Ditransitive structures in Croatian adult and child language: The role of animacy and givenness

Marta Velnić

UiT, The Arctic University of Norway

Abstract

This dissertation explores the effects that a semantic factor, animacy, and a pragmatic factor, givenness, have on the relative ordering of the two objects (IO-DO vs. DO-IO) in Croatian ditransitive structures. While the effects of animacy are explored only at a global level (object ordering), the effects of givenness are explored also in the choice of referring expressions. The effect that these factors have is explored both in adult and child language in a way that offers valuable insights for both groups. This research provides a new analysis in the acquisition of ditransitive structures as it reveals a major role of animacy in shaping children's object order.

The results show that when the two factors are neutralised, there is an indication of DO-IO being the basic object order. Conversely, I find that the IO-DO is more frequently used both in naturalistic and in experimental data, but this frequency can be attributed to the fact that in double object structures the IO is prototypically animate and the DO is prototypically inanimate. I argue that both adults and children are sensitive to animacy, but children are more sensitive to it than adults. With regard to givenness, I find that it influences both object order and choice of referring expression in the adults, but only the choice of referring expression in the children's data.

Keywords: ditransitive structures, animacy, givenness, word order, referring expressions, language acquisition, Croatian

Part I: Introduction

The aim of this dissertation is to provide insight into how children acquire ditransitive structures in Croatian. In Croatian both possible object orders are allowed: indirect object-direct object (IO-DO) and direct object-indirect object (DO-IO), thus resulting in variation in the input that children are exposed to. Since the two orders are both grammatical but are not used in the same contexts, children must get attuned to the fine-grained distinctions between the alternating orders in order to use double object structures appropriately. This dissertation analyses the effects of two factors that can be shown to influence the choice of word order in ditransitives.

The first factor is a semantic one: *Animacy*. It does not vary depending on the context. The second factor, *Givenness*, is a pragmatic factor and thus dependent on the discourse. More precisely, whether a referent is animate or not is inherent to the referent and stays stable in the discourse, while the givenness value (given / new) is referent-external and is entirely dependent on the discourse: a referent usually starts out as [-*given*] (unless it is unique or physically present), and becomes [+*given*] after its first mention. The effects of these factors are described through the animacy hierarchy, human>animate>inanimate (Yamamoto, 1999), and the *given before new* principle (Clark & Haviland, 1977), entailing that both the [+animate] and [+given] argument are preferably placed preceding arguments that are [-animate] and [-given]. Thus, they are considered triggers of movement. By investigating how these factors influence the object order in ditransitive sentences, I will show how animacy influences the sentence at a global level, while givenness influences it at a local level in child language. The main focus is on how the relative object order, DO-IO vs. IO-DO, is affected by these two factors. This is what I will refer to as the global level. Influence at the local level is used here to refer to the choice of referring expression (RE): NPs, pronouns, clitics, and null referents (omissions); and these investigated with respect to givenness only.

This thesis explores how animacy and givenness affect word order in ditransitives in different groups of speakers (adults vs. children), using various methodologies. The dissertation consists of four articles. One of the papers investigates which factors influence

object order in the adult language through an acceptability judgment task. Another paper focuses on naturalistic data and pursues a comparison of the input and output. Two articles use semi-structured elicitation tasks to investigate those contexts that were not frequently available in the naturalistic data, in order to answer more fine-grained questions pertaining to the interaction between givenness and animacy as well as the effect of givenness on referring expressions. Thus, the range of methodologies includes naturalistic (corpora) and experimental data, structured both in terms of comprehension (acceptability judgment task) and production (elicitation). The results of the studies provide a coherent picture of how animacy and givenness affect word order and referential choice in double object constructions, as the findings from one paper are confirmed and sometimes amplified in others.

The main finding of this dissertation is that animacy strongly affects children's choice of word order. Adults' preferences are also affected by it, but to a lesser degree. Since, prototypically, the direct object is inanimate and the indirect object is animate, we find an abundance of IO-DO orders across the studies. However, both adults and children favour DO-IO when animacy is controlled for. Because of the latter observation, I suggest that DO-IO is the underlying object order in Croatian ditransitives. Preschool children are sensitive to the distinct use of IO-DO and DO-IO, and use DO-IO more when animacy is neutral, but are not adult-like yet. Finally, the results of the papers in this dissertation suggest that children are more likely to mark givenness locally, through referring expressions, than globally, with object order.

This Introductory Chapter is organised in the following way: I first describe some specifics of the Croatian language (section 1); section 2 focuses on the theoretical background of ditransitive structures. Next, there is a section focusing on the two factors: animacy (3.1.) and givenness (3.2.) and the effects they have been found to have on word order in adult and child language in previous research. In section 4 I summarize the main goals of my research and formulate the predictions. In section 5, I outline the papers that are contained in this dissertation, highlighting the main findings and providing a description of the Double Object Database (5.1), which has been an essential tool for setting up each part of this research. A discussion of the papers' findings follows (section 6), with a unified perspective of the results. In section 7, I outline the remaining open

questions and propose how these can be further explored. The conclusion (section 8) summarizes the contribution of this research to the factors that shape children's productions when acquiring alternating structures and provides intuitions with regard to the discussion on underlying word order in Croatian.

1 The Croatian Language

Croatian is the official language spoken in the Republic of Croatia, which has around 4,2 million people, according to the population estimate for 2015 (Radić, 2016). The language is often referred to as Serbo-Croatian, a terminology that indicates the mutual intelligibility of the two languages but also the former political union of the two nations, along with Bosnia-Hercegovina, Slovenia, and Macedonia, as Yugoslavia. I use the term Croatian in this dissertation to refer to the language in question, as my research has been conducted exclusively in Croatia and on Croatian speakers.

Croatian has seven cases; central to the discussion of this study are the Accusative (ACC) and Dative (DAT), as they are used to mark the DO and IO, respectively. Croatian is considered a free word order language (Siewierska, 1998). Since I am discussing the possibilities of DO-IO and IO-DO ordering, this availability of word order choice is crucial for my research, because, as mentioned in the introduction, the two word orders are both grammatical but are used in different contexts. The underlying structure for transitive sentences is claimed to be SVO (Browne, 1993; Siewierska, 1998) because it has the widest contextual applicability and can be the answer to general questions such as 'What happened?'. Furthermore, it is the most frequent order if NPs are used to refer to the subject and the object. While determining the basic order for ditransitives is not the main focus of this dissertation, the results nevertheless indicate that DO-IO is the underlying order.

Even if all/most word order combinations are possible, the constituent order is determined largely by the topic-comment structure, the most frequent situation being that the subject is the topic and the verb and the object are the comment (Browne, 1993). In Croatian, clitics are fixed in second position, either after the first word or the first constituent (Browne, 1993; Schütze, 1994), which is why they have been largely avoided

in this study, as they cannot be informative in the study of word order variation in ditransitives.

2 Ditransitive structures

In section 2.1, I outline some basic concepts of ditransitive structures along with the possible ways in which the thematic roles are marked. In section 2.2 the different contextual uses are described, such as caused possession and caused motion between the English alternates; followed by studies that have been conducted on the underlying word order focusing on the studies that employ neutralising the triggers of movement as a main source for determining the underlying word order (2.3). Section 2.4 provides an overview of ditransitive structures in Croatian, focusing mainly on the structures analysed in the dissertation.

2.1 The alignment of ditransitive structures

Ditransitive sentences concern a special class of verbs, ditransitive verbs, which can take three arguments: the subject (S), the direct object (DO), and the indirect object (IO). The DO has the thematic role of theme, while the IO has the role of the recipient. Malchukov, Haspelmath, and Comrie (2010) define the typical ditransitive construction as containing a verb of physical ('give', 'send') or mental ('tell') transfer, describing a scene in which an agent causes an object to pass into the possession of an animate recipient. Malchukov et al. (2010) also define the different alignment types of ditransitive structures that can be found cross-linguistically: the *neutral alignment*, the *indirective alignment*, and the *secundative alignment*. The alignments are categorised according to how the two objects (theme and recipient) of the ditransitive sentence are marked when compared to the object (patient) of the transitive sentence. Thus, in the neutral alignment, both arguments of the ditransitive sentence are marked the same way as the object of the transitive sentence. An example of this is the Double Object Dative (DOD) in English.

(1) Transitive sentence:

    Marlon kicked a ball.

(2) Ditransitive sentence with neutral alignment:

    Marlon gave Stig a ball.

English, however, has dative alternation (Oehrle, 1976), which means that it has two alternate structures of different alignments for expressing ditransitive structures (Haspelmath, 2015). Thus, the alternate alignment that English has is the *indirective alignment*. Here the theme of the ditransitive sentence has the same marking as the patient in transitive sentences, while the recipient receives a different marking from the two (Malchukov et al., 2010). In the structure with indirective alignment in English, the theme has no marking like the transitive object in (1), and the recipient is marked with the preposition 'to' as shown in (3). The structure is thus referred to as the Prepositional Dative (PD).

(3) Marlon gave a ball to Stig.

The object order in the two English alternates is fixed: the DO precedes the IO in the PD, while the IO comes before the DO in the DOD.

