Word order effects of givenness in Hungarian:

Syntax or prosody?

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This pioneering study presents results from a forced choice experiment designed to investigate the favoured linear placement of given constituents within the post-verbal domain of Hungarian. Specifically, the experiment tested the preferred relative position of textually given topical adjunct phrases. The results indicate that speakers prefer to place topical given constituents in the immediately post-verbal position, preceding contextually new items in the clause final position. The paper makes the argument that the results are best explained by an interface approach that sees word order variation as driven by the prosodic marking associated with givenness.

Keywords: word order, post-verbal field, information structure, givenness, prosodic marking

1. Introduction

Information structural (IS) categories like focus and givenness are associated with word order alternations in many of the world's languages. Over the past decades the word order effects of focus have been investigated in great detail from a variety of formal perspectives. Popular accounts range from the purely syntactic and those formulated in terms of the syntax-IS interface to those lying at the prosody-IS interface. Indeed, in transformational generative grammar, much of this research has centered around charting the precise division of labor of the relevant grammatical components in focus-related word order phenomena. While no less prominent in functionalist schools of thought than focus, the ordering effects of givenness have received comparatively less attention in transformational grammar. A key observation, first explored in detail by the Prague School, is the tendency of given elements to linearly precede new elements. This given-before-new generalisation, however has not been widely adopted in transformational theories as a general principle. In addition to the difficulty in pinning down the linguistically relevant

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notion of givenness, reasons for this lapse include the extensive, yet ill-understood variation in givenness-related word order effects, which include across-the-board obligatory reordering, obligatory reordering applying only to a restricted range of elements, and cases in which the generalization appears to be blatantly violated; phenomena which have all been observed in a variety of Slavic and Germanic languages.

Especially challenging from a generative syntactic perspective are variations in word order due to givenness that are best described as tendencies or preferences, rather than discrete and unambiguous effects. These types of phenomena are worth exploring since they make available potentially fruitful comparisons with better studied mandatory syntactic effects associated with IS, and are thus bound to inform general theories of the relation between IS and syntax.

This paper presents a two-alternative forced choice experiment that was designed to examine whether givenness plays any role in the word order of the post-verbal domain of the Hungarian sentence. In this domain major constituents of the sentence appear in a free word order, and currently it is not clear whether any information structural categories are relevant to the choice between different post-verbal word order alternants. After providing the necessary background regarding basic notions of givenness and characteristic ways of its grammatical marking in Section 2, in Section 3 we briefly review previous analyses of the syntax of the post-verbal region of the Hungarian sentence and prior claims concerning the effect of givenness in this syntactic domain. Section 4 presents our forced-choice experiment. The results reveal that while givenness does not determine word order in a categorical way, speakers tend to prefer for the given phrases to precede the new phrases in the critical sentences. In Section 5 we discuss possible syntactic and prosodic accounts of these results, and argue for the viability of a prosodic approach that views the relevant word order variation as driven by the prosodic requirements associated with givenness. Section 6 concludes with a summary and identifies open questions for future research.

2. Givenness

2.1 Notions of givenness

Givenness can be defined in a number of ways, which vary in how one assumes that an expression or its denotation are already present in discourse (Rochemont 2016). Chafe (1974) frames givenness in terms of cognitive activation (or salience), Clark and Haviland (1977) and Prince (1981) in terms of familiarity, and Ariel (1990) in terms of accessibility, to name three key points of reference. From a linguistic perspective, givenness is commonly understood in current approaches not

as a singular notion, but as a complex category encompassing various potentially related but distinct contextual properties. Ladd (1980), for one, discriminates between referential and textual senses of givenness. While extensionally these two senses may overlap, they do not necessarily coincide: something that is textually given may or may not be referentially given, and a referentially given entity may or may not be textually present (see Baumann and Riester 2013).

It is often posited that different combinations of these and other basic properties comprising different particular notions of givenness will lead to different degrees of givenness in a more encompassing sense. This assumption is common to a number of models that have been set up to capture the gradual or scalar nature of givenness (Chafe 1974; Prince 1981; 1992; Ariel 1990; Gundel et al. 1993; Arnold 1998; Kaiser 2011 among others). These models propose that the level of givenness of a particular item can be placed on a scale or hierarchy. The differential, and potentially graded, nature of givenness is revealed in its differential linguistic marking, potentially reflected, for instance, in the choice among alternative nominal forms that can be used to refer to the given entity (Ariel 1990; Gundel et al. 1993), or in differences in accent type and deaccentuation (Baumann 2006; Baumann & Grice 2006). Givenness markers can thus be defined in a way in which they reflect the varying degrees of givenness they are associated with (Krifka, 2008).

Thus, givenness may be of varying types and/or degrees, as revealed by potential differences in their linguistic marking. The aim of the present empirical study is modest: it concentrates on one type of given elements in Hungarian, namely, topical textually given phrases. This type would be positioned comparatively high on any givenness scale. Textual givenness is a relatively simple affair: textually given items are part of the common ground because they have a salient matching linguistic antecedent in prior discourse. As for topicality, this notion overlaps with givenness a number of ways. It requires the presence (or accommodation) of a corresponding element in the common ground (Chafe 1976; Gundel et al 1993; Lambrecht 1994; Prince 1981) Further more, it sometimes may also be understood as being scalar (Givón 1983; Ariel 1991). Two basic types of topics are commonly distinguished: aboutness topics (or sentence topics), of which the comment part of the sentence is predicated (Reinhart 1981; Lambrecht 1994), and discourse topics, namely themes of particular discourse segments (van Dijk 1976; Prince 1981). The two notions are not mutually exclusive in the sense that an element that is marked linguistically as the aboutness topic of a sentence may be, or may become, the discourse topic at that point of the discourse. For instance, in a dialogue context, if an item is marked as the aboutness topic in the question, then that item may function as the discourse topic (though not necessarily the aboutness topic) for the answer directly addressing that question.[1] In the experiment to be presented below we

1. For the relation between aboutness topic and discourse topic, see also Asher (2004: 191).

examine the syntactic positioning of phrases that are both textually given and topical in a a sense of topicality to be defined below (we will refer to them as *topically given*, for short).

