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**Stress shift and NSR in Czech**

We present evidence from acceptability rating experiments that stress shift (i.e., a deviation from the default stress realization) can be motivated in two different ways in Czech: (i) to satisfy STRESS FOCUS and (ii) to satisfy *STRESS GIVEN. We model this finding by adopting a nuclear stress rule that requires stress to be rightmost within the focused constituent (rather than within a sentence).

**Proposal** We assume that information structure is expressed primarily prosodically in Czech (e.g., Šimík & Wierzba to appear): focus correlates with stress and givenness correlates with the lack of stress. The relevant constraints deriving these correlations are defined as follows (where sentence stress is the most prominent stress in a sentence).

(1)   STRESS FOCUS (SF): The focus of a sentence contains the sentence stress.

(2)   *STRESS GIVEN (*SG): Given expressions do not contain the sentence stress.

Both SF and *SG are conditions that have been, in one way or another, traditionally assumed in the Czech literature (e.g. Petřík 1938, Daneš 1957, 1959). Our core proposal is that the NUCLEAR STRESS RULE (NSR) of Chomsky & Halle (1968) (see Daneš 1957 for an early formulation on Czech) should not be defined upon the domain of a sentence but rather upon the domain of focus. We define the relevant constraint as follows.

(3)   NUCLEAR STRESS RULE-F (NSR-F): The most prominent stress in the focused constituent is realized on the rightmost element of the constituent.

Table 1 illustrates the basic predictions of NSR and NSR-F for a number of SVO structures (underlining = sentence stress, ✓ constraint satisfaction, ✗ constraint violation), where word order and sentence stress position are manipulated (SF and *SG are always satisfied). Both NSR and NSR-F predict all stress-final cases (a, c, e) to be acceptable, irrespective of the broad (a, e) or narrow (c) focus status of the stressed constituent. The predictions diverge for the stress shift cases (b, d): While NSR predicts both stress shift for SF and *SG reasons to be reduced in acceptability, NSR-F only predicts an acceptability reduction in the stress shift for the *SG condition. The reason is that in the SF condition, the stress is rightmost within the focus (trivially so). More generally, NSR-F predicts free ordering of stressed narrowly focused constituents, as long as no independent (e.g. syntactic) constraints are violated (see Junghanns & Zybatow 1997 for Russian).

|     | syntax/prosody/IS | NSR | NSR-F | label |
| --- | --- | --- | --- | --- |
| a. | [S V $\underline{O}$]$_F$ | ✓ | ✓ | default |
| b. | S $\underline{V}_F$ O | ✗ | ✓ | stress shift for SF satisfaction |
| c. | S O $\underline{V}_F$ | ✓ | ✓ | reordering (for SF satisfaction) |
| d. | [S $\underline{V}$ O$_G$]$_F$ | ✗ | ✗ | stress shift for *SG satisfaction |
| e. | [S O$_G$ $\underline{V}$]$_F$ | ✓ | ✓ | reordering for *SG satisfaction |

Table 1: Violation profiles for NSR vs. NSR-F

**Experiment** The experiment, in which 32 native speakers of Czech took part, consisted of a series of short dialogues, presented auditively (on headphones). The participants' task was to rate the acceptability of the response (target) in the context of the initial utterance by pressing a number (on computer keyboard) from 1/totally unacceptable to 9/totally acceptable. The target sentences consisted of the constituents S, V, O, and PP. We manipulated three factors (within items): 1. category stressed (O stressed vs. V stressed), 2. stress position (stress shift vs. default stress), 3. type of focus (narrow focus on the stressed constituent vs. broad focus on the whole sentence), giving rise to 8 conditions in total (2x2x2). The type of focus was manipulated contextually (by

the initial utterance) and systematically correlated with givenness (for narrow focus, the whole background was given, in broad focus, PP was given in O stressed conditions and O+PP was given in V stressed conditions). A schematic example of an item in all its conditions is provided in (4) and (5). There were 32 items in total (plus 64 fillers).

(4)  Initial utterances

    a.  Did Marie force Václav to leave?        *Narrow focus on O, followed by (5a) or (5b)*
    b.  Did Marie ask Jiří to leave?           *Narrow focus on V, followed by (5c) or (5d)*
    c.  Do you know if everyone already left? *Broad focus, PP given, followed by (5a) or (5b)*
    d.  Do you have an idea why Jiří left? *Broad focus, O+PP given, followed by (5c) or (5d)*

(5)  Target utterances (schematic English)

    a.  Marie forced <u>Jiří</u> to leave.                *Stress on O, stress shift*
    b.  Marie forced to leave <u>Jiří</u>.              *Stress on O, default stress*
    c.  Marie <u>forced</u> Jiří to leave.               *Stress on V, stress shift*
    d.  Marie Jiří to leave <u>forced</u>.              *Stress on V, default stress*

**Results** The mean ratings for all 8 conditions are in Table 2 (standard deviations in parentheses). According to pairwise $t$-tests, there is a significant difference between stress shift and default stress in the object/broad condition ($t = 3.1, p = 0.003$) but not in the object/narrow condition ($t = 3.0, p = 0.16$); in the verb conditions, the differences are not significant (narrow: $t = 0.3, p = 1.00$, broad: $t = 1.5, p = 0.60$) (all $p$-values Holm-Bonferroni adjusted).

| Category stressed | Type of focus | Stress position | Mean rating |
|---|---|---|---|
| Object | Narrow | Stress shift | 7.3 (1.86) |
| | | Default stress | 7.9 (1.36) |
| | Broad | Stress shift | 4.9 (2.41) |
| | | Default stress | 5.9 (2.58) |
| Verb | Narrow | Stress shift | 7.2 (1.87) |
| | | Default stress | 7.1 (2.11) |
| | Broad | Stress shift | 6.3 (1.94) |
| | | Default stress | 6.7 (2.31) |

Table 2: Results

**Discussion** We argue that there are two types of stress shift in Czech—for SF satisfaction and for *SG satisfaction. We propose that only the latter type violates NSR-F and is therefore expected to be less acceptable than the competing operation of constituent reordering (which satisfies NSR-F). This expected difference in acceptability was found to be significant for stress shift to an object but not for stress shift to a verb. Yet, the latter goes in the expected direction numerically and was found to be significant in Šimík & Wierzba (to appear). (We speculate that the difference was not so pronounced in the present experiment because the size of the discourse given part was relatively large (O+PP), which might have prompted a narrow focus interpretation of the verb.) Šimík & Wierzba's work complements the present one in one more respect—it shows that stress shift for *SG satisfaction (and the consequent violation of NSR-F) is more acceptable than default stress (and the consequent *SG violation and NSR-F satisfaction).

**References** Chomsky, N. & M. Halle. 1968. *The sound pattern of English.* ● Daneš, F. 1957. *Intonace a věta ve spisovné češtině.* ● Junghanns, U. & G. Zybatow. 1997. Syntax and information structure of Russian clauses. *Proceedings of FASL 4,* 289-319. ● Petřík, S. 1938. *O hudební stránce středočeské věty.* ● Šimík, R. & M. Wierzba. to appear. The role of givenness, presupposition, and prosody in Czech word order. *Semantics & Pragmatics.*