Croatian is also a language in which the ditransitive structure can be expressed through the indirective alignment, and the main focus of this study is the contextual applicability of order variants of the Croatian indirective alignment. In this structure, the patient in transitive sentences is marked with the Accusative case (4), and so is the theme in ditransitive sentences (5), while the recipient is marked with the Dative case. Examples of a transitive sentence and the indirective alignment are displayed for Croatian in (4) and (5) respectively.

(4)   Transitive sentence:

Marlon   čita   knjigu.

Marlon-NOM   reads   book-ACC

"Marlon is reading a book."

(5)   Ditransitive sentence with indirective alignment:

a. *Marlon   daje   knjigu   Stigu.*

Marlon-NOM   gives   book-ACC   Stig-DAT

"Marlon is giving a book to Stig."

b. *Marlon   daje Stigu   knjigu.*

Marlon-NOM gives Stig-DAT book-ACC

"Marlon is giving Stig a book."

As shown in (5), the object order is not fixed and both variants (DO-IO and IO-DO) are grammatical. Croatian has dative alternation as it also displays the third and last type of alignment defined by Malchukov et al. (2010): the *secundative alignment*. In this type of alignment, the recipient in the ditransitive is marked the same way as the patient in transitive sentences, while the theme is marked differently. With the secundative alignment in Croatian, the recipient is marked with Accusative case (like the patient), while the theme is marked with the Instrumental (INS). An example is given in (6), word order variations apply.

(6)   a. *Marlon   nudi   Stiga   jabukom.*

Marlon-NOM offers   Stig-ACC   apple-INS

"Marlon is offering Stig an apple."

b[1]. *Marlon   nudi jabukom   Stiga.*

Marlon-NOM offers apple-INS Stig-ACC

"Marlon is offering an apple to Stig."

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[1] My intuition is that this variant is less well-formed than (6a), but examples like this are clearly treated as grammatical by Zovko-Dinković (2007) : e.g. *Lena je poslužila čajem i keksima goste*. (Lena-NOM served tea-INS and bicuits-INS guests-ACC).

This structure is not the focus of my studies, the reasons for this will be explained in section 2.4.

The main difference between English and Croatian dative alternation consists in how the contextual variations are expressed: in English, pragmatic differences (such as givenness, focus, weight) are signalled by alternating between the two structures above (PD/DOD); in Croatian, since one of the structures, the secundative, is quite marginal and limited to only a handful of verbs (section 2.4), contextual variations are expressed within the indirective alignment by the word order variations of the Accusative and Dative case.

2.2 Contextual use of the alternates

According to Levin (2008) a difference in the contextual use of the English PD and DOD alternates is to signal caused possession or caused motion: the two structures present in English reflect the change that the DO is undergoing: change of state (caused possession) and change of place (caused motion). Hovav and Levin (2008) proposed a verb-sensitive approach, according to which the PD and DOD alternates are used differently if the verb can encode both caused possession and caused motion. The 'give'-type verbs only encode caused possession, while the 'throw'-type and 'send'-type verbs can express both event types. Thus, 'give'-type verbs can have both the DOD and the PD construction, but always encode caused possession, regardless of which structure is used. The use of either structure with the 'give'-type verb depends on Information Structure. According to Levin (2008), in 'throw'-type and 'send'-type verbs, the DOD is used to express caused possession, while the PD can be used to express either event. The 'throw'-type and 'send'-type verbs differ because the former also encode manner, while the 'send'-type verbs are more sensitive to animacy (Levin, 2008). The distribution of this encoding is summarised in Table 1.

Table 1: Distribution of caused possession and caused motion encoding in English (Levin, 2008)

	PD	DOD
'Give'-type	Caused possession	Caused possession
'Throw'-type	Caused motion or caused possession	Caused possession
'Send' (theme inanimate)	Caused motion or caused possession	Caused possession
'Send' (both animate)	Caused motion	-

In Croatian, caused motion is signalled by the use of the PP to mark the recipient/goal. However, for 'send'-type verbs with two animate objects, the PP is optional, as caused possession is not an available reading and thus both structures (with and without PP) signal caused motion like in (7).

(7) a. *Učitelj je   poslao učenike   ravnatelju.*
    teacher-NOM is-AUX   sent   pupils-ACC   principal-DAT
   b. *Učitelj je   poslao učenike   kod   ravnatelja.*
    teacher-NOM is-AUX sent pupils-ACC   at   principal-GEN
    "The teacher sent the pupils to the principal."

Although I have encountered this type of PP ditransitives in the production of some of the participants (in a condition with the verb 'send' and two animate objects, where the caused motion reading was the only one available), this structure is not discussed further in the dissertation. The main reason is that other factors (such as the weight of the PP) can intervene on the object ordering, and thus obscure the effects of animacy and givenness.

Going back to the wider contextual applicability of the PD discussed in Levin (2008), a number of studies conducted on the dative alternation (Brown, Savova, & Gibson, 2012; Clifton & Frazier, 2004; Kizach & Mathiasen, 2013) also indicate that the PD is contextually more applicable than the DOD. The wider applicability of the PD will be

further discussed in the section on givenness (3.2). Brown et al. (2012) claim that the PD is the more canonical structure, evidence of that being that, in English, all dative verbs have the PD structure, but only a subset can alternate into a DOD structure (p.195)[2]. Nevertheless, the DOD is attested more frequently in a corpus of English adult oral language discussed in Bresnan (2007). However, the high frequency of the DOD may be a result of the tendency of recipients (IO) to be animate, and of the themes (DO) to be inanimate (as will be extensively discussed in section 3.1, animate referents tend to precede inanimate referents).

2.3 The underlying word order

The discussion on the underlying order is a central and relevant one. At the same time, it is not the main focus of this dissertation, as I aim to discover the contextual differences that drive the use of IO-DO vs. DO-IO in Croatian. However, these factors (animacy and givenness) are assumed to trigger movement; the orderings based on these properties are outlined in section 3. Thus, when there is no trigger, i.e. the context is neutral/balanced, there is no movement, and thus taking the context into account should contribute to revealing the underlying word order. According to my results, DO-IO surfaces in neutral contexts when no triggers for movement are present, and this provides an indication that it is underlying. I will first outline the two main approaches regarding the underlying order (derivational and non-derivational) and then move on to describing the studies that investigate the underlying word order by relating the structures to the context in terms of presence/abscence of triggers for movement, which resemble the approach that this study takes.

There are two main approaches in treating ditransitive structures: the derivational approach, referred to also as the single meaning approach, and the non-derivational approach referred to as also the multiple meaning approach. The former supposes a derivational relation between the English PD and DOD, and thus the meaning of the two

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[2] DOD uses of the supposedly PD-only verbs were found in corpora (Bresnan, 2007)

structures is unvaried. According to (Larson, 1988), the PD is the underlying structure and the DOD is derived from it (see also Baker (1988) and Den Dikken (1995) for discussion in favour of this view). Baker (1988, p. 46) coined the Uniformity of Theta Assignment Hypothesis according to which *the identical thematic relationships between items are represented by identical structural relationships between those items at the level of deep structure*. Thus, since in the PD and DOD the thematic roles of theme and recipient/goal remain unvaried, the deep structure, the underlying representation, must also be identical to the two structures. He also states that his hypothesis indicates that there is an empty preposition which governs the recipient/goal in the DOD, entailing that PD is the underlying structure. Similarly, Den Dikken (1995) stipulated a transformational relationship between the two structures. With the DOD being derived from the PD and with the indirect object always containing a PP, but with an empty head in the DOD.

By contrast, the non-derivational approach assumes that there is no derivational relation between the two structures and they are thus both base-generated (Marantz, 1993). This approach also entails that there can be differences in meaning between the two structures, one of which was already presented in the previous section in terms of caused possession (DOD) and caused motion (PD) (Levin, 2008). Oehrle (1976) focuses on other differences in meaning, such as intentionality and the possibility to cancel the possession relation. Notice the semantic difference of the examples from Oehrle (1976)in (8) and (9).

(8) a. I baked a cake for Max, but now that you're here, you may as well take it.

   b. *I baked Max a cake, but now that you're here, you may as well take it.

(9) a. Originally, I bought this tea-kettle for my wife, but I decided to keep it.

   b. *Originally, I bought my wife this tea-kettle, but I decided to keep it.

In the first set of examples the difference in meaning relates to the time when the intention is determined: in (8a) the intention is asserted at the time of the utterance, while in (8b) the indention holds subsequently as well, and results in an inappropriate use of the DOD. In example (9a), the intention does not have to hold subsequently, thus the possession is cancellable, but that is not the case in (9b).

1 Ditransitive structures in Croatian adult and child language

Studies that use context to define the underlying word order suppose a derivational approach, but rely on the analysis of contexts in which a structure is accepted to indicate what the underlying word order is. Here I focus on the studies conducted on languages that signal ditransitive structures with case. The general idea of this approach is that the underlying order is the one that can be used in most contexts, and the structure that permits maximal focus projection (entire sentence in focus), is always unmarked (Müller, 1999). The context is established based on various factors such as givenness, focus, and animacy as properties of the objects. Thus, we should expect to find the underlying order if it is applicable to a wide range of contexts and if it is the one preferably used in neutral contexts.

