The relative influence of animacy, givenness, and focus on word order in Croatian ditransitive structures

Marta Velnić

NTNU, Norwegian University of Science and Technology
marta.velnic@ntnu.no

Abstract

This paper aims to investigate how animacy, givenness, and focus influence word order in Croatian, as previous research has found that these factors have an effect on word order. Eighty-two participants completed an acceptability judgment task. The results showed, as expected, that animacy and givenness influence the animate/given object to precede the inanimate/new object, while focus provides the opposite effect. Focus is stronger than animacy because animacy has an influence only when focus is absent. Givenness has a weaker effect than the other factors because when animacy is balanced, there is a general preference for direct-indirect order. We thus reveal that these three factors are ordered hierarchically in the following way: focus > animacy > givenness.

Keywords: word order, ditransitives, givenness, focus, animacy, Croatian, Acceptability judgment task

1 Introduction

This paper reports how animacy, givenness, and focus influence word order in Croatian, which is considered a 'free' word order language and thus all word orders consisting in the combination of the subject, verb, and two objects are attested but with varying frequencies (Siewierska & Uhliřová 1998). Previous research has shown that the preference for one word order over another is dictated by pragmatic and semantic factors like givenness (Birner & Ward 2009; Clark & Haviland 1977), animacy (Dahl & Fraurud 1996; Ferreira 1994; Røreng 2011; Rosenbach 2003), and

focus (Gundel 1999; Røreng 2011). We investigate the effect of these factors by using ditransitive structures in Croatian, and more precisely the effect on indirect-direct (IO-DO) or direct-indirect (DO-IO) order. We have chosen to investigate the relative order of the two objects instead of the subject-object because, due to thematic role biases, the subject has been found to be more accessible than the other thematic roles (Arnold 2001); thus two objects should be more equal than the subject and the object, and the effect of the factors in question will be observed more directly.

An Acceptability Judgment Task (AJT) was designed to test the influence of these factors through word order preference. Eighty-two native speakers (mean age=23.3) of Croatian completed the AJT. The task provided various contexts based on the combinations of the three properties on the two objects. The target sentences were presented in four varying orders of the verb and the two objects (VID, VDI, IVD, DVI) randomized for each item, and each of them was judged on a 5-point Likert scale.

We used Linear Mixed Effects to create models in which word order and each of the factors was a predictor, and a null model where only word order was a predictor. ANOVAs were conducted as comparisons of the factor models to the null model. The results for animacy and focus were significant (p-value=0.02 and p-value=$2.2e^{-16}$); the result for givenness was not significant. However, adding givenness to the animacy model improves it, which means that also givenness contributes to word order preference. We can see the effect that a factor has on word order in the examples where all factors but one were neutralized. We find that, as expected, animate objects precede inanimate ones, while focused objects follow the non-focused ones, regardless of animacy. The effect of givenness was not clear because in the condition of balanced animacy, the participants preferred DO-IO orders (VDI and DVI)[1] regardless of which object was the given one. There was however a better judgment of IO-DO orders when the IO was given than when the DO was given.

In order to reveal the relative importance of the factors we used the conditions in which there was an interaction of two factors. Focus is a stronger factor than animacy because animacy influences object order only when neither object is

---

[1] When the position of the verb is taken into consideration, the abbreviations for the two objects, IO and DO, are further reduced in order to avoid long acronyms; thus, VID, VDI, IVD, and DVI are used.

focused. Since the givenness model was not significant, we establish that it is the least relevant factor. Thus, the relative order of the factors is the following: focus > animacy > givenness.

2   The effects of givenness and focus on word order

Given and focused arguments are treated as factors with opposite effects in this task as the task only included focused elements which are new. These properties are outlined together as they represented the antipodes of linearization hierarchies.

The relation of givenness to word order is that given information usually precedes new information (Birner & Ward 2009; Clark & Haviland 1977), as background precedes focus (Gundel 1999). According to the *given>new principle*, if all other factors are equal, speakers will prefer to place the information that is familiar to the listener first, and place the new information later (Birner & Ward 2009). Effects of givenness were found in ditransitives of various languages (Clifton & Frazier 2004 for English; Kizach & Balling 2013 for Danish).

