achieved in the same way as in the main experiment. Half of the items for both *zato* and *zatímco* were with CT as a subject (word order SVO) and half with CT as an object (word order OVS). The CT alternatives factor was not manipulated in this experiment. The contexts used corresponded to what we called implicit alternatives in the main experiment. The focused constituents are again on a scale of importance / greatness (as introduced in 3.1.2). In (41), the glossed parts are presented, an example of a whole item is in Table 5.

(41)

1a	Včera	se	na	školním hřišti	řešil	nějaký	incident
	yesterday	REFL	on	schoolyard.LOC	handled	some.NOM	incident.NOM
	s	učitelkami.					
	with	teachers.INSTR					

'Yesterday, there was some kind of incident with female teachers on the schoolyard that was being handled.'

1b	Slyšela jsem,	že	češtinářka	podala	stížnost.
	heard.F AUX	that	Czech_language_teacher.NOM.F	filed.F	complain.ACC

'I heard that the female Czech language teacher filed a complaint.'

2a	Matikářka	podala	výpověď.
	Math_teacher.NOM.F	handed_in.F	resignation.ACC

'The female Math teacher handed in her resignation.'

2b	Zato	matikářka	podala	výpověď.
	zato	Math_teacher.NOM.F	handed_in.F	resignation.ACC

'The female Math teacher, on the other hand, handed in a resignation.'

Table 5 – An example of an item from filler experiment 1

	speaker A	speaker B	prosody
a	Včera se na školním hřišti řešil nějaký incident s učitelkami. Slyšela jsem, že češtinářka podala stížnost.	[Matikářka]$_{CT}$ podala [výpověď]$_{F}$.	H
b	Včera se na školním hřišti řešil nějaký incident s učitelkami. Slyšela jsem, že češtinářka podala stížnost.	[Matikářka]$_{CT}$ podala [výpověď]$_{F}$.	D
c	Včera se na školním hřišti řešil nějaký incident s učitelkami. Slyšela jsem, že češtinářka podala stížnost.	Zato [matikářka]$_{CT}$ podala [výpověď]$_{F}$.	H
d	Včera se na školním hřišti řešil nějaký incident s učitelkami. Slyšela jsem, že češtinářka podala stížnost.	Zato [matikářka]$_{CT}$ podala [výpověď]$_{F}$.	D

3.1.4 Filler experiment 2 – adverbials

In this sub-experiment, the nature of the constituent preceding the contrastive topic was further manipulated. For this purpose, the topic particle *to* was set side by side with adverbials, in particular adverbials of time, which do not have a distinct relation with the CT constituent. Otherwise, the structure of each item is similar to the experiments already discussed. The two manipulated factors were thus these two:

- CT type: plain contrastive topic x adverbial + contrastive topic
- prosody: hat-contour x naturally declining

The conditions are the following:

a – adverbial CT + hat-contour prosody

b – adverbial CT + declining prosody

c – *it*-cleft CT + hat-contour prosody

d – *it*-cleft CT + declining prosody

Altogether, there are 12 items in this filler. The syntactic nature of the contrastive topic in utterance B was manipulated between items – 6 items are subjects, 6 objects (thus, following the word order SVO or OVS). Sentences in (42) show glossed parts of one item, which is constructed as a whole in Table 6.

(42)

1a	Tenhle	týden	hrajou	naše	týmy	spoustu	důležitých
	this	week	play.PL	our.NOM	teams.NOM	many	important.GEN
	zápasů.						
	matches.GEN						

‘Our teams are playing many important matches this week.’

1b	Fotbalisté	už	porazili	dva	soupeře.
	footballers.NOM	already	defeated.PL	two	opponents.ACC

‘The footballers have already defeated two opponents.’

2a	Včera	basketbalisté	porazili	mistry.
	yesterday	basketballers.NOM	defeated.PL	champions.ACC

‘Yesterday, the basketballers defeated the champions.’

2b	To	basketbalisté	porazili	mistry.
	it	basketballers.NOM	defeated.PL	champions.ACC

‘The basketballers defeated the champions.’

Table 6 – An example of an item from filler experiment 2 (with SVO word order)

	speaker A	speaker B	prosody
a	Tenhle týden hrajou naše týmy spoustu důležitých zápasů. Fotbalisté už porazili dva soupeře.	Včera [basketbalisté]$_{CT}$ porazili [mistry]$_{F}$.	H
b	Tenhle týden hrajou naše týmy spoustu důležitých zápasů. Fotbalisté už porazili dva soupeře.	Včera [basketbalisté]$_{CT}$ porazili [mistry]$_{F}$.	D
c	Tenhle týden hrajou naše týmy spoustu důležitých zápasů. Fotbalisté už porazili dva soupeře.	To [basketbalisté]$_{CT}$ porazili [mistry]$_{F}$.	H
d	Tenhle týden hrajou naše týmy spoustu důležitých zápasů. Fotbalisté už porazili dva soupeře.	To [basketbalisté]$_{CT}$ porazili [mistry]$_{F}$.	D

4.1.5 Filler experiment 3 – focus and prosody

In order to include stimuli in which the clause is not initiated just by a contrastive topic, filler experiments 3 and 4 involved a clause-initial contrastive focus, which has a distinct prosody from topics in Czech (Veselá 2007). For the first mentioned, a set of 12 items manipulating the prosody of the focused constituent was developed. The sentence was either uttered with a prosody typically associated with a focused constituent (an accent on the focused constituent and then natural fall of pitch), or it was uttered with prosody typically associated with a contrastive topic, i.e. hat-contour as seen in previous sub-experiments. CT prosody used for initial focus was used in order to include stimuli that sound clearly unnatural. Another factor for this sub-experiment was the presence of focus particles *taky* (‘also’) and *jenom* (‘only’).

- FOC type: plain focus x *taky/jenom* + focus
- prosody: (typically) focus prosody x (typically) CT prosody

These were manipulated between items (6 items for each). The conditions thus look like the following:

a – plain focus + focus prosody

b – plain focus + CT prosody

c – focus with particle + focus prosody

d – focus with particle + CT prosody

In (43), parts of an example item are glossed. Apart from the focused constituent is the rest of the constituents in B’s utterance given (as seen in 2a/b).