I will focus on the studies conducted on German (Müller, 1999; Røreng, 2011) and Russian (Titov, 2017). Both of these languages use the Accusative to mark the theme and the Dative to mark the recipient. An example of both object orders in the two languages is given in (10) and (11).

(10)   German - Røreng (2011):

a.   *Peter hat dem   Studenten   das   Buch gegeben.*
       Peter has the-DAT student   the-ACC book given

b.   *Peter hat das   Buch   dem   Studenten   gegeben.*
       Peter has the-ACC book   the-DAT student   given
       "Peter gave the student the book." / "Peter gave the book to the student."

(11)   Russian - Titov (2017):

a.   *Ivan   peredal   agentu pismo.*
       John   delivered   agent-DAT   letter-ACC

b.   *Ivan   peredal   pismo   agentu.*
       John   delivered   letter-ACC   agent-DAT
       "John delivered the agent the letter." / "John delivered the letter to the agent"

Studies on German have made divergent claims with respect to which object order is underlying. It has been argued that IO-DO is the underlying order (Lenerz, 1977), or that both orders are basic but dependent on the verb (Haider & Rosengren, 2003; Meinunger,

2000). According to Røreng (2011), the main problem with the latter formulation is that there is no agreement on which verbs belong to which class. The proposal for IO-DO being underlying is based on the observation made by Lenerz (1977) (given in Røreng (2011)) that the DO-IO order is ungrammatical when the DO is in focus, but the IO-DO is possible with either DO or IO in focus. Lenerz's (1977) conclusion is based on an analysis conducted on only three verbs ('give', 'give as a gift', and 'show') and only in contexts of animate IO and inanimate DO, thus this investigation is too limited for providing strong conclusions.

Müller (1999) discussed these word orders in terms of marked and unmarked, in the framework of optimality theory. He claimed that clause-internal word orders in scrambling languages exhibit degrees of markedness, rather than a strict division between well- and ill-formed (Müller, 1999, p. 778). This is also what one of my tasks investigates. The markedness of a structure is inversely proportional to the variety of contexts that it can occur in: the more context types it can occur in, the less marked it is. Müller also postulates that degrees of markedness do not reflect the degree of deviation from the underlying structure, and in his view unmarked and underlying do not necessarily match. According to Müller (1999) DO-IO is the underlying order as it is possible for an IO anaphor to be bound by a preceding DO, but the opposite relation is not possible. He investigates a variety of verbs, including the ones previously classified as having different underlying orders and provides a unified account that DO-IO is underlying to all verbs in German. Some examples are shown in (12) and (13).

(12) a. daß man die   Gäste₁   einander₁   vorstellte
       that one   the-ACC guests each other-DAT introduced
       " That the guests were introduced to each other."
    b. *daß man den   Gästen₁ einander₁ t₁   vorstellte
        that one the-DAT guests each other-ACC introduced
(13) a. daß der Arzt den   Patienten₁ sich₁   im Spiegel zeigte
       that the doctor the-ACC patient   himself-DAT in mirror showed
       "That the doctor showed the patient₁ to himself₁ in the mirror."

b. ?*daß der Arzt dem   Patienten$_1$ sich$_1$ t$_1$ im Spiegel zeigte

that   the doctor the-DAT patient himself-ACC in mirror   showed

"That the doctor showed himslef$_1$ to the patient$_1$ in the mirror."

Müller's use of the optimality theory framework outlines how the attested orders are a result of the interaction between factors such as definiteness, animacy, focus, and case; I have ordered them based on their ranking (high to low) presented by Müller (1999). Müller (1999) claims the underlying order of the objects is DO-IO, and IO-DO is obtained through scrambling but it is also considered unmarked. Overall, this proposal has been argued to be problematic (Anagnostopoulou, 2008), and I will thus take into account the claim that he makes for DO-IO being underlying, but I rely more on Røreng's (2011) methodology for considering the contextual factors as triggers for movement.

Røreng (2011) conducted a corpus study which focused on NP-NP combinations of ditransitive structures. IO-DO was by far the most frequent order in the corpus, but for the purposes of the cited study, the same amount of IO-DO and DO-IO orders were included for a total of 688 occurrences of 195 different verbs. Thus Røreng's data provide a concise picture of the word order and its relation to verbs, unlike studies like Lenerz (1977) in which only a handful of verbs were taken into consideration. Røreng (2011) analysed the occurrences with regard to animacy and focus, in terms of background>focus structure (this structure will be discussed in section 3.2), as factors influencing word order. She found that the vast majority of the occurrences can be accounted for with reference to these two factors. She further argues that DO-IO is the underlying word order, as there were only three occurrences that could not have been triggered by the factors under examination, and they exhibited the DO-IO order. Thus, the IO-DO order is mainly caused by animacy (as IOs are typically animate) and background>focus structure. With regard to the relative strength of the two factors in terms of triggering movement, Røreng (2011) found that focus is a stronger factor than animacy. A corpus study conducted on child and child-directed speech (Sauermann, 2016) confirms this finding, as the majority of DO-IO occurrences were balanced with regard to definiteness, givenness, or pronominality.

For Russian, divergent claims were made with respect to what the underlying word order is. For example, Bailyn (2010) claims that DO-IO is underlying, while Dyakonova

(2007) holds the opposite view, namely of the IO-DO being the underlying order. Bailyn (2010) reaches his conclusion through the analysis of Instrumental secondary predicates, as only the Accusative object can control into such clauses (14), and reciprocal binding which is along the lines as the data from Müller (1999) presented in (12) and (13). He reaches the conclusion that the DO-IO, or *Higher-accusative* as he refers to it, is the underlying order.

(14) a. Maša našla Sašu   golym.
        Masha_i found Sasha_k-ACC nude_k-INS
        "Masha found Sasha nude."
     b. *Maša pomogla Saše   golym.
        Masha_i helped Sasha_k-DAT nude_k- INS
        "Masha helped Sasha nude."

Dyakonova (2007) provides evidence against this view from non-agentive readings and narrow and wide focus. She claims that non-agentive readings are available with ditransitives taking a dative and an accusative argument (15). With respect to narrow and wide focus she considers the IO-DO structure to be more applicable because it can either have narrow focus on the theme or wide sentence focus, while the DO-IO structure can only have narrow focus on the goal and can refer to a given theme. However, no contextual explanation is provided, and factors such as animacy were disregarded. The two structures are presented in (16).

(15)   On   podaril mne   prekrasnyh detej.
       He-NOM gave me-DAT beautiful-ACC children-ACC
       "I have beautiful children thanks to him."

(16) a. Nastya   kupila Sergeyu   mašinu.
       Nastya-NOM bought Sergey-DAT car-ACC
       "Nastya bought Sergey a car."

b. Nastya   kupila mašinu Sergeyu.

 Nastya-NOM bought car-ACC Sergey-DAT

 "Nastya bought a/the car for Sergey."

In relation to my studies, I focus mainly on the most recent study on this matter, Titov (2017), because of the attention that was payed to the triggers for movement. She approaches the issue by investigating contexts of neutral animacy and focus to reveal the underlying order[3]. Her investigation reveals that when the ditransitive sentence is neutralised, DO-IO surfaces as the underlying order, and is thus in contradiction with Dyakonova (2007). However, Titov (2017) provides a more in-depth analysis as she relates the possible readings to the contexts and balances focus and animacy independently. Titov (2017) relates the issue to the concept of the *relative interpretive prominence* of objects, and prominence is related to context as *material that is contextually prominent precedes material that conveys information not (yet) prominent in the discourse*. She claims that DO-IO is expected to capture the majority of possible configurations related to the relative prominence of the two objects. Consequently, the derived structure should be resorted to when the basic structure fails to capture a specific interpretation. For the following examples in a neutral context and with both animate objects, Titov (2017) claims that the example in (17a), with DO-IO order, can signal the following situations: when both referents are definite, both referents are indefinite, or when the DO is definite and the IO is indefinite. The example in (17b), with the IO-DO order, on the other hand, can only express the one situation which the DO-IO cannot capture, that is, when the IO is definite and the DO indefinite. Thus, the scrambled structure is licensed only by the definite preceding the indefinite.

(17)   Russian – Titov (2017)

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[3] Titov (2017) refers to it as the *canonical* order.

a. *Ivan*   *peredal*   *špiona*   *agentu.*

John-NOM   handed   spy-ACC   agent-DAT

"John handed the spy to the agent." /

"John handed a spy to an agent." /

"John handed the spy to an agent."

b. *Ivan*   *peredal*   *agentu špiona.*

John-NOM   handed   agent-DAT   spy-ACC

"John handed the agent a spy."

Thus, when givenness, referentiality and animacy are neutralised, the DO-IO surfaces as the underlying order.

My approach is quite similar to Titov's with regard to accounting for the context and the preferences of word order therein. However, unlike Titov (2017), I test speakers' judgments in various contexts of animacy, givenness, and focus, including the neutral context. Even if the main goal of this dissertation is to observe the effect of the two factors, the preference/use of DO-IO is clear in the neutral contexts with no triggers for movement, which indicates that it is the underlying order.