Similarly, focus follows the information that is considered as 'background' which is often given information. Focus is the information that is not part of the common ground between the interlocutors, and the definition that is taken into consideration in this paper is taken from Gundel (1999), according to whom focus represents new information that is being asserted or questioned in relation to the background. Effects of focus were found relevant in ditransitive structures (Røreng 2011).

This implies that the two pragmatic factors taken into consideration here influence the argument to be placed in opposite ways according to the *given>new* and *background>focus* linearizations.

3   The effect of animacy on word order

This property is not context-dependant as the previous two, but referent-dependant. The simplified animacy scale usually involved in linguistic linearization includes three levels of animacy: Human > Animate > Inanimate (Yamamoto 1999); the scale

entails that Human arguments precede Animate ones and Animate arguments precede Inanimate ones. Branigan et al. (2008) claim that animate (intended as both Human and Animate) entities are conceptually highly accessible and thus easier to retrieve, so this will cause them to be placed first in terms of word order. This linearization can be observed, for example, in the active/passive structures of various languages when the active structure is preferred with animate agents, while the passive structures is preferred with animate patients (Ferreira 1994; Gennari et al. 2012). This tendency of animate-first is also reported in the structural choice between *of* and *–s* genitive in English (Rosenbach 2003).

In the current study, I analyse how two conditions of animacy impact word order; namely, the different impact of prototypical and balanced animacy. I refer to a context as prototypically animate when the IO is human and the DO is inanimate (Velnić 2018). A context has balanced animacy when both objects are on the same level of the animacy scale. In the case of the current study, the objects were either both Human or both Inanimate.

4 Ditransitive structures in Croatian

Ditransitive structures occur with ditransitive verbs – verbs that have three arguments typically with the thematic roles of agent, recipient, and theme (Malchukov et al. 2010) – and therefore need a subject, an indirect object, and a direct object for the respective thematic roles. The most typical ditransitive constructions contain a verb of physical transfer such as 'give' and 'sell', or verbs denoting mental transfer such as 'show'.

In Croatian ditransitive structures, all combinations of verb (V), IO, and DO are grammatical but their choice depends on the context. Some of these orders, the ones on which this study focuses on, are presented in (1).

(1) a Majka   je   dala curici   čokoladu.   – S-V-IO-DO
        mother-NOM is-AUX gave girl-DAT   chocolate-ACC

   b. Majka je dala čokoladu curici. – S-V-DO-IO

   c. Majka je curici dala čokoladu. – S-IO-V-DO

   d. Majka je čokoladu dala curici. – S-DO-V-IO

"The mother gave a/the chocolate to a/the girl / The mother gave a/the girl a/the chocolate."

The thematic roles of recipient (IO) and theme (DO) are marked on the noun with the dative and accusative case respectively. The combinations of three arguments: V, IO, and DO are taken into consideration in this study; the position of the subject is disregarded. The current study tests the acceptability of the sentences ordered like the one presented in (1a-d) relatively to the contexts in which the two objects vary with respect to animacy, givenness, and focus.

5 Methodology

This study aimed to reveal if the effect of the factors in question was the same as found in other languages, and which one of the three factors had a greater influence in word order preference.

The methodology consisted of an AJT which contained a total of 12 different contexts distributed over 18 examples. The AJT was created with SurveyGizmo and was accessed online through a web-link. The experiment included a total of 41 sentences including fillers. Due to a simplification of creating the contexts, only 6 of the test items contained a different focus marking between the two objects; we will thus refer to the two groups of test items as *without focus* and *with focus*. The distribution of the test items is displayed in tables 1 and 2. Each example consisted of two parts: a context sentence which was crucial for setting the pragmatic properties of the objects, and the target sentences which were provided after the context sentence in four word orders (VID, VDI, IVD, DVI) randomized for each example.