2.2 The grammatical marking of givenness

Givenness has been shown to be associated in a wide range of languages with specific realisations both in terms of syntax and prosody. The syntactic reflexes of givenness often involve the use of non-canonical word order as reflected by the given-before-new generalization introduced above. In terms of prosody, on the other hand, givenness marking typically takes the form of reduced prosodic prominence, such as deaccentuation (Halliday 1967; Chafe 1976; Ladd 1980; Cruttenden 1997). One possibility with regard to any particular manifestations of these two types of reflexes is to assume that they arise independently of each other; that is, givenness exerts its influence on word order and on prosody separately. The other main possibility, capitalizing on the fact that syntactic form and prosodic form are highly interrelated, is to approach syntactic effects of givenness from the perspective of its prosodic effects, uncovering how the former may in fact be motivated by the latter. In the remaining part of this section, we survey some prominent accounts of the syntactic effects of givenness exemplifying each of these two possible approaches. We will return to them in Section 3.2 below, where we consider both of these possibilities in relation to the word order effects of givenness we have found in Hungarian.

A long established generalisation going back to the work of Henri Weil, Hermann Paul and the Functional Sentence Perspective of the Prague School, and also adopted in some form in a great deal of linguistic research since (e.g. Clark & Clark 1977; Clark & Haviland 1977; Gundel 1988; Kučerová 2007, 2012; Skopeteas & Fanselow 2009), is that given material generally precedes new material. A careful formulation of this generalisation is presented in Neeleman and van de Koot (2016):

(1) *Given-before-New Generalisation*
If a language uses word order alternations to mark givenness, then in the marked order the given material precedes the new material.

The following Czech examples illustrating this generalization are taken from Kučerová (2007). When the subject is interpreted as a (new, nonspecific) indefinite and the object is interpreted as a definite, the basic SVO order changes to OVS (2b). If the subject is definite, or both the subject and the object are novel indefinites, then the basic SVO order surfaces (2a).

(2) a. Chlapec našel lízátko
boy.NOM found lillipop.ACC
'The boy found a lollipop' 'A boy found a lollipop' 'The boy found the lollipop'

b. Lízátko našel chlapec
lollipop.ACC found boy.NOM
'A boy found the lollipop'

Kučerová (2007, 2012) puts forward a syntactically based analysis, proposing a givenness operator (G-operator) to account for this effect. Her account can be said to be syntactically flexible in that the G-operator has no fixed position in the functional hierarchy of the clause: it may be inserted in one of several positions. Wherever the G-operator is inserted within the structure of the clause, for each c-commanding phrase within the containing propositional clausal constituent it introduces the presupposition that that phrase must be given. It then follows from the Maximize Presupposition principle (Heim 1991) that all given phrases must c-command, and thus (due to the right-branching nature of Czech clause structure) must precede, all new phrases.[2]

The overlap between givenness and topicality means that given elements may also be syntactically marked on account of being topical. Of special relevance to our current concerns is the notion of *familiarity* topic. A familiarity topic, also called *givenness* topic or *continuity* topic (Bianchi & Frascarelli 2010), is a given expression linked to a previously established aboutness topic and/or used for topic continuity (Givón, 1983, 1990; Lambrecht 1994), which gets "an already introduced aboutness topic" "merely refreshed" (Bianchi & Frascarelli 2010). This particular notion of familiarity topic is similar to what van Dijk (1981) dubs 'sequential topic', and what Erteschik-Shir (2007) refers to as 'continued topic'.[3]

Basing themselves on the cartographic approach (Rizzi 1997), Frascarelli and Hinterhölzl (2007) show that in Italian familiarity topics are associated specifically with a low IP-external position that is located below the position of *aboutness/shifted* topics (Reinhart 1981), *contrastive* topics (Büring, 1997), and left-peripheral

2. As noted in the preceding subsection, different types and/or degrees of givenness may elicit varying forms of associated linguistic marking. Kučerová (2007, 2012) claims that an object in Czech is marked by reordering as in (2b) only if it is "presupposed" in addition to being given in the common ground, where presuppositionality is roughly equivalent to Enc's (1991) notion of specificity. Šimík and Wierzba (2015) argue that this extra requirement is both too strong and too weak for an adequate description of Czech.

3. Familiarity topic status has been shown to influence word order phenomena (Cowles & Ferreira 2011).

focus, as shown in the clausal sub-hierarchy of dedicated left-peripheral functional projections below.[4]

(3) $[_{ShiftP}\,[_{ContrP}\,[_{FocP}\,[_{FamP}\,[_{IP}$

Thus, in some cases the syntactic marking of given constituents may be due specifically to their familiarity topic status.

Both the flexible account and the cartographic account presented thus far regard givenness related word order phenomena as primarily syntactic, without assuming that the prosodic properties of given constituents play a significant role in these word order variations. With regard to the word order effects of focus, this has been a prominent line of research, culminating in what have come to be called cartographic syntactic accounts of focus (Bródy 1995; Rizzi 1997).[5] At the same time, some focus-related word order alternations have been treated as being governed by the prosodic need of focus to bear the nuclear accent. Namely, it has been suggested that marked word orders may result from the syntactic alignment of the focused constituent with the default position of sentence-level nuclear prominence (Neeleman & Reinhart 1998; Zubizarreta 1998; Ishihara 2003; Szendrői 2003). It is also eminently possible to approach the apparent syntactic effects of givenness from the perspective of the prosodic properties associated with it, uncovering how the former may in fact be motivated by the latter. The key idea on which this type of approach is based is that, in inverse analogy to focus, given elements prefer to *avoid* surfacing in a syntactic position which is assigned prosodic prominence by default. Šimík and Wierzba (2015) argue in favour of such an account of the word order effects of givenness in Czech, one example of which was cited above. They show that, in the absence of stress shift, Czech disfavours a new » given ordering of arguments if and only if the given element is in a sentence-final position, where it receives the default nuclear stress (see also Šimík et al. 2014; Šimík & Wierzba 2017). Under this approach word order interacts with givenness via the prosodic needs of given constituents.

It is worth noting that this general type of account is only applicable to languages in which givenness (or rather, the particular type of givenness at issue) imposes special prosodic requirements. While in many languages givenness is associated with deaccentuation, this is not a universal property. For instance,

4. In Italian familiarity topics are less restricted than the other topic types in that, due to some other constituents' options for movement in the clause, they may linearly en up either at the right or the left periphery; see Frascarelli and Hinterhölzl (2007).