2.4 Ditransitive structures in Croatian

I have already shown in section 2.1 that Croatian has two possible ways to mark the objects in ditransitive structures. Here, I focus more on the indirective alignment (Accusative/Dative combinations), which is the core of this study.

In Croatian ditransitives, all combinations of subject, verb, and objects are grammatical, but are attested with different frequencies. The position of the subject will not be discussed any further. Some of the possible word orders are presented in (18).

(18) a. *Marlon*   *je*   *dao*   *loptu*   *Stigu.* (S-V-DO-IO)

Marlon-NOM   is-AUX gave   ball-ACC   Stig-DAT

   b. *Marlon*   *je*   *loptu*   *dao*   *Stigu.* (S-V-DO-IO)

Marlon-NOM   is-AUX ball-ACC   gave   Stig-DAT

c. *Loptu*   *je*   *Marlon*   *dao*   *Stigu.* (DO-S-V-IO)
   ball-ACC   is-AUX Marlon-NOM   gave   Stig-DAT

d. *Marlon*   *je*   *dao*   *Stigu*   *loptu.* (S-V-IO-DO)
   Marlon-NOM is-AUX gave   Stig-DAT   ball-ACC

e. *Marlon*   *je*   *Stigu*   *dao*   *loptu.* (S-IO-V-DO)
   Marlon-NOM is-AUX Stig-DAT   gave   ball-ACC

f. *Stigu*   *je*   *Marlon*   *dao*   *loptu.* (IO-S-V-DO)
   Stig-DAT   is-AUX Marlon-NOM gave   ball-ACC

"Marlon gave a/the ball to Stig."

The examples in (18) show that a variety of orders is possible, but these can be grouped into sets that only take object order into account: DO-IO (examples 18a-18c) and IO-DO (examples 18d-18f). The dissertation mostly focuses on the relative order of the two objects (DO-IO vs. DO-IO), but the position of the verb is also taken into consideration in some of the papers. More precisely, Paper 1 takes the following orders into consideration: VDI, DVI, VID, and IVD[4].

Gračanin-Yuksek (2006) provides an analysis for the parallelism between some of the Croatian structures seen in (18) and the English PD and DOD alternates. She claims that, in Croatian, under neutral intonation, VDI is the semantic equivalent of the PD, IVD is equivalent to DOD, while VID is structurally ambiguous, as it can be derived from both structures. Her analysis suggests that VDI and IVD are base-generated orders. My data can neither confirm nor disprove this claim, as our approaches are different: she analyses the distribution of these orders in particular constructions such as the ban against nominalisations, causative readings, quantifier scope, and two-goal constructions, while I look at it through the neutralisation of animacy and givenness. The structures analysed by Gračanin-Yuksek (2006) and their English equivalents are presented in (19).

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[4] When the structures are described with regard to the position of the verb, the abbreviations for the two objects, IO and DO, are further reduced in order to avoid long acronyms; thus, VDOIO is abbreviated to VDI and so on.

(19) a. *Marlon   je   dao   loptu   Stigu.*

       Marlon-NOM   is-AUX gave   ball-ACC   Stig-DAT

       "Marlon gave the ball to Stig." (PD)

   b. *Marlon   je   Stigu   dao   loptu.*

       Marlon-NOM   is-AUX Stig-DAT   gave   ball-ACC

       "Marlon gave Stig the ball." (DOD)

   c. *Marlon   je   dao   Stigu   loptu.*

       Marlon-NOM   is-AUX gave   Stig-DAT   ball-ACC

       "*Marlon gave the ball to Stig." (PD)*

       or "Marlon gave Stig the ball." (DOD)

My approach is closer to those of Røreng (2011) and Titov (2017): we consider that some object orders are more marked than others (thus requiring a particular context), while the more widely applicable one(s) is/are unmarked and can in a sense be considered as underlying. The way my results contribute to this issue will be discussed in section 6.2.

A brief overview of the ditransitive structures with Accusative (recipient) and Instrumental (theme) cases is in order, along with the reason for their exclusion from the central discussion. These structures also allow both DO-IO and IO-DO orders (example 6 in section 2.1), but they were excluded due to their low frequency. There was an attempt at eliciting such structures in one of the tasks with the verb 'to offer', but very few participants made use of the Instrumental/Accusative alternative. Moreover, verbs that can alternate between the two alignments are limited to three verbs (*nuditi* 'offer', *služiti* 'serve', and *darivati* 'give as a gift'), eight if their aspectual pairs[5] are counted (Zovko-Dinković, 2007). In addition, the verbs 'to offer' and 'to serve' are also subject to semantic restrictions, as their recipients can only be human, and their themes are limited to things

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[5] Most verbs in Croatian have perfective and imperfective pairs; thus the full set of verbs that has case alternations is the following: *nuditi* ('to offer'-imperfective), *ponuditi* ('to offer'-perfective), *služiti* ('to serve'- imperfective, atelic)*, posluživati* ('to serve'- imperfective telic), *poslužiti* ('to serve'-perfective)*, darivati* ('to gift'-imperfective)*, darovati* ('to gift'- perfective) *, podariti* ('to grant'- perfective).

consumed through the mouth, such as food, drink, and cigarettes (Zovko- Dinković, 2007). Due to such limitations, these structures are excluded from further discussion.

To conclude this section, Croatian uses case marking to express the thematic roles in a ditransitive sentence. The marking of the theme with the Accusative and the recipient with the Dative is taken into consideration in this study. These two arguments can occur in both orders (DO-IO and IO-DO), and the main focus of this dissertation is the question of how the factors animacy and givenness influence the choice of object order.

3 Factors influencing object order in ditransitives

As it has been mentioned in the Introduction (section 1), ditransitive structures provide a fertile ground for research, due to their complexity and variation: small changes in the pragmatic context yield different word orders. In this dissertation, I focus on one semantic and one pragmatic factor: animacy and givenness. The main difference between those two factors is that animacy is an inherent and constant property of the discourse referents, whereas givenness reflects the context of the discourse. Thus, a referent can, and in most cases will, change its givenness value from [-given] to [+given] as the discourse progresses. With regard to both factors, the context they create makes a structure more or less acceptable, but not ungrammatical.

In this section, I first provide some previous research on animacy and how it relates to word order, with special attention to ditransitives. This includes an overview of what we know about how children acquire it. Section 3.2. focuses on givenness and its effect on word order and referring expression in adult and child language.

3.1 The effects of animacy on word order

Animacy influences speakers in their word order choice, often causing the animate argument to be placed first. Siewierska (1988, p. 30) describes this tendency for a number of languages through the Personal Hierarchy, which is categorised according to person (1st-3rd) for human referents, and then continues with decreasing animacy as presented in (20).

(20)   Personal Hierarchy (Siewierska, 1988):

$1^{st} > 2^{nd} > 3^{rd} >$ higher animals > other organisms > inorganic matter > abstracts

Yamamoto (1999) provides a more thorough division of the hierarchy, which is not viewed linearly, but rather as human-centred. Yamamoto (1999) states that the hierarchy varies depending on the community in which the language is spoken, as some parts of the scale are influenced by cultural factors, such as what is viewed as food. A model of the Animacy Scale provided by Yamamoto (1999, p. 22) is given in Figure 1.
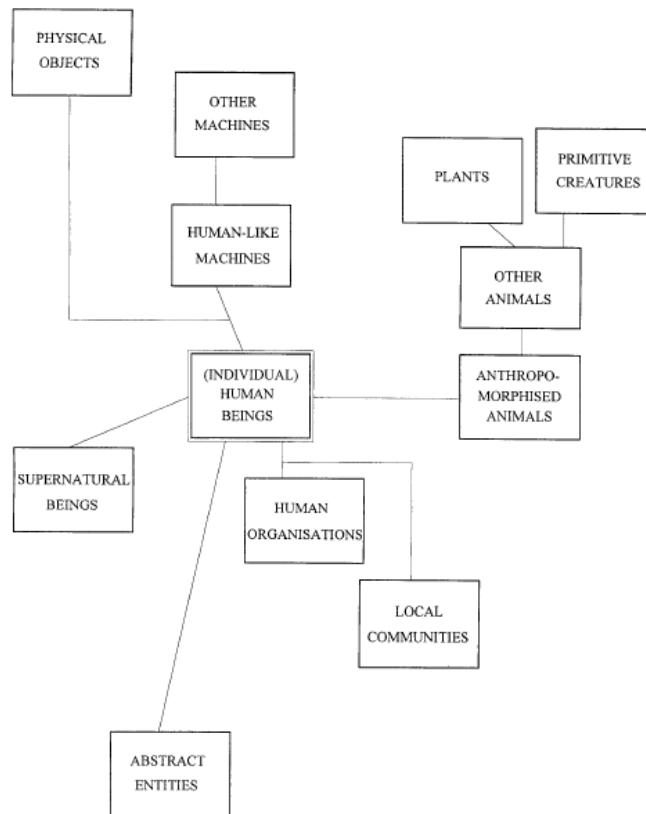

Figure 1:Animacy Scale according to Yamamoto (1999)

These hierarchies offer a very detailed view of the classification of entities, but they are both too detailed for the purposes of this dissertation. Yamamoto (1999) claims that the

general animacy scale distinguishes animate form inanimate, and human form non-human (21). This is the scale most commonly used in linguistics.