	Prototypical animacy	Balanced animacy	
	IO animate	Both animate	Both Inanimate
DO Given	1	1	2^2
IO Given	1	1	2
No Given	1	1	2
Total examples	12		

Table 1. Examples without focus

---

[2] Due to a compiling error, one of the examples here had only 25/82 responses and we are therefore excluding this example, so there is only one example here.

	Prototypical animacy	Balanced animacy (Both animate)
IO Focus	1	1
DO Focus	1	1
S Focus	1	1
Total examples	6	

Table 2. Examples with focus

The properties of the objects were the following. The animacy of an object was related to the animacy of the referent and it was reduced to a binary contrast between Human and Inanimate. Given and focus were contextually related properties and were thus set with a context sentence presented prior to the target sentence. An object was [+given] when it was mentioned prior to the target sentence, it was [-given] if it had not been mentioned. Focus was set as a property which could only relate to [-given] objects, and an object was [+focused] when it was the object explicitly asked about in the context. An example of a sentence with the condition in which the IO is Animate and the DO is given (without Focus) is given in (2).

(2)   CONDITION: IO Animate, DO Given
        CONTEXT:
        A: Imaš   li   još   uvijek   onaj   svoj   kalkulator?
        have-2nd.SG Q-particle more   still   that-ACC your-ACC calculator-ACC
        B: Ne, nažalost   nemam,   sad koristim   onaj na   mobitelu.
           no unfortunately do_not_have-1st.SING now use-1stSING that on   mobile
        "A: Do you still have that old calculator of yours?"
        "B: No, unfortunately I don't, now I am using the one on my phone."
        TARGETS:
        VID: Pred puno godina sam   dala   nećaku   kalkulator
             ago many years have-AUX gave-1stSING nephew-DAT   calucator-ACC
        VDI: Pred puno godina sam dala kalkulator nećaku
        IVD: Pred puno godina sam nećaku dala kalkulator
        DVI: Pred puno godina sam kalkulator dala nećaku
        "Many years ago, I gave the calculator to my nephew."

Like in example (2), this task includes only NP-NP combinations of the two objects. The reason for this is that referring expressions have an impact on word order. However, while pronouns tend to precede NPs (Bresnan et al. 2005; Gundel et al. 1993) due to the more general principles of the quantitative harmonic alignment (de Marneffe et al. 2012), the clitics in Croatian are fixed in second position (Browne 1993; Schütze 1994), and thus in this case it is syntax, rather than pragmatics,

dictating the order of the objects. Thus, by using only NPs, it is more assuring that the factors in question will be the ones causing a certain word order preference.

The AJT does not contain examples of animate DO and inanimate IO due to it being most likely an unnatural situation (e.g. give the boy to a ball) or resorting to infrequent verbs such as 'sacrifice' (e.g. sacrifice the girl to the sun).

5.1 Participants

Eighty-two native speakers of Croatian (ages: 18-53, mean: 23.3) completed the AJT. The participants were recruited thorough social media and by visiting lectures at the University of Rijeka and distributing leaflets with the link and QR code that lead to the online survey.

5.2 Procedure

Once the survey was accessed online, the participant had to fill in a preliminary questionnaire regarding age (participants under the age of 18 could not take part), gender, native language, other spoken languages, and where they grew up. They also had to consent that the answers provided will be used for research purposes by ticking a box at the end of the preliminary questionnaire.

The testing proceeded as follows. The participants saw a context sentence on screen (no audio stimuli) in which the referents varied in animacy, givenness, and focus. After each context sentence, four sentences with a ditransitive verb varying in their word order were provided. The participants were asked to rate these sentences on a 5-point Likert scale with five being perfectly acceptable and one being not acceptable.

6 Results

6.1 Comparison of the models

The first step in the analysis was to check whether the three factors influence the ratings, and which one is a better predictor for word order judgment. Five models were set up by using Linear Mixed Effect (Bates et al. 2015): two *null models* with word order as the only predictor, and one model for each of the three factors (+word order) were set as predictors (*animate model*, *given model*, and *focus model*). The null model was then compared to each of the three factor models. The reason for making

two null models was that not all the data within the survey are directly comparable: we are splitting our results in conditions without focus (table 1) and examples with focus (table 2) and thus each set of examples has its own null model to be compared to.