(43)

1a	Těšila jsem se		na	dnešní	hádanky	v
	look_forward_to.F AUX REFL		on	today’s.ACC	puzzles.ACC	in
	novinách,	ale	vypadá	to,		

newspapers.LOC but looks_like it

'I was looking forward to today's puzzles in the newspapers, but it seems…'

1b

že	děda	už	vyluštil	sudoku.
that	grandpa.NOM	already	solved.M	sudoku

'… that grandpa has already solved the sudoku.'

2a

Křížovku	vyluštil.
crossword.ACC	solved.M

'He solved the crossword.'

2b

Taky	křížovku	vyluštil.
also	crossword.ACC	solved.M

'He also solved the crossword.'

The difference in prosody between the conditions on the examples from (43) 2a and 2b can be seen in pitch lines in Figures 6 and 7. Table 7 then shows the form of one item in all conditions (using the glossed parts from (43)).

Figure 6 – Pitch lines of utterances with focused constituent on the first position with typically focus prosody (red line) and with typically CT prosody (hat-contour, green line) for the utterance Křížovku vyluštil. *(2b in (43))*

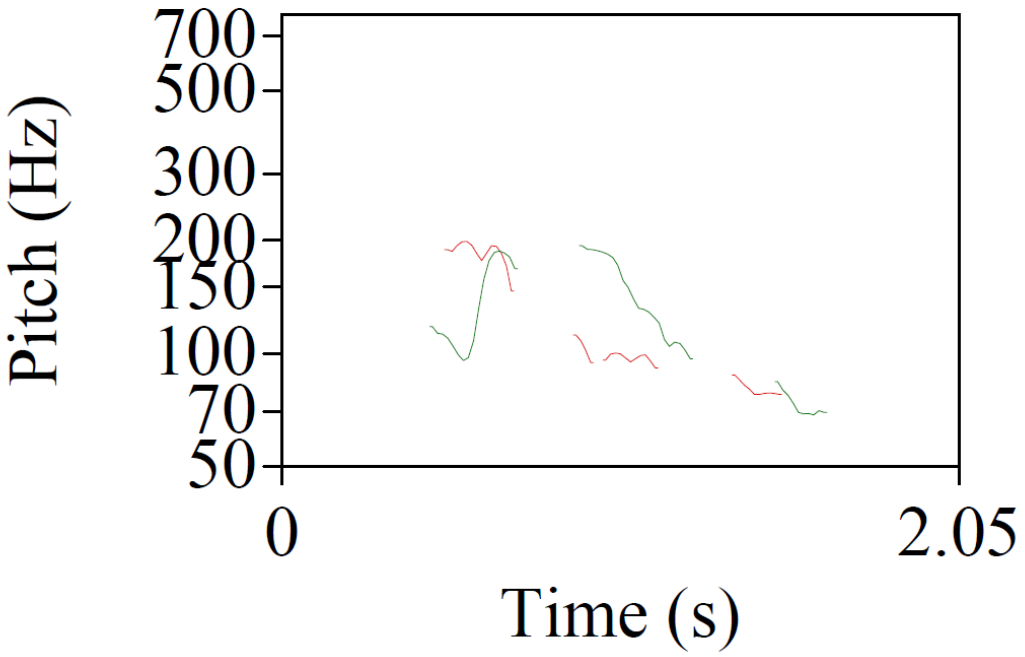


Figure 7 – Pitch lines of utterances with focused constituent on the first position with typically focus prosody (red line) and with typically CT prosody (hat-contour, green line) for the utterance Taky křížovku vyluštil. *(2c in (43))*

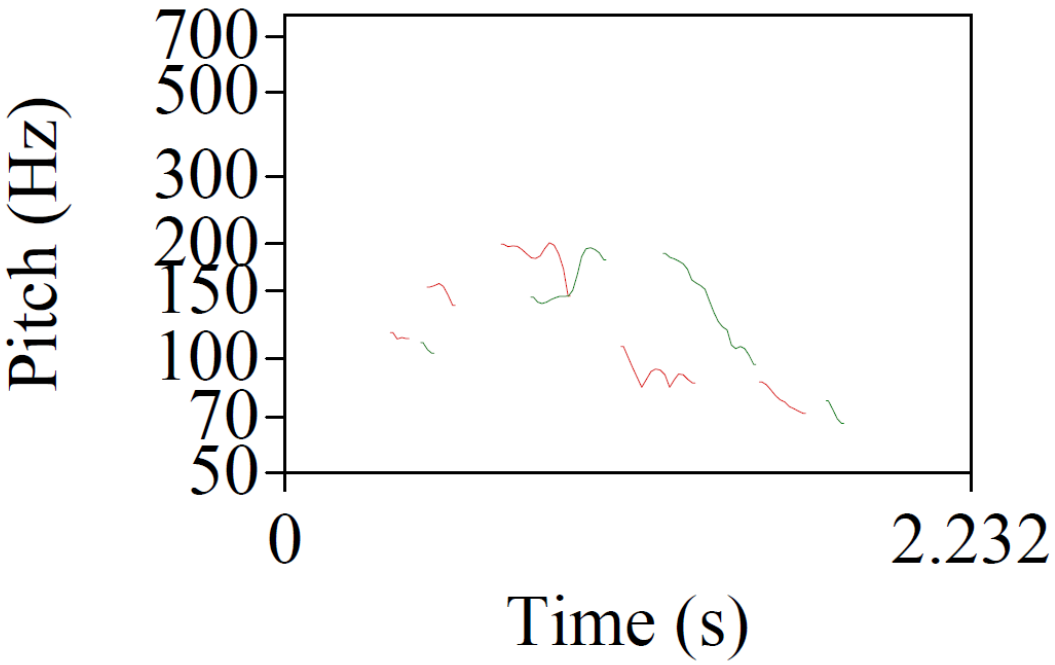


Table 7 – an example of an item from filler experiment 3 (with the lexical item *taky*)

	speaker A	speaker B	prosody
a	Těšila jsem se na dnešní hádanky v novinách, ale vypadá to, že děda už vyluštil sudoku.	[Křížovku]$_F$ vyluštil.	FOC
b	Těšila jsem se na dnešní hádanky v novinách, ale vypadá to, že děda už vyluštil sudoku.	[Křížovku]$_F$ vyluštil.	CT
c	Těšila jsem se na dnešní hádanky v novinách, ale vypadá to, že děda už vyluštil sudoku.	Taky [křížovku]$_F$ vyluštil.	FOC
d	Těšila jsem se na dnešní hádanky v novinách, ale vypadá to, že děda už vyluštil sudoku.	Taky [křížovku]$_F$ vyluštil.	CT

4.1.6 Filler experiment 4 – focused object and word order

The fourth filler concentrates on the interaction of word order and the prosodically marked focused object. The aims of this filler experiment were orthogonal to the main purpose of the study. The experiment was largely exploratory and aimed to test the naturalness of in-situ vs. fronted object focus and the order of subject and verb in the fronted condition. The only factor manipulated is the word order of speaker B's utterance:

a – OVS

b – OSV

c – SVO

Glossed parts are presented in (44), all conditions in an example can be then seen in Table 8. Altogether, there are 8 items in this sub-experiment.