5. For a flexible syntactic approach to focus, see Neeleman and van de Koot (2008); for a hybrid syntactic/prosodic flexible approach to focus in Hungarian, see Surányi (2012).

in languages like Italian and Romanian the givenness of a constituent does not license its deaccenting (Ladd 2008: 323; see Ladd 1990).

In this section we have reviewed some of the key notions of givenness, along with several prominent approaches to its grammatical marking. Before proceeding to present our experiments, in what follows we provide the relevant background on Hungarian.

3. Background on Hungarian

3.1 Free word order in the post-verbal field

Hungarian is a discourse-configurational language that has both a Topic and a Focus position in its sentence structure (É. Kiss 1995). The focus position is unique: focus is canonically situated immediately before the finite verb. Topics, which are recursive, precede the comment, thus they are located to the left of the verb, and also to the left of the pre-verbal focus, if there is one. The standard structural analysis of the Hungarian sentence is given schematically in (4a). (4b) spells out a possible implementation of this constituent structure in terms of functional projections.[6] The Topic position houses aboutness topics or contrastive topics (É. Kiss 2002; Gécseg & Kiefer 2009). Aboutness topics are generally shifted topics.

(4) a. [Topic* [Focus [V [XP … YP]]]]

b. [$_{TopP}$ Topic [$_{TopP}$ Topic [$_{FocP}$ Focus [$_{Foc}$ V] [*V P* XP … YP]]]]

Example (5) below exemplifies a sentence in which the object is topicalized to a pre-verbal position. If the verb has a verbal particle, then in broad focus sentences like (5), it is immediately pre-verbal.

(5) a. Pistá-t el-vitték a Bahamák-ra
Steve-ACC PRT-take.PAST.3SG the Bahamas-onto
'Steve was taken to the Bahamas.'

While the pre-verbal domain of the Hungarian sentence has been described in terms of a hierarchical structure within which different word orders give rise to different assignments of topic and focus information structural roles, the structure of the post-verbal domain has been a matter of controversy. Post-verbal constituent order has been described as "free" (including both arguments and adjuncts) in

6. A number of proposals have been offered in the literature that implement (4a)) in different ways (e.g. Bródy 1995; Puskás 2000; É. Kiss 2002). The choice among the different alternatives will be immaterial for our present purposes.

the sense that different orders are not mapped to differences in the distribution of topic and focus functions:

(6) a. El-magyaráztam a feladat-ot a diákok-nak.
PRT-explained.1SG the assignment-ACC the students-DAT
'I explained the assignment to the students.'

b. El-magyaráztam a diákok-nak a feladat-ot.
PRT-explained.1SG the students-DAT the assignment-ACC
'same'

One point of debate has been whether or not the post-verbal domain has hierarchical surface structure, showing *structural* asymmetries between subject and object arguments, or whether this domain of the sentence is best analyzed as structurally "flat", with major constituents in sister positions. The best elaborated account is É. Kiss's analysis, who argues forcefully in a number of studies (1987, 1994, 2002, 2008) in favor of the "flat" view of the surface structure of the post-verbal domain. Surányi (2006a,b) advocates a right-branching hierarchical analysis of the post-verbal domain, proposing a scrambling movement based account of the free post-verbal order of major constituents. Importantly from the present perspective, the scrambling operation does not affect the assignment of topic or focus roles according to this movement based approach either.

While the order of non-focal post-verbal constituents is syntactically free, it may be modulated by non-syntactic factors. These may include specificity and human reference (É. Kiss, 2002), as well as "phonological weight", which is subject to Behagel's (1932) law of growing constituents (according to which shorter constituents precede longer ones; É. Kiss 2008).

3.2 Givenness in Hungarian

There have been few attempts to characterise the role of givenness in Hungarian. In the remainder of this section we briefly summarise existing proposals regarding the effect of givenness in prosody, and in syntax.

It is not clear whether or not information structurally given material is, as a rule, deaccented in Hungarian, and as far as we are aware, there is no experimental evidence to back up either position. According to Varga (1981, 2002) and Gyuris (2012), given elements are deaccented as a rule. Although they do not explicitly make this point, Kálmán and Nádasdy (1994) do not posit that givenness based deaccenting is a general process in Hungarian as an obligatory process. They suggest, however, that obligatory deaccenting applies, in the presence of a pre-verbal narrow focus, to (non-focal) background elements in the post-verbal domain (a view also shared by Vogel & Kenesei 1987, and Kenesei & Vogel 1989). They also

claim that pre-verbal given topics preceding a pre-verbal focus are deaccented as an option (Kálmán & Nádasdy 1994: 459).

There are few studies that make any mention of the role of givenness or newness in post-verbal constituent order. Varga (1981: 200) is a notable exception. He provides the pair of examples in (7b) and (7c), noting that the order of the post-verbal elements is free as long as both of them are informationally new or both of them are given.

(7) a. Mit csinált a konyhá-ban?
what do.PAST.3SG the kitchen-in
'What did he do in the kitchen?'

b. Be-gyújtott a konyhá-ban a fi-á-nak.
PRT-lite.PAST.3SG the kitchen-in the son-POSS-DAT
'He lit a fire in the kitchen for his son.'

c. Be-gyújtott1 a fi-á-nak a konyhá-ban.
PRT-lite.PAST.3SG the son-POSS-DAT the kitchen-in
'He lit a fire for his son in the kitchen.'

Varga goes on to suggests that in a context like (7a) while (7b) is natural, (7c) is unacceptable (which he marks with an asterisk, indicating ungrammaticality). He does not provide a description of the grammatical mechanisms that are responsible for this asymmetry, but formulates the generalization that in case the post-verbal part of the comment contains a given element and a new element, then the new, and consequently accent-bearing, element may only occur in the comment-final position.