Once the models were set, each factor model was compared to its respective null model by conducting an ANOVA. The results of the ANOVAs tell us how significantly they differ from their respective null model. The results of each ANOVA are presented in tables 3-5.

	Df	AIC	BIC	logLik	p-value	significance
nullM	25	12567	12724	-6258.4	0.02	p< 0.05
animacyM	33	12565	12772	-6249.4		

Table 3. ANOVA of the null model and the animacy model

	Df	AIC	BIC	logLik	p-value	significance
nullM	25	12567	12724	-6258.4	0.1745	No
givennessM	33	12571	12778	-6252.7		

Table 4. ANOVA of the null model and the givenness model

	Df	AIC	BIC	logLik	p-value	significance
nullM[3]	35	19556	19790	-9742.9	$2.2e^{-16}$	p< 0.001
focusM	47	19371	19685	-9638.4		

Table 5. ANOVA of the null model and the focus model

These data confirm that animacy (p-value=0.02) and focus (p-value=$2.2e^{-16}$) are influential factors, while givenness is not. The focus model (including only the examples from table 2) was compared to its own null model from which it differed significantly (p-value of $2.2e^{-16}$). Since the null model we are comparing the focus model to is different from the null model set up for animacy and givenness, we cannot directly say that focus is as relevant as animacy for predicting word order. We will see which one of the two is more relevant by looking into examples where there is a minimal pairing between the two conditions in the following sections.

---

[3] The null model to which the focus model is compared to is not the same as the null model to which the other two models are compared to.

However, a model that includes both given and animate as predictors is better than a model that just includes animacy. This entails that givenness is a relevant factor, but less so than animacy. When those two factors are combined, they form a very good model for predicting the effects of these factors on word order. The summary of the data is displayed in table 6.

	Df	AIC	BIC	logLik	p-value	significance
animacyM	33	12565	12772	-6249.4	$5.129e^{-06}$	p< 0.001
an+givM	57	12545	12903	-6215.7		

Table 6. ANOVA of the animacy model and the model containing both animacy and givenness

All three factors contribute in determining word order in Croatian ditransitives. We will proceed by analyzing the conditions in which each of the factors is neutralized.

6.2 The animacy effect

In order to observe how the animacy effect is manifested we will look into the conditions where givenness is balanced and thus not a factor. The mean judgments of these conditions are displayed in table 7 and are divided per example, followed by the statistical results in table 8 obtained by conducting a linear mixed effect model with animacy as a dependant variable and the participant and item set as random variables.

Animacy	VID	IVD	VDI	DVI
Prototypical	3.78	4.25	4.09	3.26
Prototypical	3.57	4.29	3.97	4.39
Balanced (both animate)	2.45	3.02	4.24	4.46
Balanced (both inanimate)	2.69	2.81	4.08	3.92

	Estimate	T value	p-value	Significance
VDI-prototypical (intercept)	4.036	35.616	$2e^{-16}$	p<0.001
VDI-balanced- both animate	0.207	1.297	0.206	No
VDI-balanced- both inanimate	0.048	0.305	0.76	No
DVI- prototypical	-0.207	-1.473	0.14	No
IVD- prototypical	0.237	1.825	0.06	p>0.1
VID- prototypical	-0.359	-2.806	0.005	p>0.01
DVI- both animate	0.426	2.069	0.038	p>0.05
DVI- both inanimate	0.048	0.236	0.81	No

Table 7.	IVD- both animate	-1.457	-7.065	$2.90e^{-12}$	p<0.001
	IVD- both inanimate	-1.506	-7.301	$5.58e^{-13}$	p<0.001
	VID- both animate	-1.432	-6.947	$6.51e^{-12}$	p<0.001
Mean	VID- both inanimate	-1.030	-4.996	$6.85e^{-07}$	p<0.001

judgments in conditions of neutral givenness

Table 8. Summary of the Liner Mixed Effects model for animacy[4]