(44)

1a Koukám, že se na náš dobročinný bufet
look.1SG that REFL on our.ACC charitable.ACC buffet.ACC
sešlo spousta dobrot.
came_together.N many goodies.GEN
'I see that many goodies were brought to our charity buffet.'

1b Nevíš, co přinesla ředitelka?
NEG.know.2SG what brought.F director.NOM.F
'Do you know, what did the (female) director bring?'

2a Bábovku přinesla ředitelka.
bundt_cake.ACC brought.F director.NOM.F

2b Bábovku ředitelka přinesla.
bundt_cake.ACC director.NOM.F brought.F

2c Ředitelka přinesla bábovku.

director.NOM.F brought.F bundt_cake.ACC

'The (female) director brought the bundt cake.'

Table 8 – An example of an item from filler experiment 4

	speaker A	speaker B
a	Koukám, že se na náš dobročinný bufet sešlo spousta dobrot. Nevíš, co přinesla ředitelka?	[Bábovku]$_F$ přinesla ředitelka.
b	Koukám, že se na náš dobročinný bufet sešlo spousta dobrot. Nevíš, co přinesla ředitelka?	[Bábovku]$_F$ ředitelka přinesla.
c	Koukám, že se na náš dobročinný bufet sešlo spousta dobrot. Nevíš, co přinesla ředitelka?	Ředitelka přinesla [bábovku]$_F$.

4.1.7 All-new filler stimuli

The last set of stimuli contains 20 items in which speaker B's utterances contain only all-new sentences (i.e., not containing focused or given constituents and CTs). 8 items use the word order OVS, 12 use the word order SVO. To ensure the acceptability of OVS structures, objects were referencing mostly humans and subjects referencing non-human entities due to humanness having a certain role in the Czech word order (Jasinskaja & Šimík to appear). Examples are presented in (45), 1 is an example of SVO, and 2 of OVS word order.

(45)

1A Co je to za zvuky? Ty jsem tu ještě neslyšela.
what is it for sounds those.ACC AUX here yet NEG.heard.F

'What are these sounds? I have yet not heard them here.'

1B Soused si pořídil trombon.
neighbour.NOM REFL acquired.M trombone.ACC

'The neighbour acquired a trombone.'

2A Viděla jsem přijíždět záchranku. Co se děje?
saw.1SG.F AUX to_arrive emergency.ACC what REFL happens

'I saw the ambulance arrive. What is happening?'

2B Turistu uštkla zmije.
tourist.ACC bit.F viper.NOM

'A viper bit a tourist.'

4.2 Predictions

The next section shows predictions for each of the experiments.

4.2.1 Main experiment

The following factors were manipulated:

- CT type: plain contrastive topic x *it*-cleft contrastive topic (i. e., *to* + contrastive topic)
- prosody: hat-contour x naturally declining
- CT alternatives: explicit x implicit group of constituents which could be potentially contrastive topics

In general, the contrastive topic is frequently associated with hat-contour prosody (as discussed in Chapters 2 and 3). This prosody contour is quite flexible and optional for plain CTs (Veselá 2007). Upon reviewing structures containing CT with *to*, it seems that the hat-contour is far more mandatory. *It*-cleft CTs are thus predicted to be rated as less natural when presented with naturally declining prosody than with hat-contour prosody. More technically speaking, we predict an interaction between prosody and CT type: prosody should have a stronger effect in *it*-cleft CTs than in plain CTs.

The hypothesis for the explicitness factor comes from the supposed strength of different CTs (as in Veselá 2007). Having the alternatives (from which the next CT is chosen) spelled out explicitly appears to be a stronger prompt for the potential use of CT and for the use of the hat-contour prosody than when the alternatives are implicit. Conditions that contain an explicit group of potential CTs are predicted to be rated more natural than the ones with non-explicit group, yet both still remaining high on the scale of naturalness. The explicit CTs are predicted to be more affected by the prosody than the implicit CTs, the hat-contour prosody being the more natural for explicit CTs.

The last factor manipulated between items is the syntactic role of the CT – subject x object. This is predicted to have no effect on the naturalness rating, i.e., all items should be rated similarly regardless of the syntactic role.

4.2.2 Filler experiment 1 – *zato* and *zatímco*

Similarly to the main experiment, the conditions with plain CTs are predicted to be rated high regardless of their prosody (hat-contour perhaps being slightly more natural). For conditions with *zato* or *zatímco* followed by a CT, there are two possible scenarios.

The first hypothesis is that these structures will have the same prosodic contour as structures with *it-cleft* CTs, thus will be rated higher with the hat-contour prosody than with the naturally declining prosody (as is predicted for *it-cleft* CTs in the main experiment). The second hypothesis deals with *it-cleft* CTs as different from the CTs with *zato/zatímco* – the prosody would not interact with the rating of these contrastive topics (similarly to plain CTs).

4.2.3 Filler experiment 2 – adverbials

Previous experiments used structures which contained CT with the first position occupied by *zato* or *zatímco,* which can have a similar use to *to* in *it-cleft* CTs. In this filler, an adverbial occupies the first position. The need for prosody marking could be tied to the second position of the CT.

Based on my intuition, it seems that the prosodic marking of CT is not mandatory for the combination with an adverbial. Thus, it is predicted that the naturally declining prosody of structures with adverbials and CT will be rated high.