(21)   Human > Animate > Inanimate

Dahl and Fraurud (1996) also point out the anthropocentric view of animacy, as they argue that the pervasiveness of animacy has deep cognitive roots, and this might be due to the anthropocentric world-view that humans have; this could explain why the animacy-first linearization is cross-linguistically constant.

Branigan, Pickering, and Tanaka (2008) considers animate entities to be conceptually highly accessible. According to McDonald, Bock, and Kelly (1993) this is also related to grammatical roles as conceptually accessible arguments tend to be assigned to higher-level grammatical roles. This explains why most subjects are animate. Keeping in mind the human-centred view proposed by Yamamoto (1999), as humans and as language users, we tend to pay more attention to the animate, when compared to the inanimate. This makes animate referents more easily retrievable, and as a consequence, they are placed first in a sentence. Van Nice and Dietrich (2003) refer to this as *animate-first*, and the phenomenon has been noticed cross-linguistically and in a variety of structures.

In addition, having an animate argument expressed as the first argument can also be related to thematic role, as agents and beneficiaries are most likely to be animate. The Thematic Role Hierarchy from (Choi, 1996, p. 41) is offered in (22).

(22)   Agent > Beneficiary > Experiencer/Goal > Instrument > Patient/Theme > Locative

This is relevant with regard to the research on ditransitives that I present in this dissertation as what I call the *prototypical animacy* condition is an animate recipient/goal and an inanimate theme, and in accordance to the hierarchy in (22), the goal precedes the theme. The hierarchy presented in (21) and the hierarchy in (22) go hand-in-hand as agents/beneficiaries/experiencers   are   human/animate,   while   the instruments/themes/locatives are inanimate. Additionally, Artstein (1999, p. 2) explains that the co-occurrence of an element from the high end of the animacy scale with an

element from the low end of the thematic role scale results in markedness. Consequently, having a theme that has the feature [+human] and an agent that is [-animate] is marked, because in this case either the animacy hierarchy or the thematic role hierarchy will have to be violated: if the latter hierarchy is respected, the inanimate argument will precede the animate one, while if the animacy hierarchy is respected the theme will precede the agent. When the high/low ends of the two hierarchies match (e.g. animate agents and inanimate themes), the result is an unmarked structure: agent precedes theme and animate precedes inanimate. Thus, having agents and beneficiaries that are human—or at least animate—along with inanimate themes represents the most natural case. Thus, in ditransitive structures that consist of an agent expressed as the subject, a recipient/goal that is the IO, and a theme that is the DO, the structure is unmarked when the IO is human or animate (high end), and the DO is inanimate (low end), because this way both hierarchies are respected. The corpus study conducted by Dahl and Fraurud (1996), mentioned above, on Swedish captures exactly this: the DO is mostly expressed with inanimate referents, while the IO has animate referents.

Perhaps the best-known work in relation to the animacy-first order has been conducted on the preference of active vs. passive voice, related to an animate agent in the former and an animate patient in the latter case (Ferreira, 1994; Gennari, Mirković, & MacDonald, 2012). Speakers of English and Spanish were found to have a strong tendency to use active sentences when the agents are animate, but prefer passive voice when the patient is animate, entailing that speakers prefer animate subjects. Thus, the speakers were more inclined to use structures such as 'The manager was worried by the layoffs' rather than 'The layoffs worried the manager'[6].

Another domain in which animacy has proven to be influential is the choice of possessive structure. Rosenbach (2003) tested native speakers of British and American English by using a questionnaire and found that animacy, topicality, and semantic relation

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[6] Examples taken from Ferreira (1994).

of the possessor and possessum[7] influence the choice between the English s-genitive and of-genitive ('the boy's mother' vs. 'the mother of the boy'). However, Rosenbach's (2003) task reveals that even though the factors interact, animacy has a more substantial effect than topicality, and thus the speakers were more likely to choose the s-genitive (possessor-possessum) when the possessor was animate (i.e. 'the boy's mother'), and the of-genitive (possessum-possessor) when it was inanimate (i.e. 'the wheels of a lorry').

Effects of animacy have also been noticed within ditransitive structures, but not many studies have explicitly tested the effect of animacy, because the tasks testing ditransitives usually leave the prototypical animacy condition intact, and instead test how these structures are influenced by givenness. Thus, most of the studies of ditransitives will be outlined in the section in relation to the effects of givenness (section 3.2).

A study that investigates specifically animacy in the domain of ditransitives is Kempen and Harbusch (2004); they conducted a corpus study on German ditransitive sentences. The authors checked the order of each of the possible pairs of grammatical functions included in a ditransitive structure (S & DO, S & IO, DO & IO) in relation to animacy. The results show that, when the IO is inanimate, it is not likely to precede the subject (3 instances of IO-S and 39 instances of S-IO), but when both S and IO are animate, the IO becomes more likely to precede the subject (17 occurrences of IO-S and 20 occurrences of S-IO) (Kempen & Harbusch, 2004, p. 177). Kempen and Harbusch (2004) conclude that there is a direct influence of animacy on word order. They also find an effect of animacy on grammatical function (i.e., subjects are more likely to be animate), but claim that the two effects are not linked and that animacy affects language production on two separate levels (linearization and grammatical function). Ortmann (1998, p. 75) describes the object order of Sesotho as animacy-driven: both object orders are allowed when animacy is balanced, but, if only one of the two objects is animate, it has to precede the inanimate object.

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[7] Rosenbach (2003) classifies them in prototypical and non prototypical relations based on how likely the argument is to be either the possessor or the possessum, e.g. the boy's eyes are a prototypical combination while the mother's future is classified as less prototypical.

In sum, animacy influences word order in an animate-first direction, and this has been observed in a variety of structures (passives, possessives). However, studies related directly to animacy and its use/influence in ditransitive structures are uncommon, as in most of the studies on ditransitives the animacy conformation is left as prototypical: IO is typically animate and DO inanimate.

3.1.1 **The effects of animacy on word order in child language**

In relation to the acquisition of animacy, its high conceptual accessibility renders it a relatively easy concept to grasp, and consequently, children distinguish animate from inanimate NPs and use them in an adult-like manner by the age of two (de Marneffe, 2012, p. 34). In a study conducted by Rescorla (1981), it was found that, at the age of two, children comprehend the vocabulary for agents and actors better than the vocabulary for inanimate referents. More precisely, children had the most categorisations and terms for animals, followed by the number of terms for vehicles, and then fruit. This is compatible with the animacy hierarchy seen in (21): animals are [+animate], vehicles are somewhere in between animate and inanimate entities, and fruit is [-animate].

In relation to the use of animacy in syntactic contexts, Lempert (1989) conducted a study with English pre-schoolers and found that children were more able to use the passive construction when they were taught the passive with an animate patient, when compared to children that were exposed to these structures with an inanimate patient. Sugisaki (2007) analysed occurrences of the Japanese copula for location verbs, which has two distinct forms depending on the animacy of the subject. The author found that, from the earliest productions (age 1;5-2;1), children exhibited the obligatory animacy agreement.

Children have also been found to be attentive to the property of animacy in their ditransitive productions. Cook (1975) conducted an act-out task with a wide age range of English-speaking children (ages 5–10) and presented evidence that the comprehension of ditransitive sentences is better when the animacy is prototypical (animate IO and inanimate

DO) than when it is not (inanimate IO and animate DO)[8]. Moreover, both configurations with unbalanced animacy (IO-animate/DO-inanimate and DO-animate/IO-inanimate) were better comprehended than the constructions with balanced animacy (both objects animate, or both inanimate). With regard to animacy and structure, Cook (1975) shows that the children had no problem in giving an animate theme to an inanimate recipient if the instructions were expressed with the PD, but they were not able to do so when the instructions had a DOD structure. He claims that the children used a semantic strategy in the DOD construction, and thus interpreted the inanimate object as the theme and the animate object as the recipient. This indicates that the DOD structure is more difficult to comprehend, and that children rely on semantics (the animate entity is the recipient) more than on syntax (the first NP is the recipient).

Evidence for the preference of the animate-inanimate order is also found in corpora: Snyder (2003, p. 53) conducted a corpus study on ditransitive structures in English and found that children (age range 3–8) rely heavily on animacy in their word order choices. However, animacy cannot be the only relevant factor, because the corpus had only animate IOs and mostly inanimate DOs (as we would expect in naturalistic speech), but the IO-DO orders amount to around half of the attested examples. In addition, the author found that, when the DO was animate, the PD structure (DO-IO) was used significantly more than when the DO was inanimate ($p < 0.001$). Snyder's (2003, p.56) analysis also reveals that children rely less on animacy as they grow older, as the animate DO is associated with the PD structure 90% of the time in the youngest children (age 3–4), and it steadily decreases until it reaches 50% at ages 7 and 8. According to Snyder (2003), this is due to givenness becoming more relevant, as the proportion of IO-DO and DO-IO is constant across the three age groups, thus entails that other factors become relevant when animacy is found to have decreased its effect. I outline Snyder's results on givenness in section 3.2.1.