É. Kiss (1996, 1998) points out that Varga's (1981) prosody-based generalization regarding given and new post-verbal elements fails to apply in sentences containing two narrow foci, one of them in the pre-verbal slot and the other in a post-verbal position. In her judgment, in such sentences an informationally new post-verbal focus is preferably not comment-final in the presence of an additional informationally given element; instead, the post-verbal focus prefers to precede any given phrases. She proposes that this is because in a double focus sentence the post-verbal focus does not occupy an *in situ* position, but instead, extending the functional structure in (4b), it is located in a higher, functional specifier position: it is raised to a post-verbal FocP. Since given argument phrases normally remain low in their argument positions, they linearly follow this post-verbal focus. É. Kiss acknowledges that post-verbal given material may also occur to the left of the post-verbal focus, but she suggests that this material is topical (or else it is quantificational, a special case that is irrelevant to our present concerns). She argues that while such post-verbal topics are not interpreted as aboutness topics, they nevertheless do possess topic properties: they must be interpreted as specific

or definite (referential). Thus, the relevant part of the functional structure É. Kiss (1998) proposes for the post-verbal region of Hungarian is an iteration of the relevant portion of the functional structure in the pre-verbal field:[7]

(8) $[_{TopP} \ldots [_{FocP} \ldots V \ldots [_{TopP} [\ldots [_{FocP} \ldots]]]]]$

In summary, É. Kiss's (1996, 1998) proposal differentiates between topical and non-topical post-verbal given elements, without making direct reference to pure givenness. On the assumption that the domain to the right of the lowest discourse-related functional projection, which is comprised by elements that are neither focal nor topical, exhibits free word order, a *non-topical* given element is expected to be able to both precede and follow a non-focal new element, while a *topical* given element is predicted to precede it.

4. Experimental treatment

While there have been proposals for the existence of givenness related word order effects in Hungarian, no formally gathered empirical evidence is available to support them. In order to explore these effects, we present the results of a forced choice experiment that addresses this issue. The experiment was part of a series of experiments that have been designed to look at the effects of Focus and Givenness on the word order of post-verbal constituents in Hungarian. The scope of this paper is limited to the analysis of the effects of topical givenness alone.

4.1 Methods and materials

Participants were asked to complete a two-alternative forced choice experiment. In each step of the experiment they were presented with a context question, and two possible answers, which only differed in the linear order of their two post-verbal phrases. The task of the participants was to read the context question first, and then to pick the answer which they felt was the more felicitous. The dependent variable to be analyzed was the proportion of word orders chosen in relation to the total number of responses recorded for each condition.

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7. A similar set of iterated A-bar projections is proposed by Szabolcsi (1997). A partial representation is given below. RefP can only be occupied by (non-focal) referential phrases, including definite NPs. Movement to the post-verbal RefP, however, is not assumed to be overt.

(i) [HRefP [… [FocP [AgrSP V [RefP […[FocP …]]]]]]]

The context for each condition was presented in the question, while the two answers represented two possible word order realisations of the same target sentence. A template is given in (9), in which the two word orders are labeled as 'Answer 1' and 'Answer 2'. We will use the term *target sentence* to refer to the pair of sentences presented as possible answers, abstracting away from their post-verbal word order.

(9) *Context question*
   a. Answer 1: TOPIC V XP YP
   b. Answer 2: TOPIC V YP XP

A total of 16 lexicalizations matching this template were created.

The target sentences always contained a topic, which was followed by a verb, and two post-verbal constituents. The topic functioned as a grammatical subject, and it was invariably a singular definite expression referring to a person. Formally, it was either a proper name or a noun phrase consisting of a definite determiner and a noun. The verb may or may not have contained a verbal prefix. As noted in above in Section 2, a number of factors may influence the word order preferences regarding post-verbal constituents. In order to isolate the effects of givenness, the two constituents were matched for other possible factors that might possibly have an effect or ordering preferences. They were both adjuncts, to rule out asymmetrical argument structural relations. They were both of the same syllable count to rule out any effect of prosodic weight (i.e. Behagel's law of growing constituents). They were both specific and definite. Finally, the two post-verbal phrases were also matched for animacy.

In order to further counterbalance the experiment and to rule out any possible lexical effects that might influence word order preferences, the set of participants was divided into two groups. If in Group 1 one of the two post-verbal phrases, say XP in (9), was Given, then in Group 2 it was the other post-verbal constituent, namely YP in (9), that had a Given status; and vice versa.

Each trial was displayed on a separate screen. The context setting question appeared at the top of the screen, and the two answers representing two possible post-verbal word orders of the target sentence appeared in the centre of the screen, one below the other. Within each trial, the presentational order of the two answers was randomized in order to remove any presentational bias.

The experiment consisted of four conditions, and followed a Latin square design, based on four counterbalanced lists of critical items. Within each list, each condition was represented by four items. Each participant saw each of the sixteen lexicalizations in one of the four conditions. Of the four conditions the present paper considers only those that are relevant to the analysis of the effects of Givenness on post-verbal word order preferences.

In particular, we analyze two conditions: (i) a critical condition, and (ii) a baseline condition. In the baseline condition both post-verbal phrases were new. In the critical condition one of the two post-verbal phrases was new, while the other one was given. In particular, the given phrase had a linguistically matching antecedent in the context setting question that was syntactically marked there as an aboutness topic. This lent the given phrase in the target sentence both textual and topical givenness. Neither the critical nor the baseline items contained a narrow focus, i.e., they were all broad focus sentences.

Table 1 presents an overview of the experimental conditions analyzed in this study.

Table 1. Experimental conditions

Conditions	**One of the post-verbal phrases**	**The other post-verbal phrase**
Baseline condition	new	new
Critical condition	textually given + topical	new

A sample target sentence is given in (10), showing the two possible word order realisations that formed the alternatives in the forced choice task.

(10) a. Az unoká-m be-vásárolt [a hétvégé-n]
the grandson-POSS PRT-buy.PAST.3SG the weekend-on
[a csarnok-ban].
the hall-in
'My grandson did the shopping on the weekend in the market hall.'

b. Az unoká-m bevásárolt [a csarnok-ban]
the grandson-POSS PRT-buy.PAST.3SG the hall-in
[a hétvégé-n].
the weekend-on
'My grandson did the shopping in the market hall on the weekend.'

In the baseline condition the target sentence was presented with a context question that determined both post-verbal constituents to be contextually new. The relevant question for (10) is presented in (11).

(11) Hogy segít neked Andris?
How help.3SG you.DAT Andrew
'How does Andrew help you?'