4.2.4 Filler experiment 3 – focus and prosody

The conditions of the third experiment are the following:

a – plain focus + focus prosody

b – plain focus + CT prosody

c – focus with particle + focus prosody

d – focus with particle + CT prosody

The combination of structures with focus and its typical prosody is predicted to be rated as very natural, the incongruent combination of focus and CT prosody should be rated rather unnaturally. The presence of a focus particle is predicted to have stronger disfavour in the incongruent conditions.

4.2.5 Filler experiment 4 – focused object and word order

For this filler experiment, the prediction concerns the naturalness of three different word orders in structures with a focused object. SVO is predicted to be rated higher than both conditions with object-initial structures (OVS and OSV). At the same time, we expect OSV to be perceived as more natural than OVS because it preserves the neutral SV order. OVS is predicted to be a natural choice in case the subject is focused (which it is not in the design of filler experiment 4).

4.3 Results

In this chapter, the results for all the sub-experiments will be discussed. A general trend that can be seen throughout the experiments is a relatively high rating (higher than 4 on the scale) of the majority of conditions (except for the incongruent conditions, see 3.3.4). As will be evident, most of the predictions have not been borne out. This will be discussed in section 4.4.

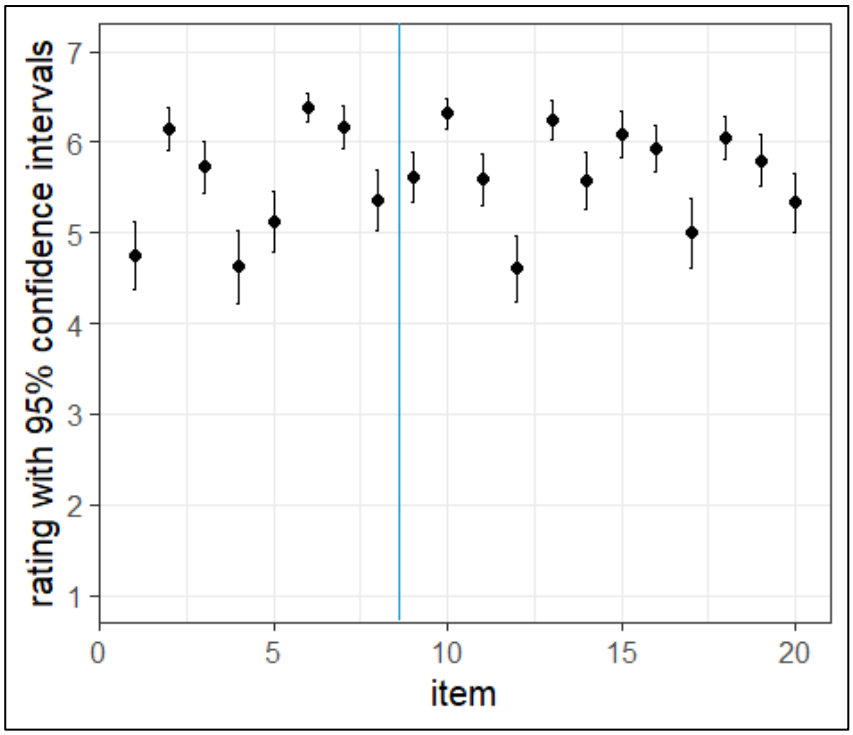
Before presenting the results of the experiments dealing with contrastive topics, I will first report the results of selected filler experiments, as they provide a useful background against

which we can view and interpret the main results. In particular, the set of all-new stimuli provides a useful rating baseline and filler experiment 3 demonstrates that the prosodic manipulations were, in principle, successful in affecting the naturalness rating. Statistics were done in R (R Core Team 2023) using the Cumulative Link Mixed Model (clmm, Christensen 2023).

4.3.1 All-new filler stimuli

The filler experiment contained items that were all-new, i.e., there was no contrastive topic or one focused constituent. As can be seen in Figure 8, the items were indeed rated as very natural, although the ratings do vary between items.

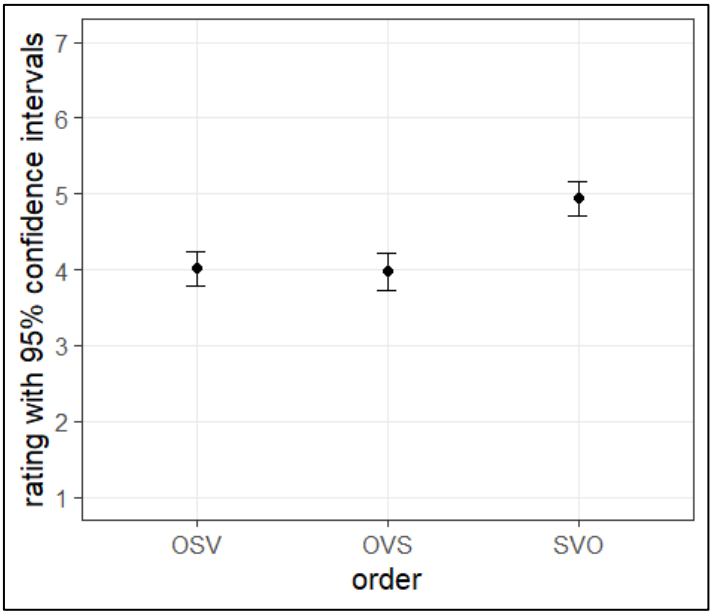
Figure 8 – Mean ratings of items in filler experiment 5 – The first 8 items have the word order OVS, the rest SVO (the division is indicated by the blue line)



4.3.2 Filler experiment 4 – focused object and word order

I fitted a statistical model predicting the effect of word order on naturalness. Word order was treatment-coded, with SVO being the reference level. According to the model, both OSV and OVS word orders are rated as less natural than SVO ($z = -7.440$, $p < 0.001$; $z = -6.839$, $p < 0.001$; respectively). By visual inspection, it is clear that there is no difference between the ratings of OSV and OVS. In comparison with all new items (filler 5), all items were rated as less natural than most of the all-new ones.