The data from tables 7 and 8 show that the values with which the IO-DO orders are judged are much higher in conditions of prototypical animacy than when animacy is balanced. In case of balanced animacy, DO-IO orders are evidently preferred. We can also see that across the conditions VDI remains stably judged at a high rate, which is obvious from the statistical results in table 8 as VDI is not judged significantly differently in any of the three animacy conditions (prototypical /both animate /both inanimate). The significance in the intercept merely indicates that the distribution of values with which it was judged is not uniform, and from the high mean value that it has in table 7, it is obvious that the value used for this order was more likely to be in the high end of the scale. The VID is the order that seems to be least well accepted, especially in conditions of balanced animacy.

6.3 The givenness effect

In order to observe the effect that givenness has on word order, we will display only the examples of balanced animacy. If givenness has an effect, it is expected to be

---

[4] Note that the word order alternations are presented here in the same order as in the model, from the intercept towards more divergent examples

manifested with a word order preference towards DO-IO orders when the DO is given, and IO-DO when the IO is given.

Givenness	Animacy	VID	IVD	VDI	DVI
DO	Both	1.69	2.12	3.89	4.58
DO	None	3.26	3.89	4.29	3.71
IO	Both	3.45	3.89	3.65	3.65
IO	None	3.67	2.52	4.54	3.48

Table 9. Mean judgments in conditions of neutral animacy

	Estimate	T value	p-value	Significance
VID- givenIO (intercept)	3.561	16.78	$7.84e^{-07}$	p<0.001
VID- givenDO	-1.079	-3.76	0.01	p<0.01
VDI- givenIO	0.542	-3.87	0.00011	p<0.001
DVI- givenIO	0.012	0.08	0.93	No
IVD- givenIO	-0.353	-2.52	0.011	p>0.05
VDI- givenDO	1.067	5.38	$8.75e^{-08}$	p<0.001
DVI- given DO	1.658	8.36	2e-16	p<0.001
IVD- givenDO	0.878	4.43	$1.03e^{-05}$	p<0.001

Table 10. Summary of the Liner Mixed Effects model for givenness

Overall, there seems to be a preference for DO-IO orders, as these maintain a high acceptance rate across all examples, while the IO-DO orders are rated (significantly) lower. By having the VID as an intercept, we can see that it significantly differs from most of the other orders in both givenness conditions. When taking into consideration table 9, it is obvious that this is due to a low acceptance of VID overall.

As expected from the models explained in section 5, givenness did not have a strong effect and most of the preference seems to be towards DO-IO orders, even in one of the examples with a given IO. These examples match what has been seen previously with regard to balanced animacy.

6.4 The focus effect

For observing the effect that focus has on word order, we take into consideration only the examples in which focus is explicitly marked through query. Here we expect to find that when an object is in focus, the speakers will prefer an order where that object is placed last.

As for the previous two factors, the mean judgments and the summary of the linear mixed effect model are shown below. The contrasts are set differently in the

linear mixed effects model as we are observing the preference between IO-DO and DO-IO orders at a more general level and the contrast between the more specific orderings within IO-DO and DO-IO. In this setup, the IO-DO preference is signaled with a (-) sign, while when comparing individual orders, the (-) sign designates the preference for VID and DVI in the IO-DO and DO-IO orders respectively.

Focus	Animacy	VID	IVD	VDI	DVI
DO	IO	3.54	4.56	2.80	2.20
DO	Both	3.25	4.10	3.19	2.46
IO	IO	2.95	3.20	4.02	4.02
IO	Both	2.00	2.40	4.01	4.54
S	IO	3.56	3.84	3.34	3.18
S	Both	2.52	2.59	4.45	4.46