This context question did not contain any of the post-verbal constituents, therefore givenness was not expected to play a role in the word order choices of the participants. It was hypothesised that this condition would induce the choices between the two candidates in (10) to be at chance levels, thus the baseline

condition would serve as the basis of comparison against which the effects of givenness could be measured. If the results indeed reflect chance levels, then that also confirms that biases for possible word orders have been successfully controlled for. Note, however, that this condition properly fulfills its role as a baseline even if it does not yield chance level results, i.e., if it turns out that due to some hidden factor(s) we find that participants exhibit a certain degree of preference towards one of the two orders. This is because the same factor(s) are expected to also be present in the matched target sentences of the critical condition. What is crucial is whether the critical condition reveals a significant difference as compared to this baseline.[8]

In the critical (new-given) condition, givenness was elicited in two ways. First, the context question contained an antecedent phrase that was textually identical to one of the two post-verbal phrases in the answer (this will be referred to as the target phrase). Second, the given phrase was also syntactically marked as a syntactic topic in the context question, which is a reliable trigger of an aboutness topic interpretation in Hungarian. We assumed that marking the target constituent as an aboutness topic (*A hétvégén* in (12a)) in the context question would make this phrase topical in the target sentence: it would have the effect of interpreting this constituent as a familiarity topic.

An example of a pair of context questions used in the critical condition is given in (12).

(12) a. A hétvégé-n mit csinált Andris?
the weekend-on what do.PAST.3SG Andrew
'What did Andrew do on the weekend?'

b. A csarnok-ban mit csinált Andris?
the hall-in what do.PAST.3SG Andrew
'What did Andrew do in the market hall?'

The context questions shown in (12) contain one of the post-verbal constituents of the target sentence, which is *a hétvégén* 'on the weekend' in (12a), the context question presented to Group 1, and *a csarnokban* 'in the (market) hall' in (12b), the context question presented to Group 2. The hypothesis was that if the type of givenness employed in the experiment has an effect on the word order of the post-verbal constituents, then this preference will be reflected in a significant difference between the results of the baseline and the new-given conditions.

8. We are making the simplifying assumption here that the potential hidden factor(s) at issue have the same effect in the critical condition as in the baseline condition.

The experiment was conducted with 192 participants (171f/21m, age range: 18–85, mean = 54). Participants were volunteers recruited online through advertisements posted on the social networking site Facebook.

The dependent variable was the ratio in which participants chose one possible word order over another in the contexts provided. The ratios were analyzed with the progam R (version 3.3.0, R Core Team, 2013), using logistic mixed effects models implemented with the lme4 package (Bates et al. 2015), where the fixed effects were the conditions (critical and baseline), and the random effects were the participants and the target sentences. A series of models were fitted, and the most parsimonious model was selected by backward elimination, using ANOVAs.

The models calculated the slope and intercepts for both random effects. Additionally, pairwise comparisons were conducted using the lsmeans package, with Tukey correction. These compared all conditions that formed part of the larger experiment. Below we will only include the two conditions in Table 1. Finally, we also checked, using a one-sample *t*-test, whether or not the proportion of the two selected orders in the baseline condition was significantly different from chance level. The following section will describe the results of the experiment.

4.2 Results

As reflected in the plots in Figure 1, a substantial difference seems to surface between the ratios of the selected word orders in the two conditions.

After fitting logistic mixed effect models, pairwise comparisons were run. The results indicate that givenness had a significant effect on the word order preferences: participants favoured the placement of the given item in the immediately post-verbal position over having it in the clause-final position (z-ratio = 2.26, p = 0.044, standard error: 0.105). The results of the one-sample *t*-test that compared the baseline condition to chance level revealed that participants' choices in this condition did not differ from chance level.

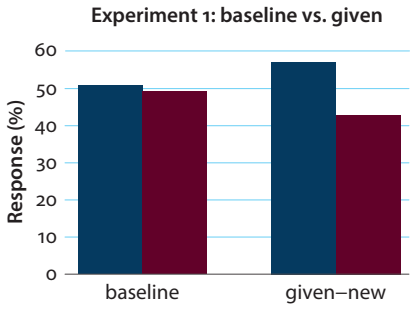

Figure 1. Placement of target item in the baseline and new-given conditions. red = target item in clause final position, blue = target item in immediately post-verbal position

4.3 Discussion

The foregoing outcomes reveal that, at least when textual givenness is coupled with familiarity topic status, the immediately post-verbal positioning of the given phrase is favoured over its clause-final placement. Thus, free word order in the Hungarian post-verbal field is sensitive to topical givenness in that, when other factors are appropriately controlled for, a given » new ordering preference emerges.

This result is convergent with Varga's (1981) intuitions regarding the superiority of the given » new order as compared to the new » given linearization after the verb. The convergence is only partial for two reasons. First, rather than applying to givenness across the board, the effect is only shown here to cases of topical givenness (cf. Section 2.1). Second, our results suggest that the effect does not involve a categorical difference between word order choices, which would be indicative of a grammatical distinction between the possible word orders (as implied by the asterisk assigned to the new » given order in Varga 1981: 200). Instead, the responses appear to reflect tendencies or preferences. Having said that, the convergence with the pattern laid out by Varga (1981) seems sufficiently clear.[9]

As noted in the introduction, there are two main routes that can be taken in modelling word order effects of givenness. Givenness-related syntactic alternations may be assumed to reflect givenness directly, implicating the mapping between syntax and information structure. Alternatively, they may be motivated by the prosodic needs associated with givenness, rendering the syntax-givenness relation indirect. In the next section we first consider how our results may be interpreted in terms of the syntactic proposals reviewed in Section 2.2, and then we explore the prospects of an indirect prosodic approach.

5. General discussion

5.1 Syntactic approaches

As will be recalled from Section 2.2, Kučerová's (2007, 2012) flexible syntactic approach posits a givenness-operator (G-operator) that imposes the presupposition that elements that c-command it within a propositional unit are given. It follows from the Maximize Presupposition principle (Heim 1991) that in a language whose syntax is sufficiently flexible to permit it, all given phrases will c-command all new phrases. In turn, assuming that the domain at issue in which

9. As we came across the relevant passage of Varga's (1981) squib only after we have designed the experiments and analysed their results, we find this convergence strongly suggestive that the effects we have found are real.

the relevant structural reordering takes place is right-branching, this will linearly order all given phrases before all new phrases. Recall also that the property of givenness that is imposed by the G-operator in Czech includes a combination of givenness and specificity (see footnote 2). As the post-verbal given phrases in our experiment were definite NPs, they satisfy the requirement of specificity.