With regard to languages in which the [+human] object obligatorily precedes the [-animate] object, Demuth, Malillo, Francina, and Christopher (2005) conducted a study on

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[8] The configuration of inanimate IO and animate DO was constructed by a simple rotation of the 'giving' relation of the test objects, such as 'give the man to the book', a sentence that would have been very unlikely outside the experimental setting.

animacy in ditransitives in Sesotho children of an age range of 3–12 years. In Sesotho, animate objects occur immediately after the verb and are followed by the other object; the reverse is ungrammatical. The study showed that all age groups place the human object before the inanimate one. The order is less strict when the two objects are not at the extremes of the hierarchy; thus, in animate-inanimate and human-animate pairings, the productions of the younger groups were less target-consistent. In the condition with two inanimates, one of which was the benefactor, all age groups up to the age of eight performed at chance level, with the 12-year-olds performing like the adults and placing the benefactor first. These results indicate that children take animacy into consideration from as early as age three, but they refine the animacy hierarchy at a later stage, while the overlap of animacy with thematic roles is acquired even later (Demuth et al., 2005, p. 441).

In relation to animacy and case marking, children seem to be more precise with case marking in the roles cannot be disambiguated through animacy: Drenhaus and Féry (2008) conducted an elicited imitation task with German children (age range 3;9–6;8). This study is of particular interest for this dissertation, because the authors balanced the animacy in their task. They found a higher rate of case errors when animacy was prototypically distributed than when both objects were animate, as in the latter condition the IO was more consistently marked with the Dative, while in the former condition the children overused the Accusative marking and used it to also mark the recipient. Drenhaus and Féry (2008) argue that this is due to case marking being used to disambiguate the arguments in terms of theme and recipient when the animacy is balanced, while in the prototypical condition the listener can rely on other strategies, such as the animate object being the recipient and the inanimate one being the theme. This means that, within the prototypical condition, animacy contributes to our understanding of what the thematic roles of theme and recipient are, while, with balanced animacy, this needs to be disambiguated more explicitly; thus, the children are more precise with their use of the dative for marking the IO.

To summarize, there are many studies in the literature suggesting that children are attentive to animacy from an early age. Animacy has been shown to influence the interpretation (Cook, 1975), production (in terms of word order) (Demuth et al., 2005; Snyder, 2003) and case marking (Drenhaus & Féry, 2008) of ditransitive structures in child language.

3.2 The effects of givenness on word order

Unlike animacy, givenness is not a constant property of a referent, and consequently, the interlocutors have to keep on updating the referents' status with regard to this property as the discourse progresses. In this section, I discuss the effects that givenness has globally, i.e. at the sentence level, expressed through word order, along with the effect that givenness has on word order in children. The local effects (choice of referring expression) of givenness in adults and children are outlined in section 3.3. The terms *global* and *local markers* are taken from Hickmann, Hendriks, Roland, and Liang (1996) who have defined the former as entailing the level of the utterance structure, while the latter signalling the choice of nominal determiners (definite/indefinite). Here I treat the two types of markers somewhat differently: for global markers I focus only on the object order, while for local markers I extend the list of referring expressions to NPs, pronouns, clitics, and omissions. In my view, omissions can be considered an intersection between global and local markers; omissions obviously have an influence at the local level since the referring expression is omitted, but also at a global level since, if one of the objects is missing, there is no object order to be observed.

In this dissertation, I consider givenness from the listener's perspective: an object is considered [+given] when it is known to the listener. Therefore, it needs to be part of an established common ground between the speaker and the listener, and in this way, it is similar to the grammatical concept of *definiteness* (Lyons, 1999). I treat definiteness as a grammatical realisation of the pragmatic factor of givenness. Givenness can be accomplished in many ways: uniqueness (Lyons, 1999), familiarity (Lyons, 1999), physical presence (Hughes & Allen, 2013), visual availability (Matthews, Lieven, Theakston, & Tomasello, 2006), accessibility (Hughes & Allen, 2013), and, perhaps most importantly in my tasks, previous mention (de Marneffe, 2012). Previous mention is also defined as anaphoric definiteness by Lyons (1999), because the referent has been mentioned before and is thus known (given) from the linguistic context. Thus, on this view, what is given is also part of the background, and it is also eligible to be the topic, as topics

are usually given arguments. Therefore *given*, *topic*, and *background* share some common properties, as do their respective counterparts *new*, *comment*, and *focus*. I will not go into the full array of differences that these concepts present. This dissertation is concerned mainly with the effects of givenness defined as above; nevertheless, I use the concepts of topic and focus to reinforce [given] and [new], respectively.

The relation of givenness to word order is that given information usually precedes new information (Birner & Ward, 2009; Clark & Haviland, 1977), as topic precedes comment (Gundel, 1988) and 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). This communicative role of language goes back to the Prague School Linguistics according to which the sentence structure reflects the impact of the communicative function of language: these features include topic-comment and theme-rheme structures (Hajičová, 1994). Firbas (1971) refers to this as the Concept of Communicative Dynamism according to which the elements in a sentence push the communication forward, with the initial elements having a low degree of communicative dynamism (no new elements), and as the sentence progresses the degree of dynamism increases (new elements). The linear arrangement is a factor of the communicative dynamism, along with the context and semantic structure (Firbas, 1971). Since the formulations of the Prague School Linguistics, the topic/focus articulation along with the given>new principle, has been claimed as valid in a variety of Slavic languages: Polish (Grzegorek, 1984; Siewierska, 1993), Russian (Dyakonova, 2007; Kallestinova, 2007; Titov, 2017), Czech (Kučerová, 2007, 2012) for which the principle has originated, and also Croatian (Browne, 1993; Kučerová, 2012).

With regard to the listener's perspective, Prince (1992, p. 301) divides the notions of given/new into hearer-based or discourse-based. The former influences the way we refer to a referent, based on the assumptions we have about the hearer's knowledge about that referent. With regard to the former notion, a referent may evoke an entity that has or has not yet occurred in the current discourse, because the speaker knows it is part of the hearer's knowledge regardless of the current state of the discourse. The latter notion of givenness relates to the listener's knowledge gained during the current discourse. In this dissertation,

I am concerned with discourse-based givenness, but the two might amply coincide in an experimental setting, since the participant and experimenter do not have access to each other's knowledge previous to the task.

The notion of topic is related to givenness as topics are usually given (old information). However, topics are not simply given information, but they are rather expressing *pragmatic aboutness* (Reinhart, 1981). Nevertheless, because sentence topics must correspond to an already established referent (Reinhart, 1981), it will be considered given information. Consider the sentences in (23): the second one, being used in an out-of-the-blue context, is a presentational sentence that introduces a new referent, while the following sentence has one of the referents from the previous sentence as topic.

(23)   A: What happened?
         B: I just saw Bridget all dressed up wearing high heels.
         C: She has a big date tonight and was very excited about it.

The topic in the last sentence of (23) satisfies the *old-information criterion* and also passes what Reinhart (1981) refers to as *the about test*, as the sentence can be paraphrased like in (24).

(24)   As for Bridget, she has a big date tonight and was very excited about it.

However, not all given information is the topic. Consider the example presented in (25), taken from Reinhart (1981, p. 73):

(25) Context: A man talking about how his grandson is difficult to please.
And its uh got good taste. It's good. And the cereal, grandma don't like cereal but she finished (it) to the last (dish). And I enjoy ... I like it too. It's tasty! And I uh ... *He didn't want the cereal*. (*He) doesn't eat (it*). said "Todd it wouldn't kill ya, taste it!"

The topic of the few first sentences is the cereal, but in the sentences marked with italics, the topic of the sentence is the grandson because the conversation is about the grandson

and him being picky with the food, even if the cereal is given information and in the immediate awareness of the listener.

If a topic is overarching to a more ample discourse than it can be referred to as discourse topic (DT), Van Dijk (1977, p. 56) defines the DT in terms of sequential topic which is defined in terms of repeated reference to a referent in the discourse. He however specifies that the individual sentences contained within the DT stretch can still have individual topics. The difference between the two notions is exemplified in (26). The example is taken from one of the stories used in Paper 4; *the bell* (DO) is the DT.

(26) a. A cat was walking through a meadow and lost her bell.

    b. A dog found the bell.
    c. The dog gave the bell to her puppy.
    d. The puppy was playing with the bell while a crow was watching him.

In 26c, *the puppy* is the topic of the sentence, but *the bell* is the DT, as it is what the discourse is about. The DT is thus a given argument that keeps recurring in the discourse, it is a sequential topic (Van Dijk, 1977), like the grandson's behaviour in (25) or the bell in (26). This concept of topic is made use of in Paper 4 in to reinforce givenness and make it more evident to the child that the argument in question is [+given]. According to Arnold (1999) the strength of a trigger[9] is defined as a competitive property, and topic and focus are more salient than referents that are not the topic or in focus. Thus, the DT should be the most salient/prominent argument, more so than the other referents that are simply given. Thus, we can consider DT as a strengthened givenness factor. Consequently, the DT is expected to have a bigger effect on word order than a simply [+given] object.