Table 11. Mean judgments in conditions with focus

	Estimate	T value	p-value	Significance
FocusDO (intercept)	3.356	33.85	<0.00001	$p < 0.001$
FocusIO	0.026	0.37	0.362	No
FocusS	0.136	1.34	0.102	No
FocusDO- IO-DO/DO-IO	-0.456	-1.05	0.157	No
FocusDO- VIDvs.IVD	0.166	0.43	0.337	No
FocusDO- VDIvs.DVI	-1.228	-2.23	0.022	$p < 0.05$
FocusIO- IO-DO/DO-IO	0.396	1.42	0.09	No
FocusS- IO-DO/DO-IO	0.707	1.43	0.089	No
FocusIO- VIDvs.IVD	1.303	6.41	0.000017	$p < 0.001$
FocusS- VIDvs.IVD	0.787	1.94	0.038	$p < 0.05$
FocusIO- VDIvs.DVI	2.730	13.16	<0.00001	$p < 0.001$
FocusS- VDIvs.DVI	2.019	4.10	0.00073	$p < 0.001$

Table 12. Summary of the Liner Mixed Effects model for focus

The means in table 11 provide a clear picture that the focused object is preferred in a structure where it follows the object that is not in focus. The fact that there is no statistical difference between the focus-DO and focus-IO condition means that the overall distribution of the data is equally significant in these two conditions, but this first layer of statistical analysis does not reveal the direction of that preference. The preference is evident form the means in table 11: IO-DO when DO is in focus and DO-IO when IO is in focus, as expected. Continuing with the summary provided in table 12, the focus-DO condition shows a statistical difference between the preference for VDI and DVI with a preference for the former order. Within the focus-IO

condition there is a significant difference between the judgment of both VID vs. IVD and VDI vs. DVI, with IVD and DVI being preferred. However, the difference within the orders of the IO-DO group is much stronger, probably due to a very low acceptance, again, of VID in this condition.

Within the two conditions outlined so far, animacy does not seem to play a role, as the word order preference is the same both when animacy is prototypical and balanced. Its effect can be noticed when neither object is in focus, in the focus-S condition, where IO-DO orders are slightly preferred when animacy is prototypical and DO-IO orders are preferred when animacy is balanced (not significant), as it has been seen so far regarding the other factors. Significant preferences arise between the more fine-grained word order differences (see table 12).

7 Discussion and conclusion

The results have shown that all three factors in question have an effect on word order preferences in Croatian ditransitive structures.

Nevertheless, givenness seems to be the least effective factor. This is evident both from the statistical comparison of the models (section 6), and from the means presented in section 6.3 from which it is evident that once animacy is balanced, the preference lies towards DO-IO orders with little regard to what the given object is. Thus, these data seem to capture rather the preferences of balanced animacy than of givenness. It is evident that focus is an influential factor as the speakers display strong preferences in placing the focused object last.