One serious complication for a G-operator approach is related to the syntactic domain to which its ordering effect needs to be limited. On Kučerová's proposal the givenness operator divides the clause (for her, a propositional domain) into a given and a non-given portion (Kučerová 2012: 14): all material above the G-operator is given, and all material below it is new. This does not seem to hold for Hungarian. It is in fact the norm in Hungarian to place new information into a position before the verb, which is normally higher than elements of the post-verbal field, given the right-branching character of Hungarian clause structure. As reviewed in Section 3.1, Hungarian clause-structure is generally assumed to be hierarchical and right-branching all the way from its left edge at least to that head-initial projection whose head is overtly filled by the verb. In order for it to be viable in the first place, the G-operator-based account of the post-verbal ordering preference furthermore presupposes that the surface structure of the post-verbal domain too is hierarchical and right-branching. This is compatible with Surányi (2006a, b), though not with É. Kiss (1987, 1994, 2002, 2008); see Section 3.1 above. In all sentences that contain an informationally new exhaustive focus, the focus routinely occupies the pre-verbal position, independently of the givenness status of any post-verbal constituents. This is represented schematically in (13a). It might be argued, however, that this type of systematic counterexample is irrelevant, if one assumes that the pre-verbal focus is located outside of what Kučerová describes as a 'propositional' unit. If so, a range of other systematically available word orders make the same point. For instance, as schematized in (13b), in broad focus sentences an informationally new bare noun phrase argument normally also appears in an immediately pre-verbal position, again independently of whether or not any of the post-verbal phrases, which it c-commands, is given (for illustrative examples, see É. Kiss 2002: Chapter 3.6). The same holds of manner and other predicate phrase internal adverbials, which routinely occupy a (not necessarily immediately) pre-verbal position when they are informationally new, again irrespective of the givenness of post-verbal phrases; see (13c) (for an example, see É. Kiss 2002: 21, (24a)).

(13) a. $\text{Focus}_{new}\ \text{Verb}_{given}\ \text{XP}_{given/new}\ \text{YP}_{given/new}$
b. $\text{Bare-NP}_{new}\ \text{Verb}_{new}\ \text{XP}_{given/new}\ \text{YP}_{given/new}$
c. $\text{ADV}_{new}\ \text{Verb}_{new}\ \text{XP}_{given/new}\ \text{YP}_{given/new}$

In view of such facts, the domain of application of the G-operator would have to be restricted to the post-verbal domain in Hungarian. Effectively, the operator must be stopped from imposing the presuppositon of givenness on any c-commanding phrase above the surface position of the verb. While this could be doable, it would be stipulative, since it would limit the effect of the G-operator to what is considered a smaller-than-propositional clausal unit on most extant analyses of Hungarian clause structure. This in itself makes the approach less attractive to account for our experimental results. In fact, limiting the G-operator's application to the empirically required *linearly* post-verbal domain may well be a non-trivial task if the structural 'height' at which the verb surfaces is not constant across the various constructions, i.e. if the verb raises to a higher or lower position within the clausal functional hierarchy depending on what occurs in the pre-verbal domain (see Bródy 1995; Puskás 2000; É. Kiss 2002).

A second major challenge to the G-operator approach is the fact that that approach predicts a much greater effect of givenness on word order than we have found (see Šimík & Wierzba 2017 for the same issue posed by their Czech experimental data). The degradation that results from leaving a given element *below* the G-operator is due on Kučerová's theory to the violation of Heim's (1991) Maximize Presupposition. Indeed, violations of this principle generally give rise to a relatively perceptible infelicity, as illustrated by the sentence in (14b), uttered in a context in which it is part of the common ground that the speaker has exactly one neighbour (14a).

(14) a. Common ground: the predicate 'neighbour of mine' has a unique individual in its extension.
b. #A neighbour of mine broke into my attic.

By contrast to this type of infelicity, what our results from Hungarian reflect is a preference of one post-verbal order over the other, rather than a sharp difference between the two. This remains unexplained under a G-operator based analysis.

It seems fair to conclude, then, that a G-operator based account of our empirical findings has little to offer itself.

Let us turn now to how a cartographic approach could handle the current empirical results. As will be recalled from Section 3.2, É. Kiss (1996, 1998) offered a syntactic analysis of the post-verbal domain of Hungarian in terms of discourse-related functional projections. The relevant parts of this analysis are reproduced in (15) below for convenience. É. Kiss suggested that when two identificational foci are present in the Hungarian clause, the post-verbal focus occupies a post-verbal FocP position, which may be preceded within the post-verbal field by topics.

(15) $[_{FocusP}$ Focus Verb $[_{TopicP} \ldots[_{FocusP} [\ldots$(in situ) $\ldots]]]]$

In order to be able to adopt this analysis as a model of our experimental findings, assume now that a post-verbal TopP may be present even in the absence of a post-verbal FocP, i.e., when no focus appears in the post-verbal domain. This is a natural assumption, as both TopP and FocP, including their pre-verbal instantiations in Hungarian, are generally taken to be projected only when a corresponding topic and focus element is present.

For the sake of the argument, we may support the postulation of a post-verbal topic position in Hungarian by making a combination of two points. First, É. Kiss herself does not specify what type of topic interpretation is assigned in this position, but notes that it is not an aboutness topic interpretation. We suggest that elements in this position could be viewed as familiarity topics in the sense of Givón (1990), Lambrecht (1994) and Frascarelli and Hinterhölzl (2007). Second, as noted in Section 2.2, Frascarelli and Hinterhölzl (2007) demonstrate that FamP, the position of familiarity topics, is relatively low in Italian (see (3). It is lower than the position of aboutness and contrastive topics. Indeed, in Hungarian too both of these are located higher than the purported topic position in the post-verbal domain (namely, aboutness and contrastive topics are in the pre-verbal field, see Section 3.1). In Italian, FamP is also lower than the position of a fronted focus. Indeed, the position in question is lower than the canonical (pre-verbal) position of focus in Hungarian clause structure too.