Unlike givenness and topic, focus is the information that is not part of the common ground between the interlocutors. The notion of semantic focus used in this dissertation (only in Paper 1) is taken from Gundel (1999), according to whom focus represents new information that is being asserted or questioned in relation to the background. The notion of focus is tested only in one of the tasks in this dissertation (the acceptability judgment task, Paper 1) and it is treated as an answer to a wh-question, I disregard the instances in

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[9] In Arnold (1999) it is referred to as *salience*.

which focus is placed on given information. Thus, [+given] and [+focused] information are in complementary distribution in my work. This also entails that, unlike givenness, focus influences the argument to be placed last, or at least towards the end of a sentence, according to the *given>new* and *background>focus* linearizations.

Thus, word order is heavily influenced by information structure, which means that speakers tend to formulate their utterances by having the following order: given>new, topic>comment, background>focus. Ditransitive structures have also been found to conform to these effects.

 Having outlined the basic theoretical assumptions of the given>new order and its relation to the topic>comment and background>focus order, I move to outlining the research that has been conducted on the application of the given>new order with special attention to ditransitive structures.

Skopeteas and Fanselow (2010) summarize the syntactic mechanisms that speakers of various languages use to accommodate the given>new order. These mechanisms involve scrambling (Georgian, Czech, Hungarian), passivation (German, American English, Québec French, Dutch), and clitic left dislocation (Greek). The word order alternation in double object constructions can clearly be seen as a case of scrambling to accommodate a given>new word order.

Collins (1995) analysed corpus data of Australian English and found a relation between givenness of the referent and the structure (DOD or PD) in which it appears. He states that definite (given) recipients are more likely appear in the DOD construction as 96% of the DOD contained definite recipients, while only 63% of the recipients were definite in the PD. He also found that the theme was more likely to be a expressed with an indefinite NP in the DOD (79%), and more likely to be definite in the PD construction (60%).

The two alternates, PD and DOD, have been found to have some asymmetries with regard to comprehension and the given>new order. Clifton and Frazier (2004), Brown et al. (2012) (for English) and Kizach and Balling (2013) (for Danish)[10] found a facilitative effect on comprehension when the presented order was given>new in the DOD, but not in

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[10] Danish also has the PD and DOD alternation.

the PD; also, they found a low acceptance rate of new>given structures expressed with the DOD. These studies used reaction times (Clifton & Frazier, 2004; Kizach & Balling, 2013), and self-paced reading (Brown et al., 2012). Kizach and Balling (2013) claim that the DOD structure is more complex, and thus the additional cognitive load of having the new argument precede the given one makes it more difficult to process. Brown et al. (2012) suggests that discourse information is incorporated into the structure of the DOD, but not of the PD, and so the DOD has constraints on how the given and new information are ordered, allowing only for given>new. Returning to what was outlined in section 2.2, we see that the results obtained by these studies suggest that the PD is more contextually applicable than the DOD.

3.2.1 The effects of givenness on word order in child language

With regard to children's data and the acquisition of the given>new principle, the main challenge that children might face while acquiring the principle is taking the listener's perspective into account. For example, Schaeffer and Matthewson (2005, p. 54) argue that children lack a pragmatic concept that allows them to systematically distinguish between their own beliefs and the beliefs of the interlocutor. They refer to this as the concept of Non-Shared Assumptions[11] , according to which the speaker's and the listener's assumptions are always independent. They claim this might happen because children consider what is known to them to be part of the common ground, and this consequently influences what is marked as [+given] by the children. This is the reason why children might take a long time to account for givenness through word order, as they are marking what is given for them, but not necessarily given for the listener. Regarding the various definitions of givenness, research has shown that *previous mention* has more effect on children's choice of referring expression than *physical presence* (Matthews et al., 2006).

The research on givenness in child language has found some divergent results regarding the timeline of children acquiring and applying givenness in discourse. Unlike animacy, givenness is a contextual property, and the speaker, in this case the child, has to

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[11] Referred to also as Non-Shared Knowledge in Schaeffer (1999)

be able to assess what the listener knows, in order to mark it appropriately. I will first outline studies that investigated givenness in other domains and found the effect of givenness/topic, and then move on to describing the studies that investigated givenness in ditransitive structures.

The acquisition of givenness has been studied in many domains of language, such as subject omission, topics, and V2 constructions, and divergent results were reached. For the first domain, Gordishevsky and Avrutin (2004) investigate Russian which allows optionality with regard to pro-drop, as the overt subject/object do not signal additional emphasis as it does in languages such as Italian or Spanish. The distribution of subject omission is dependent on contextual requirements which relate to givenness as the omission is claimed to be allowed when the items are recoverable from the linguistic (given) or situational (physically present) context (Gordishevsky & Avrutin, 2004). The longitudinal data from Gordishevsky and Avrutin (2004) revealed that information structure is available to young Russian children (age range: 1;8-2;0 and 2;0-2;6), but there is a clear development between the two age groups as the second one is more adult-like. When children make omissions in a non-adult-like manner, Gordishevsky and Avrutin (2004) attribute it to the concept of Non-Shared Assumptions (Schaeffer, 1999). The authors conclude that the sensitivity to linguistic discourse is fast to develop and thus assume that parts of it are innate. De Cat (2003, 2009) claims that French children have the necessary pragmatic competence to encode topics. She provides both spontaneous (De Cat, 2003) and elicitation data (De Cat, 2009). In the latter study, she investigated how French children (mean age: 2;11/4;0/5;2) mark topics. In French, topics are expressed as dislocated phrases, and are referred back to with a pronominal element inside the clause, while non-tropicalized subjects are expressed without dislocation. The author found that children progressively reduced the use of subject clitics as they employed more dislocated NPs for the topics. Even the youngest children used dislocated NPs to encode the topic, and never used indefinites in this position (De Cat, 2009). As it has been discussed in section 3.2, topics are a pragmatic/discourse factor, so the fact that children are able to mark it as such entails that children are attentive to pragmatic factors form early on. Westergaard (2003,2008) analysed the acquisition of Norwegian children with regard to subject placement with respect to negation and wh-questions and found divergent results. In case

of wh-questions pragmatics has been found to have in child Norwegian: V2 order when the subject was new, V3 when it is given (Westergaard, 2003), as it was found in the adult data. However, in the order of subject and negation it did not play a role (Westergaard, 2008). In Norwegian, given subjects should precede negation while new subjects should follow it. Westergaard (2008) finds that children always place the DP subjects after the negation, but the pronoun subjects are placed in both positions, even when they can be considered given. The conclusion is that pragmatics is not responsible for the non-target like behaviour because if the concept of Non-Shared Assumptions were the cause, children would place objects that are new (given to them) in the position designated for given arguments, but what is observed in Westergaard (2008) is that children treat given subjects as new; thus, what must be the cause of the non-target-like behaviour is the economy of movement as children produce movement only when there is clear evidence for it.

With regard to the acquisition of the dative alternation in English, the DOD has been found to be more difficult to comprehend than the PD structure: going back to the Cook (1975) study presented in section 3.1 in relation to his findings on animacy, he also found that children of all ages had a higher ratio of correct answers when the act-out scene was communicated in the PD structure, than in the DOD structure. Children improved significantly with age with regard to the DOD construction, but not the PD, since the error rate was quite low even in the youngest group. These results show that children understand the PD better than they understand the DOD construction. However, Snyder and Stromswold (1997) have shown that the DOD and PD constructions are acquired as a group, along with other constructions[12]. They analysed corpus data from 12 children of an age span of 1;4-2;6, and they found children treat the two ditransitive constructions as grammatically related (due to the age correlation of the acquisition of the two), but also that the DOD was acquired before the PD. The authors do not relate the order of acquisition of the two structures to parental input, as there was no correlation between the lower rate of the PD in the adult speech and the age of acquisition (Snyder & Stromswold, 1997, p.

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[12] The other constructions include verb-particle constructions, VP-NP-PP constructions of the 'put' class, V-NP-VP constructions with verbs of causation and perception, and resultatives.

291). They also found that, once the children had acquired both structures, the DOD was used more frequently.

We can divide the studies that analysed the effect of givenness in ditransitive structures into the ones that find a givenness effect and ones that do not. The first group comprises research conducted on languages that exhibit a contrast between PD and DOD (such as English and Norwegian), while the second group of studies was conducted on languages that use Accusative/Dative case marking (Russian, Ukrainian, and German). These studies are explained in more detail in Paper 3, so I will not describe the methodology but only summarize the main finding in each of the two groups.