In this setup, animacy was the factor present in all of the conditions. We have noticed that the preference patterns change whether animacy is prototypical or balanced. This is evident from figures 1 and 2 in which the means of the word orders are displayed in all conditions divided in two main groups based on animacy.
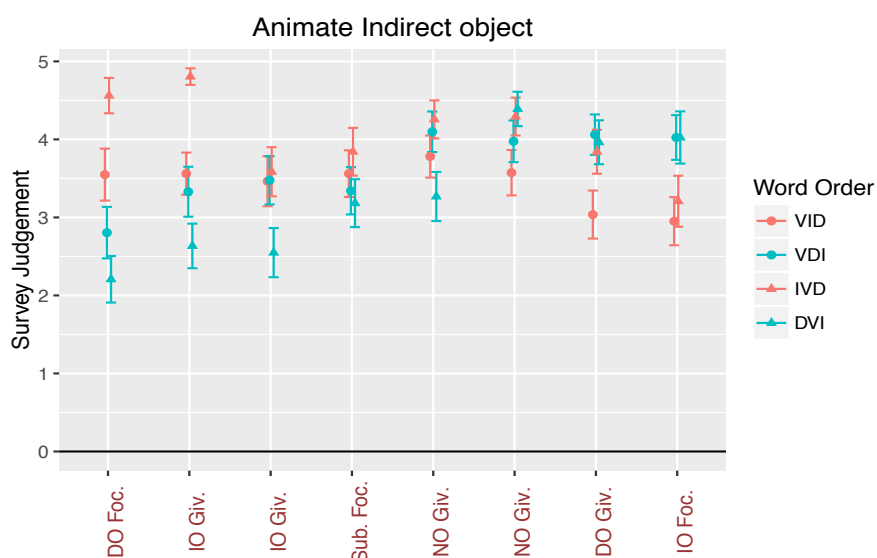
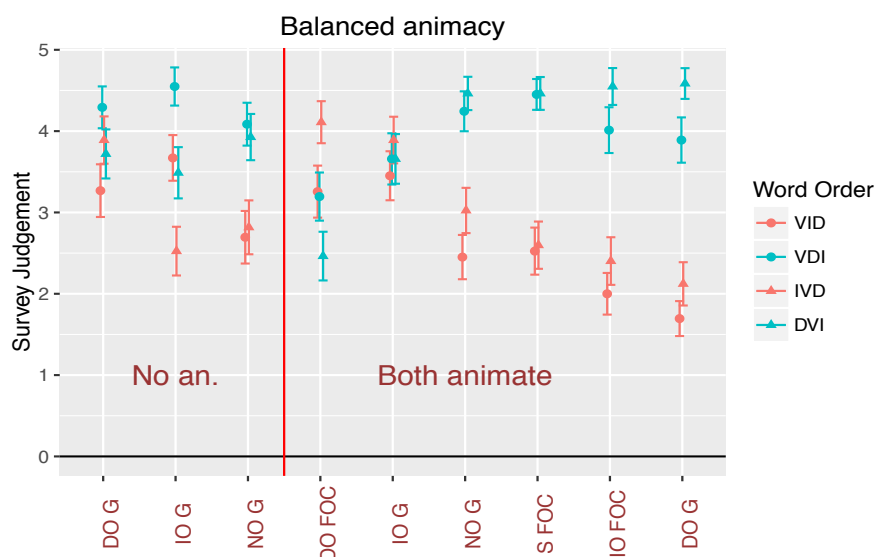*Figure 1.* Judgment means in conditions with prototypical animacy

Figure 2. Judgment means in conditions with balanced animacy

In figure 1, the IO-DO orders (red lines) are concentrated in the upper part of the graph, with the highest judgments when the DO is in focus and the IO is given. In contextually neutral conditions, Focus-S and No given, all four word orders are judged quite similarly. In figure 2, we can see a decline in the IO-DO judgments, especially in conditions of focus-S and given DO, which are contexts favouring DO-IO. However, the decline is also noticeable in the contextually neutral conditions.

The DO-IO (blue lines) orders are judged better than the IO-DO orders across the task but reach their minimum value when animacy is prototypical (figure 1) and

the contextual factors are in favour of the preceding IO (focus-DO, given-IO). When animacy is balanced, they maintain a high judgment value in all conditions except when the DO is in focus, a condition that favours IO-DO.

From these figures, we can also see the overall status of each word order, and it seems that VID has a low score, while VDI seems to be preferred more stably across the task.

Animacy and focus are both very relevant factors and dictate the word order preference. However, the results of their respective models are not directly comparable as conducted on two different sets of data. In order to establish which factor is more influential we will discuss into more detail the results of the conditions with focus. The results have shown that when one object is in focus the preference for the orders in which the focused object is placed last is quite strong and does not vary depending on whether animacy is prototypical or balanced. In the focus-S conditions, the animacy of the referents becomes relevant once again as IO-DO orders are preferred when animacy is prototypical but DO-IO when it is balanced. The latter observation has accompanied the full data set.

Thus, we conclude that the relative importance of the factors influencing word order in Croatian ditransitives is Focus > Animacy > Givenness.

References

Arnold, J.E. (2001). The effect of thematic roles on pronoun use and frequency of reference continuation. *Discourse Processes* 31(2): 137-162. doi:10.1207/S15326950DP3102_02

Bates, D., M. Machler, B. Bolker & S. Walker (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software* 67(1): 48.

Birner, B.J. & G. Ward (2009). Information structure and syntactic structure. *Language and Linguistics Compass* 3(4): 1167-1187.