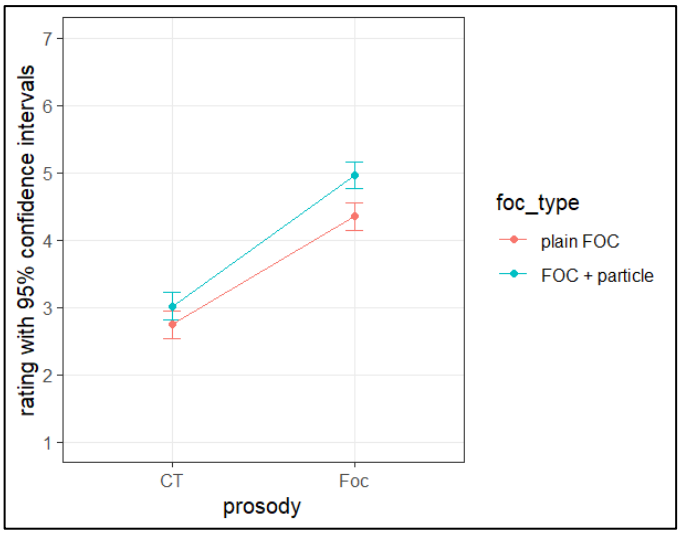
Figure 9 – Mean ratings of word order conditions for items in filler experiment 4, where the object was focused



4.3.3 Filler experiment 3 – focus and prosody

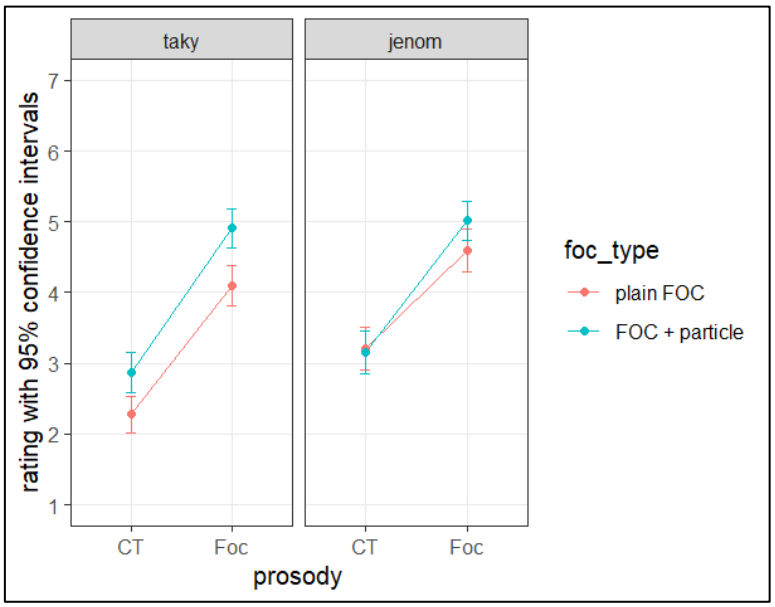
In this sub-experiment, there are two supposedly incongruent conditions. The results (see Figure 10) support this claim – the conditions with both the plain focus and the focus with a particle are rated less natural when presented with a CT-related hat-contour prosody than with the nuclear accent prosody characteristic of foci. Plain focus was rated lower than the focus with a particle. The fitted model shows that both focus type and prosody do have statistical significance independently of each other (particle + FOC in relation to baseline plain focus – $z = 5.622$, $p < 0.001$; CT-related prosody in relation to baseline focus prosody – $z = -17.463$, $p <$

Figure 10 – Mean ratings of conditions in filler experiment 3. CT prosody = hat-contour, Foc prosody = typical prosody for utterances with focused constituent



0.001). The interaction between the types of focus and prosody is not significant ($z = 1.018$, $p > 0.05$). If we separate the two lexical items (Figure 11), the interaction between the factors type of focus and given lexical item proves to be highly significant ($z = -4.173$, $p < 0.001$), and the interaction between the same two factors and prosody is also significant ($z = -2.450$, $p < 0.05$).

Figure 11 – Mean ratings of conditions in filler experiment 3, separated for each lexical item. CT prosody = hat-contour, Foc prosody = typical prosody for utterances with focused constituent



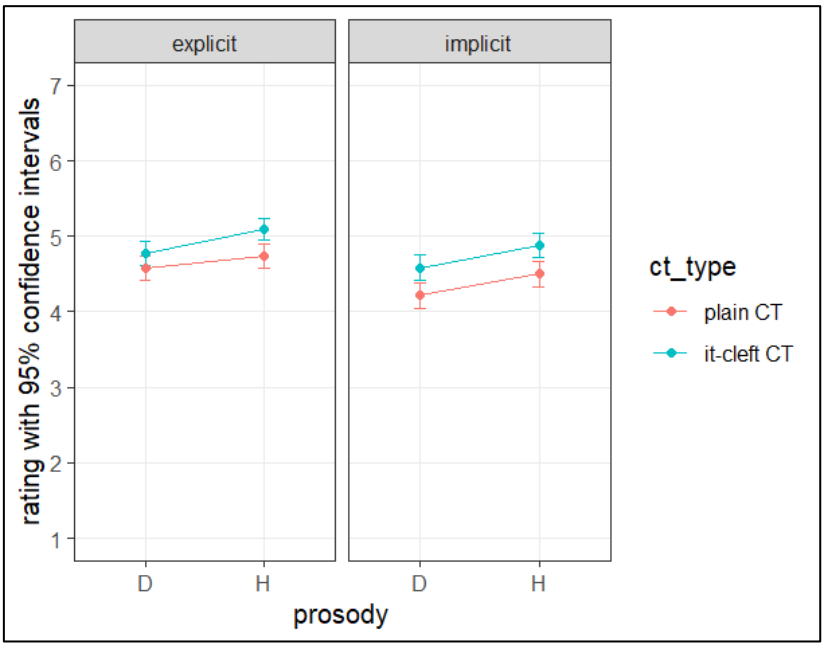
4.3.4 Contrastive topic

After looking at the results of filler experiments 5 and 3, we can see the baseline for the main purpose of our study, which concerns the prosody of contrastive topics.

4.3.4.1 Main experiment

Figure 12 shows the mean of the ratings for the main experiment.