The cartographic analysis under consideration then posits a dedicated immediately post-verbal position in Hungarian for topical items. This makes such an analysis seem highly suitable to treat the present result that topical given elements favour an immediately post-verbal placement over the clause-final position. Let us consider then (16) below as the structural analysis of those target sentences in which the given element preceded the new element.

(16) [Prt-Verb [$_{FamP}$ given …[…new …]]]

One challenge to this type of approach is posed by the preferential nature of the word order phenomena at issue. While movement to the pre-verbal topic position is practically obligatory in Hungarian, and indeed, movement of all topic types is obligatory in Italian according to Frascarelli and Hinterhölzl, this is apparently not the case for the post-verbal topic position that is hypothesized to play a role in our experimental data.

More detrimentally to the account under consideration, the very existence of a post-verbal FamP projection is dubious. First, there are no strong positional arguments in its favour. For instance, as shown in (17) below, a post-verbal familiarity topic can not only precede but it can also follow a post-verbal focus. Second, it is expected that non-specific bare NPs cannot occur in the FamP position, since topics must be specific (including definites and specific indefinites). This, however,

is disconfirmed by data such as (18), in which the object *gyógymódot* 'cure' is a non-specific bare nominal.[10]

(17) [$_{FocusP}$ Miért mutatta be [$_{FocusP}$ pont ő [$_{FamP}$ a
why introduce.PAST.3SG PRT specifically he the
diák-já-t [$_{FocusP}$ csak neked […(in situ) …]]]]
student-POSS-ACC only you.DAT
'Why was it specifically him who introduced his student only to you'

(18) Ki fejleszt-ene ki gyógymód-ot pont erre
who develop-COND.3SG PRT cure-ACC specifically this
a betegség-re?
the illness-for
'Who would develop (some sort of) a cure specifically for this illeness?'

In the foregoing we have examined a flexible and a cartographic syntactic approach to the outcomes of our experiment, and have found that they face a number of difficulties. Two types of issues appear to stand out. First, both approaches are difficult to make consistent with other facts of Hungarian that fall outside the explanandum at issue.

Second, they have no story to tell as to why the detected effects are 'merely' preferential. In the remaining part of this section, we explore an alternative, prosodic approach, which is potentially able to give a more principled explanation of the facts at hand.

5.2 A prosodic approach

The prosodic approach to the uncovered word order effects of givenness that we would like to put forward is, in a sense, the inverse of the suggestion made by Varga (1981). As we pointed out in Section 3.2, Varga (1981: 200) claimed that if the post-verbal field is comprised by a new and a given element, then it is the new, and

10. An example similar to (18) is discussed by É. Kiss (1998: 26), reporting that some speakers disprefer the 'bare NP » focus' order to the 'focus » bare NP' order in the post-verbal field, the latter of which is reproduced in (i). As in this example the bare NP contains an adjectival modifier, it may be that some speakers interpreted the bare NP as another focus. When interpreted as a focus, it falls within the scope of the other post-verbal focus ('only John') on the most plausible interpretation of the sentence (given in (i)). As this relative scope is reflected in the linearization in (a), this might be the reason why some speakers preferred this order.

(i) Melyik teszt-ben követett el CSAK JÁNOS súlyos hibá-t.
which test-in made.PAST.3SG PRT only John fatal mistake-ACC
'Which test is such that it was only John who made a grave error in it?'

therefore accented, element that must be sentence-final. Although Varga does not comment further on the grammatical mechanisms underlying this generalization, the formulation of his generalization seems to imply that the comment-final (or sentence-final) position better serves the prosodic needs of the new element than a comment-medial position would. This reasoning would be analogous to that of Šimík and Wierzba (2017) proposed for Czech, in that it takes the the syntactic order of given and new elements to be ultimately regulated by prosodic needs. At the same time, it differs from Šimík and Wierzba's account in that it views the prosodic requirements associated with *newness*, rather than givenness, as the key driving force in Hungarian. This latter hypothesis is difficult to maintain, however, because newness generally seems to be a prosodically and information structurally unmarked status, with no special prosodic requirements (Selkirk 2008; Katz & Selkirk 2011; Féry & Ishihara 2010); only focus needs to receive special (nuclear) prominence. Further, it incurs no deviation from default prosody for a new element to receive an accent in a sentence-medial position.

Instead, we propose to adopt the inverse perspective, namely the one put forward by Šimík and Wierzba's (2017) for Czech (and more generally, West Slavic). A key ingredient of their approach is that in these languages the sentence-final position is the default position of nuclear stress. The nuclear stress is commonly taken to be more prominent than any other stresses located in the same prosodic domain.

By analogy, here we submit the following claim for Hungarian:

(19) The right edge of the Hungarian sentence is prosodically special in that by default it is aligned with special prosodic prominence.

According to (19), in a default syntax-prosody mapping the right edge of the sentence is a position that is prosodically more prominent than clause-internal positions, including the position of any other post-verbal element. Admittedly, as it stands, the claim formulated in (19) is informal, leaving open various issues of implementation. It can be formally implemented in a number of different conceivable ways, but since our paper has an empirical focus we prefer to remain agnostic with regard to these choices here, leaving a formal treatment for another occasion.

Šimík and Wierzba's (2017) hold that in the absence of stress shift, Czech disfavours a new » given ordering of arguments if the given element is in a sentence-final position, because in that position the given item is aligned with the default position of the nuclear stress. This, in turn, represents a mismatch between the default prosodic pattern and the prosodic requirement associated with givenness, which in Czech they take to be deaccenting. Scrambling a given element away from a clause-final position, yielding a given » new order, has the beneficial consequence that the (scrambled) given element can be deaccented, as required, without

diverging from the default alignment of the special clause-level prominence with the end of the clause (now occupied by a new element). Thus, leaving the given phrase in its clause-final position would either result in a deviation from default sentence prosody (if the given element is deaccented), or else the deaccenting requirement of givenness would have to be violated.