Branigan, H.P., M.J. Pickering & M. Tanaka (2008). Contributions of animacy to grammatical function assignment and word order during production. *Lingua* 118(2): 172-189.

Bresnan, J., A. Cueni, T. Nikitina, R.H. Baayen (2005). Predicting the dative alternation. Paper presented at the *KNAW ACADEMY COLLOQUIUM: Cognitive Foundations of Interpretation, October 27-28, 2004.*

Browne, W. (1993). Serbo-Croat. In B. Comrie & G. Corbett (eds.), *The Slavonic languages*. New York: Routledge, 306-387.

Clark, H.H. & S.E. Haviland (1977). Comprehension and the given-new contract. In F.O. Roy (ed.), *Discourse production and comprehension. Discourse processes: Advances in research and theory* vol. 1. New Jersey, USA: Ablex Publishing Corporation, 1-40.

Clifton, C. & L. Frazier (2004). Should given information come before new? Yes and no. *Memory & Cognition* 32(6), 886-895.

Dahl, O. & K. Fraurud (1996). Animacy in grammar and discourse. In T. Fretheim & J.K. Gundel (eds.), *Reference and referent accessibility, Pragmatics and Beyond New Series,* 38. John Benjamins Publishing Compaly, 47-64.

de Marneffe, M.-C., S. Grimm, I. Arnon, S. Kirby & J. Bresnan (2012). A statistical model of the gramamtical choices in child production dative sentences. *Language and Cognitive Processes* 27(1): 86.

Ferreira, F. (1994). Choice of passive voice is affected by verb type and animacy. *Journal of Memory and Language* 33(6): 715.

Gennari, S.P., J., Mirković & M.C. MacDonald (2012). Animacy and competition in relative clause production: A cross-linguistic investigation. *Cognitive Psychology* 65(2): 141-176. doi: http://dx.doi.org/10.1016/j.cogpsych.2012.03.002

Gundel, J.K. (1999). On different kinds of focus. In P. Bosch & R. van der Sandt (eds.), *Focus: Linguistic, cognitive, and computational perspectives.* New York: Cambridge University Press, 293-305.

Gundel, J.K., N. Hedberg & R.Zacharski (1993). Cognitive status and the form of referring expressions in discourse. *Language* 69: 274-307.

Kizach, J. & L.W. Balling (2013). Givenness, complexity, and the Danish dative alternation. *Memory & Cognition* 41(8): 1159-1171. doi:10.3758/s13421-013-0336-3

Malchukov, A., M. Haspelmath & B. Comrie (eds.) (2010). Ditransitive constructions: A typological overview. In *Studies in ditransitive constructions: A comparative handbook*. De Gruyter Mouton, 1-64. doi: 10.1515/9783110220377

Røreng, A. (2011). *Die deutsche Doppelobjektkonstruktion: Eine korpusbasierte Untersuchung zur relativen Abfolge nominaler Akkusativ- und Dativobjekte im geschriebenen Deutsch.* Doctoral thesis, Universitetet i Tromsø, Tromsø.

Rosenbach, A. (2003). Aspects of iconicity and economy in the choice between the s-genitive and the of-genitive in English. *Topics in English Linguistics* 43: 379-412.

Schütze, C.T. (1994). Serbo-Croatian second position clitic placement and the phonology-syntax interface. In A. Carnie & H. Harley with T. Bures (eds.), *MIT Working Papers in Linguistics, (Papers on morphology and Phonology)* 21. MITWPL publications, 373-473.

Siewierska, A. & L. Uhliřová (1998). An overview of word order in Slavic languages. In A. Siewierska (ed.), *Constituent order in the languages of Europe.* Berlin: Mouton de Gruyter, 105-150.

Velnić, M. (2018). *Ditransitive structures in Croatian adult and child language: The role of animacy and givenness.* Doctoral thesis, UiT, The Arctic University of Norway, Tromsø.

Yamamoto, M. (1999). *Animacy and reference: A cognitive approach to corpus linguistics*. John Benjamins Publishing.