Figure 12 – Mean ratings of conditions in the main experiment. D prosody = naturally declining prosody; H prosody = hat-contour prosody

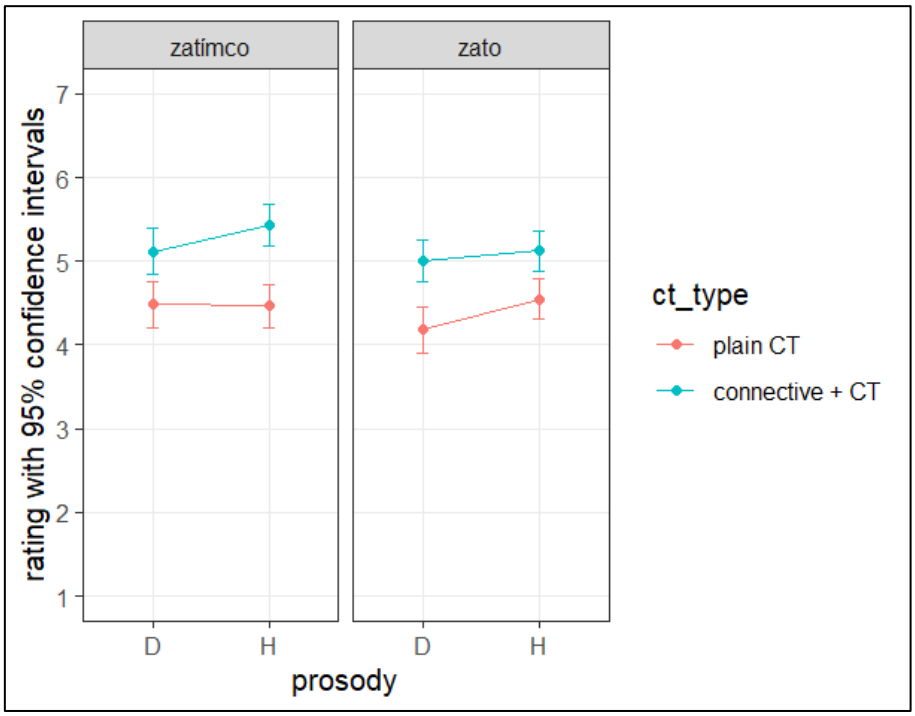


The effect of the type of CT (plain or *it-cleft*) is obvious – structures with it-cleft CTs were rated higher than structures with plain CTs. Conditions with naturally declining prosody were rated lower than with hat-contour, yet they were still found more natural than the incongruent conditions in the 3rd filler experiment (Figure 10). Conditions with explicitly mentioned alternatives were rated as more natural than their non-explicit counterparts. According to the model, the factors are highly significant independently of each other (CT type: $z = -6.665$, $p < 0.001$ [*it*-cleft CT as baseline]; prosody: $z = -5.436$, $p < 0.001$ [hat-contour as baseline]; CT alternatives: $z = -5.513$, $p < 0.001$ [explicit conditions as baseline]). No interaction was found significant ($p > 0.05$). There was also no significant difference between the ratings of SVO and OSV word order items ($p > 0.05$).

4.3.4.2 Filler experiment 1 – *zato* and *zatímco*

Figure 13 shows the results of the filler experiment where CT was preceded by *zato* or *zatímco*.

Figure 13 – Mean ratings of filler experiment 1. D prosody = naturally declining; H prosody = hat-contour. Connective + CT = CT preceded by zato or zatímco (columns).



The conditions with plain CTs are, again, rated lower than the conditions with the second position CT – according to the model, the type of CT is indeed significant ($z = -9.473$, $p < 0.001$). The prosody is also independently significant ($z = -2.675$, $p < 0.01$). Visually, there are also slight differences between the ratings of both lexical items, although not statistically significant ($p < 0.05$). The only significant interaction was found between the factors CT type, prosody and the lexical items ($p < 0.05$).

4.3.4.2 Filler experiment 2 – adverbials

The mean ratings of utterances with adverbials followed by CT are presented in Figure 14. The conditions with adverbial on the first position were generally rated lower than those with the particle *to*. Figure 15 shows the mean ratings for two groups of items based on the word order (and the corresponding syntactic role of the CT).

Figure 14 – Mean ratings of filler experiment 2. D prosody = naturally declining; H prosody = hat-contour. The first position of the utterances is either occupied by and adverbial or particle to.

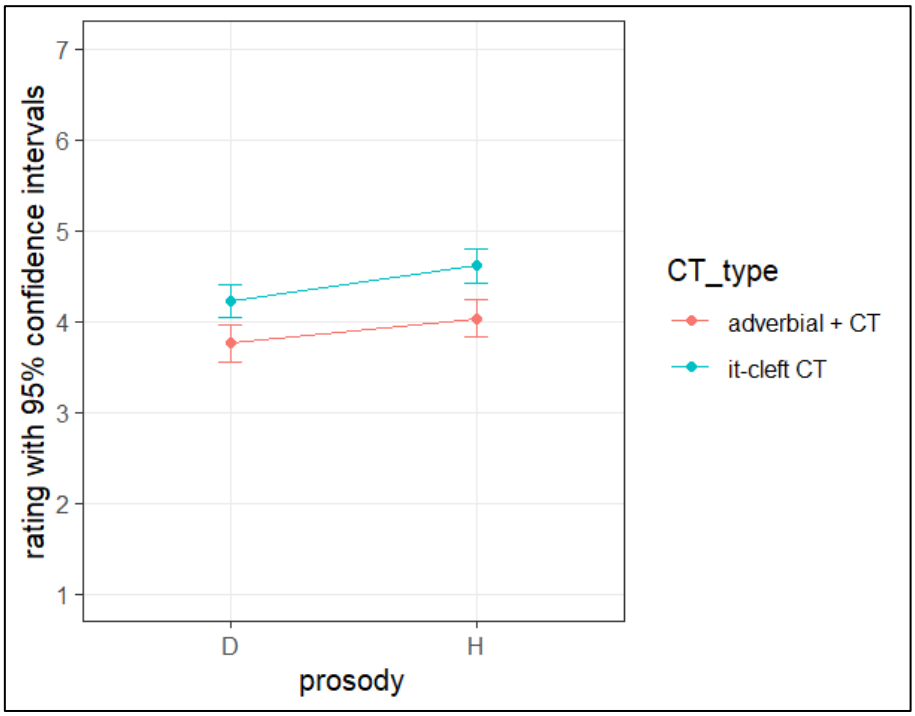
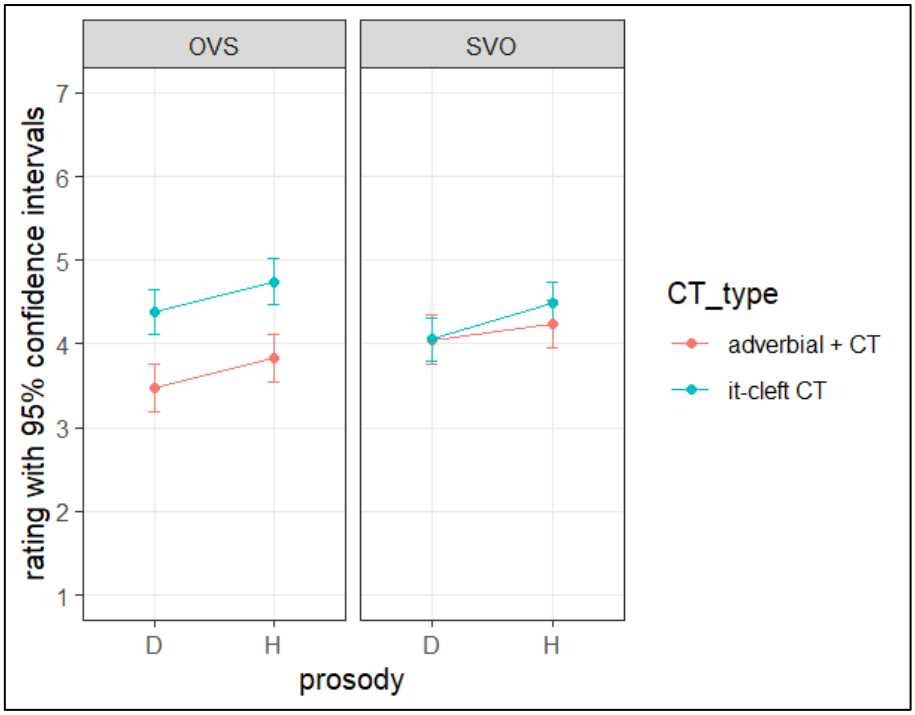