On the syntactic side, the approach only needs to assume that the derivation of a scrambled word order is either syntactically costless, or its cost is lower than the cost that would be incurred by deviating from the default prosodic pattern. Considering Hungarian, we can make the same assumption in a scrambling-based analysis of the post-verbal field (Surányi 2006a, b), while on the flat structural analysis of this field advocated by É. Kiss (1987 et seq.) the equal cost of different linear orders is the null hypothesis. But independently of the syntactic analysis of the Hungarian post-verbal field, if we assume that the attachment of adjuncts is *syntactically* free, then due to the adjunct status of both post-verbal phrases in our target sentences, neither of the two linearizations is expected to incur higher syntactic cost than the other. Thus, as far as the syntax is concerned, a Šimík and Wierzba-style approach can be straightforwardly adapted to Hungarian.

The crucial assumption that this account of our results needs to make is that topical givenness can lead to deaccenting in Hungarian. The hypothesis that it is possible (though not obligatory) to deaccent given topical elements in Hungarian is not without antecedent. Although they restrict it to sentences containing a narrow focus, Kálmán and Nádasdy (1994) make the claim that preverbal aboutness topics are optionally deaccented in Hungarian when they are given (see Section 3.2). Our suggestion is that this phenomenon is more general, and it carries over to post-verbal familiarity topics too: it is topical givenness, independently of aboutness, that licenses optional deaccenting.

To sum up, a possible prosodic account of the outcome of our forced-choice experiment is based on the following assumptions regarding Hungarian:

(20) a. Topical textually given elements may be deaccented.
b. The end of the clause is a distinguished position in that it is aligned in a default syntax-prosody mapping to special prosodic prominence; a deviation from this alignment is prosodically marked
c. Other things being equal, neither one of the possible linearizations of two post-verbal adjunct phrases is syntactically more costly than the other

On this account, it is the prosodic markedness in (20-b) that ultimately triggers the word order preference detected in our experiment. The markedness is simply the result of the fact that a non-default prosodic form is used even though a default prosodic form would also be available, with a different, but syntactically no less

economical (i.e. no less marked) word order targeting the same semantic interpetation and information structure (cf. Reinhart 2006).

The fact that the preference we have found is relatively mild can also receive an explanation on this approach. First, in general, prosodic markedness does not necessarily have the status of grammatical ill-formedness. Second, independently of the status of the marked prosodic form, the mildness of the preference also follows if deaccenting of topical given elements is optional rather than obligatory (in line with the suggestion made by Kálmán and Nádasdy 1994).

6. Conclusion

This pioneering study explored the effect of givenness on post-verbal constituent order in Hungarian, addressing the issue experimentally for the first time.

Based on a two-alternative forced choice experiment, it was found that in the case of topical textually given elements, speakers prefer a given » new order to a new » given order: they opt for placing the given constituent in the immediately post-verbal position rather than in the clause-final position in sentences containing two post-verbal phrases.

Examining a flexible and a cartographic syntactic approach to these outcomes, it was concluded that while these accounts are feasible when it comes to the attested linear asymmetry itself, they face difficulties when faced with additional empirical facts of Hungarian. Furthermore, these approaches have no straightforward explanation for the preferential nature of the uncovered effect.

The prosodic approach that we have proposed, which successfully avoids these problems, holds instead that in Hungarian (i) the right edge of the clause is aligned in default syntax-prosody mapping to special prosodic prominence, as compared to clause-internal post-verbal positions, and (ii) (*topical givenness*) licenses deaccenting.

While (ii) is an extension of a claim made by Kálmán and Nádasdy (1994) and it is an instantiation of the special relation between givenness and reduced prominence in stress-accent languages in general, the proposal in (i) is new in the form presented here, and we have left the issue of its implementation open.

The degradedness of the new » given order as well as the preferential, rather than categorical, nature of this degradation are then explained in terms of the marked status of prosodic forms (namely, those associated with a new » given order) that involve a deviation from default prosody in the presence of an available syntactic alternative that licenses a different word order (namely, the given » new order) in which the same prosodic deviation is avoided.

While such a prosodic approach successfully explains the pattern found in the experiment, it opens up certain empirical questions, as well as questions for existing theories of the Hungarian prosody-syntax interface, which are, however, beyond the scope of this paper to begin to explore, let alone conclusively settle. It may nevertheless be worth concluding by spelling out the most relevant issues in the hope that they offer worthwhile new perspectives for future research.

An outstanding empirical issue raised by our prosodic approach is whether the claim made regarding the deaccenting patterns associated with topical givenness stands up to empirical scrutiny in prosodic *production* (though see Genzel et al. 2015 for some relevant confirmatory evidence). An additional empirical question of immediate relevance is whether and which other types of givenness, in addition to topical givenness, have a similar ordering effect in the post-verbal field as the one that we reported here.

Two points made in Section 2 are of immediate relevance to this issue. First, the association of givenness with deaccentuation is subject to cross-linguistic variation. Second, givenness is a family of closely related yet different notions, and furthermore different types of givenness may be combined with each other. Therefore it may also be subject to variation which type of givenness a language associates with deaccenting. The only expectation in this regard is a priori: namely, if there is an implicational relation holding between two different types of givenness (or combinations thereof), then this implicational relation will be reflected in their prosodic marking, and a fortiori, in their ordering preferences in the Hungarian post-verbal field.

Another key issue concerns the status of the special prosodic prominence that is assumed to be located at the end of the clause by default. On current assumptions of prosodic phonology, this prominence must be associated with a prosodic position at the right edge of some high-level prosodic constituent aligned with the right edge of the clause. What is the nature of this constituent in terms of the prosodic hierarchy, and how is it derived in a default syntaxprosody mapping (for different views of the syntax-prosody mapping, see Vogel & Kenesei 1987, 1990; É. Kiss 1994; Hunyadi 2002; Varga 2002; Szendrői 2003; Surányi et al. 2012)? Do sentences with given » new and new » given orders correspond to the same prosodic structure or different prosodic structures, apart from accentuation (and strictly concomitant phonological phrase formation)? At a more theoretical level, how does the assumption of a special right-edge prominence bear on models of the directionality of prosodic heads in Hungarian (Kálmán & Nádasdy 1994; É. Kiss 1994; Varga 2002; Vogel & Kenesei 1987; Kenesei & Vogel 1989; Szendrői 2003), and more generally? How do they bear on the prosodic headedness of broad focus sentences (Katz & Selkirk 2011)? All these are non-trivial issues that point to intriguing avenues for future research.

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