Figure 15 – Mean ratings of filler experiment 2, separated items based on word order (OVS or SVO)



The CT type and the factor of prosody were significant independently of each other according to the fitted model ($z = -5.802$, $p < 0.001$; $z = -3.538$, $p < 0.001$; respectively). When separated into two groups based on word order (and the factor word order added to the model), the factor

word order proves not significant ($p > 0.05$). The only significant interaction was found between CT type and word order ($z = -4.619$, $p < 0.001$).

4.4 Discussion

As mentioned above, the results did not go in the predicted direction. The conditions containing contrastive topic with hat-contour were rated as more natural than those with the naturally declining intonation, yet the type of the CT does not interact with it.

The predicted interaction between the CT type and prosody was not found. One explanation of this could be that the participants were not sensitive to prosody, i.e., they were not attentive to the intonational contours of the utterances. This cannot be the sole reason, however, since the participants were clearly sensitive the incongruent combination of prosody and information structure – conditions containing these were rated low in comparison to the congruent conditions. The absence of the interaction can possibly be explained by the optionality of the hat-contour for both plain CTs and *it*-cleft CTs.

The explicitness factor in the main experiment also did not interact with the prosody factor in the way it was predicted. The explicit conditions were rated higher, which proved to be significant, but not in the interaction with prosody (nor with CT type). Together with the findings in Veselá (2007), we can conclude that the strength of the contrast of contrastive topic does not influence the prosodic encoding of such a constituent.

The last prediction for the main experiment considered the syntactic role of the contrastive topic. This factor (corresponding with word orders SVO or OVS) was found not significant, thus not affecting the naturalness of the utterances. The interaction with prosody was also not to be significant. This was attested in the second filler experiment as well.

As for the behaviour of structures with *zato* or *zatímco* (filler experiment 1), two possible outcomes were considered likely: these structures either copy the preference of hat-contour as the structures with *to,* or they would behave differently. We see that they indeed copy the behaviour of structures with *to* (although not in the way it was initially predicted). Even though these conditions were not significant in regard to the interaction with prosody, they were indeed rated similarly to the contrastive topic with the particle *to*.

The filler experiment 2 used conditions where the first position is occupied with adverbials, which could not be interpreted as "topicalization helper" (in the sense that topic particles support the constituent in the function of a contrastive topic). In this case, no interaction between prosody and CT type was predicted. A fitted model did not find an interaction between the two factors (supporting the findings in the main and the first filler

experiment). Still, the structures with adverbials + CT were rated as the least natural from the items containing contrastive topics (still not as unnatural as the incongruent conditions). The relatively lower naturalness of these conditions is probably due to the fact that the contrastive topic was not initial in the utterance. The preceding adverbial (unlike the topic or connector) was perceived as potential topic itself, rendering another following topic – and especially a fronted one (i.e., an object) – less natural. This is in line with the generalization that contrastive topics tend to be topicalized, leading to an utterance or at least clause-initial position (see section 2.3.2.2).

The last two filler experiments were designed around focus instead of a contrastive topic. In the third filler experiment, the structures with a focused element and CT-related intonational contour were rated as less natural than those with typical focus prosody, as predicted. There is no significant interaction between the focus type and prosody, but the model revealed an interaction between focus type and the particle used (*taky* and *jenom*), in the sense that the items with conditions with the particle *jenom* were rated higher in their plain alternative than the items with *taky*. It is also significant in combination with prosody. This could be caused by the items used since the lexical items were manipulated between items. Furthermore, the number of items for each category is not high (only six). To discover the cause of these results, further research is needed.

For the fourth filler experiment, it was predicted that the SVO word order would be rated the highest. According to the statistical model, the SVO word order is in fact significantly higher rated than the other two word orders. What was not predicted was the similarity of ratings of the OVS and OSV structures. The order of constituents after a focused object seems to be irrelevant for the naturalness of the whole utterance. What is unexpected is the fact that the SVO conditions (where the focused object is not fronted and in its base position) were rated lower than the all-new items in filler 5.

If we take another look at the main and the filler experiments with contrastive topics, there are some aspects that were not the subject of predictions worth noting.

Thanks to the filler experiment 3 with the incongruent conditions as a baseline, it seems that the choice of the intonational contour for the utterance with a contrastive topic does not affect the perceived naturalness in the sense of making it completely unnatural. What is perhaps most surprising is the higher acceptance of utterances with the topic particle than the ones without it (and with CT in the first position). It is not only the case of *to*, which was the main centre of interest, but also of *zato* and *zatímco*. The interaction of the type of contrastive topic

and prosody was not found to be significant, which leads to a question of why the contrastive topics preceded by a particle or a conjunction are more natural.

It seems that the farther position of the contrastive topic does indeed make the utterance somewhat less natural, as seen in the results of the second filler experiment – although the ratings of the adverbial counterparts (with particle *to*) are lower than in the other two subexperiments with *to*, which could lead to the idea that the items of the filler were altogether worse than the rest. I believe that the items were not necessarily badly designed (although it could have happened), rather that the lower rating is reminiscent of the effort to give the conditions with adverbials a better chance of acceptability. For the utterances with adverbials to be more natural, a specific context of the scene was needed, which does not have to coincide with the context that is needed for the utterances with the particle *to*. Due to the size of the experiment, it was not possible to also include conditions with plain CT, but the ratings can be compared with the ratings of plain CTs in the main experiment.

But why are the conditions with topic particles better than plain CTs if there is indeed a difference between the two in a way it was not predicted? It is probably due to pragmatics. The function of the particle *to* is not only to topicalize a constituent (which has already been topicalized by moving to the front position), but it also helps to a better continuation (or flow) of the conversation by directly pointing out the contrast. This contrast is more explicit in the forms *zato* and *zatímco,* and the conditions containing them were also rated as high (or slightly higher) as the utterances with *to*. Thus, the use of contrastive topic with a particle is more natural in the reply of the second speaker because it is perceived as more cooperative. This raises a question, if the same behaviour would be found in monological utterances containing contrastive topics, where the speaker does not need to follow up their conversational partner.

The significance of the prosody factor can also be connected to the concept of cooperation. The conditions with hat-contour were rated significantly higher than with naturally declining. The use of hat-contour reflects the discourse tree structure better than the declining pattern, thus, can be viewed as more cooperative.

Similarly, the conditions with focus particles in the third filler experiment were rated higher than those with plain focus. This suggests that the presence of the corresponding particle increases the perceived naturalness of a structure independently of the informational-structural nature of the constituent to which it refers (i.e., it is irrelevant whether the constituent is focus or contrastive topic).

One more observation from the main experiment needs to be addressed. Although the explicitness of CT alternatives did not interact with prosody, this factor was, according to the

statistical model, significant. The explicit conditions were rated higher compared to the implicit conditions. One potential explanation could be that when speaker B uses the already heard phrase, it is part of the common ground (as discussed in section 2.3.1) for both the speakers themselves, but also for the participant / the hearer of the conversation. In the implicit condition, the constituent functioning as a contrastive topic does not have to be part of the common ground since only a general term (hyper-topic) was used by the first speaker. Having the lexical item "at hand" (i.e., the lexical form directly added to the common ground), the reply of speaker B could be heard as more natural than without this information. To test this hypothesis, a further study of the explicit CT alternatives would be needed.

5 Summary and conclusions

The main goal of this thesis was to further research the notion of contrastive topic and its prosodic means of encoding in Czech relying on a controlled naturalness rating experiment. Firstly, the background to information structure was given (section 2.1), followed by a broad introduction of the notion of focus (section 2.2). The main part of the theoretical background discussed the notion of topic (section 2.3). In section 2.3.2, it was established that the contrastive topic in general is a set of sets of alternatives from which the speaker can choose. Prosodically, the contrastive topic is associated with the hat-contour. Through the process of topicalization, the CT constituent is placed in the first position in an utterance, furthermore, the first position of CT is also ideal from the view of optimality theory due to the least number of violated constraints.

For Czech (Chapter 3), it has been previously found that the intonation typical for the contrastive topic is the rising intonation. The position at the beginning of the utterance is also seen as characteristic of the contrastive topic in Czech. Lastly, the observations of structures with *it*-cleft contrastive topics were discussed.

An experimental study was introduced in Chapter 4. The design was based on previous findings discussed in Chapters 2 and 3. The main manipulated factors were the type of contrastive topic (plain x *it*-cleft CT), the prosody of the utterance (hat-contour x naturally declining intonation), and the explicitness of CT alternatives (explicit x implicit group of alternatives of potential CTs). It was predicted that there would be an interaction between the prosody and the type of contrastive topic (*it*-cleft CT supposedly incongruent with the naturally declining intonation), as well as an interaction between the prosody and the explicitness of alternatives (explicit CT alternatives needing the hat-contour more than implicit alternatives). Altogether, the study contained one main experiment, 4 filler experiments (one half investigating further CT hypothesis, the other half concentrated on focus) and one set of all-new filler stimuli.

Since the study contained a filler experiment with an incongruent combination of a focused constituent and the CT-related prosody, we can safely say that the participants were indeed attentive to the prosody. These incongruent conditions also serve as a baseline for the rest of the ratings, which were all higher.

All in all, the results suggest that the use of hat-contour intonation for contrastive topics in Czech is optional from the point of view of perceived information, which supports previous findings (Veselá 2007). The type of contrastive topic does not influence the perception of both

intonational contours. The *it*-cleft CTs (or the combination of a connective and a CT) were rated significantly higher than the plain CTs, most probably due to pragmatic reasons – the second speaker is perceived as more cooperative when using a particle. The nature of CT alternatives also does not interact with the prosody of the structure, although the explicit conditions were rated higher than the implicit conditions, again, most likely due to pragmatic reasons. The strength of the contrastive topic, i.e., the explicitness of the CT alternatives, was also found independently significant.

As mentioned, the presented study focused on the perception of the target structures. A follow-up (experimental production) study could investigate the prosodical differences of structures with the topic particle *to* and its focus counterpart. The use of topic/focus particles could also be researched in the light of different situations – monological or dialogical conversation – in which they appear to see if such use is really seen as more cooperative. A spoken corpus study of specifically it-cleft topic structures could also be beneficial.

All things considered, this thesis brings a new view on the notion of contrastive topic in Czech, in particular in connection with the topic particle *to*. Although the predicted interactions were mostly not found in the data, the experimental study brings further support for the claim that the hat-contour for CTs is optional in Czech.

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