Studies finding an effect of givenness in child language ditransitives include: Snyder (2003)(corpus) and Stephens (2015)(experimental-production) conducted on English, and Anderssen, Rodina, Mykhaylyk, and Fikkert (2014) (experimental-production) conducted on Norwegian. Investigating a corpus, Snyder (2003) found that the children start paying more attention to givenness from age five, and increasingly from that point on. Her results show that three and four-year-old children place the [-given] IO last (target-like) only 20% of the time. This significantly increases with age, as five- and six-year-old children do it 70% of the time, and seven- and eight-year-olds increase to 80% of the productions. The behaviour of the youngest group was discussed in section 3.1.1 in relation to animacy: these children were found to heavily rely on animacy, and since the IO is always animate in the corpus, they used the DOD construction regardless of the fact that the first object argument, the IO, is [-given] in the discourse. The two experimental studies Anderssen et al. (2014); Stephens (2015) find a givenness effect, but also a preference for the PD, which is sometimes overused. This is in line with the adult comprehension data discussed above (Brown et al., 2012; Clifton & Frazier, 2004; Kizach & Balling, 2013), as the PD was accepted with both given>new and new>given orders, while the DOD was accepted only with the given>new order.

The following studies do not find a clear effect of givenness on word order, but find a preference for the IO-DO order: Mykhaylyk, Rodina, and Anderssen (2013) (production) for Russian and Ukrainian, and Höhle, Hörnig, Weskott, Knauf, and Krüger (2014) (production) for German. Mykhaylyk et al. (2013) use the same methodology as Anderssen et al. (2014) but find an observable age difference, as the older children (5-6 year-olds)

produced more DO-IO in the theme-given condition (target-like), but IO-DO was still the generally preferred object order. Höhle et al. (2014) checked how faithfully the children reproduced ditransitive structures that violated word order (*ACC-DAT)[13] or definiteness (*indef-def) constraints. They found that children faithfully reproduce sentences with no violations, but, in the case of violations, they reproduce definiteness violations more readily than word order violations, thus they would repeat the indefinite>definite order of the target sentence, but the DO-IO sentences were often reproduced with the IO-DO order.

Thus, it seems that the effect of givenness is integrated more easily in ditransitive constructions if a language has PD and DOD alternates than in languages with case marking for the theme and recipient. Complexity seems to be an issue for the PD and DOD alternating languages, as the former is claimed to be less complex than the latter for both adults (Brown et al., 2012; Clifton & Frazier, 2004; Kizach & Balling, 2013) and children (Cook, 1975). This structure is also found to be more contextually applicable, as it can accommodate both given>new and new>given orders, while the DOD cannot (only given>new) (Brown et al., 2012). Thus, children overproduce the less complex and more applicable order.

In the case of the case-marking languages seen in this section, no claims have been made on the relative complexity of the two orders. However, in those languages, regardless of the object order, the marking of the thematic roles is unvaried, and thus the recipient and theme are always distinguishable. This is not the case for the DOD structures which makes them complex as the thematic roles are not distinctively marked. The children acquiring a case-marked language seem to pay less attention to givenness that the children acquiring English or Norwegian, and overproduce the IO-DO order. I believe that the reasons for this is the animacy of the IO, which will be discussed in the light of my findings in section 6.3.

3.3 The effect of givenness on referring expressions

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[13] They consider IO-DO is the unmarked order.

Part of the research in this Dissertation focuses on the effect that givenness has on local markers: the choice of referring expressions. I will thus outline some previous research conducted on the choice of referring expression.

Just like word order alternations, referring expressions (RE) should also be sensitive to givenness. One approach that takes RE into account is the Givenness Hierarchy (GH) defined by Gundel, Hedberg, and Zacharski (1993). Table 2 provides an overview of this hierarchy as it is presented in Gundel et al. (1993) for English and Russian.

Table 2: Referring expression in relation to the Givenness Hierarchy.

Cognitive status	In focus	Activated	Familiar	Uniquely identifiable	Referential	Type identifiable
RE English	it	that, this, this N	that N	the N	indefinite this N	a N
RE Russian	Ø on 'he'	on, eto 'this', to 'that'	Eto N, to N	Ø N		

The hierarchy signals the most appropriate form for every cognitive status (in Table 2). According to the GH, using a RE designed to a status higher up in a hierarchy leads to unsuccessful communication, like for example referring with 'that'/'this' or 'this N' to a referent that has the status of *uniquely identifiable,* and thus according to the GH requires a definite article. However, each cognitive status can be expressed with an RE designated to any lower status, and still lead to successful communication. For example, a referent that has the cognitive status *activated* is most appropriately referred to by using either 'that'/'this' or 'this N', but it can be referred to with any expression positioned to the right of it in Table 2. Nevertheless, speakers should conform to the GH and should avoid being over-specific. The reason for this is that the use of full expressions for a referent with a high cognitive status could suggest to the listener that the referent is not salient, a possible shift of attention, or provide unnecessary information that slows processing down (Fukumura, van Gompel, & Pickering, 2010).

3.3.1 **The effect of givenness on referring expressions in child language**

The studies focusing on the use of REs in child language (Gundel & Johnson, 2013; Sauermann, 2016), have found that children generally use REs correctly, i.e. according to the GH (table 2), but can still sometimes use the wrong referring expressions due to a misinterpretation of the hearer's knowledge (Tedeschi, 2008). Recall Schaeffer and Matthewson (2005)'s proposal that this happens because children have not yet developed an understanding of the concept of Non-Shared Assumptions. As a result, children consider what is known to them (but not necessarily known to the listener) to be common ground. Schaeffer and Matthewson (2005) describe this principle for the use of definite and indefinite articles in children, but the principle can apply to any givenness effect, including the use of REs.

According to the Givenness Hierarchy, the speaker can express a referent with an RE that is more informative than necessary. Thus, children can misuse the hierarchy in two ways: by overusing fuller expressions and consequently rendering the dialogue over-specific (but still accomplishing successful communication), or by overusing pronouns and null expressions (which will most likely lead to unsuccessful communication). The studies below are grouped by their result, depending on whether the children are reported as being under-specific or over-specific in their use of REs. I start with summarizing the studies with the former result, as it is a more serious violation.

Studies that found that children tend to be under-specific with their use of REs entail that they use reduced expressions when an NP is in order. Campbell, Brooks, and Tomasello (2000) found that English-speaking children use mostly pronouns in response to both general ('What happened?') and specific ('What did the ball do?') questions. The authors also found that the children are sensitive to the discourse as they increased the production of full NPs when answering the general questions. Nevertheless, the fact that mostly pronouns were used makes them under-specific with their references (Campbell et al., 2000, p. 1344). Tedeschi (2008) elicited specific and general questions from Italian children of various ages (2–5 years). Even though the data shows a progression from under-specific to over-specific with age, I classify this study with the under-specification findings because the younger children under-specify REs much more than the 5-year-olds over-

specify them. The two- and three-year-olds overuse clitics and pronouns with the general questions. Full expressions are not overused in the specific questions by the two-year-olds, but the three-year-olds use them one fifth of the time. The five-year-olds did not overuse reduced expressions, and have a marginal overuse of the full expressions in the condition of specific questions: they prefer to be over-informative than under-informative, but their productions are almost adult-like.

Within the group of studies that find that children are over-specific in their use of REs, Wittek and Tomasello (2005) used a methodology similar to Campbell et al. (2000), but conducted on German-speaking children. They obtained the opposite result of Campbell et al. (2000): children over-used NPs with specific questions, but this significantly decreased from age 2;0 to 3;6. The overuse of pronouns and null expressions was marginal in the general condition in all the age groups. Thus, German children preferred being over-specific in their production and overused NPs when a pronoun would have sufficed. Matthews et al. (2006) also used the methodology of general and specific questions on English-speaking children. Conditions with and without prior mention of the referent were added to the original methodology. All age groups (two-, three-, and four-year-olds) showed sensitivity to these conditions. The children over-specified and under-specified REs in a very similar way, with a slight tendency to over-specify, especially in the youngest group. In a corpus study conducted on longitudinal and cross-sectional data of French children, Orvig et al. (2010) found that children acquire the contexts for the use of clitics very early (around the age of 2), even though they might sometimes misuse them: children used a clitic in contexts where there was no immediate mention, but they also used another RE in contexts where the referent has been immediately mentioned and would thus require a clitic. However, the latter occurrences are more numerous, which suggests that children are over-specific rather than under-specific.

Other studies found correct usage of REs in children—for instance, Sauermann (2016) corpus study on German. Here the children's distribution of REs was similar to the child-directed speech from the same corpora, regarding both the expression of the DO and the IO. Another corpus study, conducted by Rozendaal and Baker (2010) on English, found that adults overuse both pronouns and NPs to the same extent (pronouns for discourse-new referents, and NPs for discourse-given referents), children up to 2;6 make more pragmatic

mismatches than adults but use over-specific and under-specific referents in the same amount, while children aged 3;3 are adult-like in their overgeneralizations. Gundel and Johnson (2013) investigated a corpus of English speaking children by applying the Givenness Hierarchy from Gundel et al. (1993). She found instances of indefinite and definite NPs in the higher statuses of the Givenness Hierarchy, such as *In focus*, *Activated*, and *Familiar*, in which more reduced forms would have sufficed (cf. Table 2). Thus, the authors conclude that children younger than four years are over-specific. However, Gundel and Johnson (2013) also points to the limits of corpus data: it provides little opportunity for errors, because most of the referents are at least *activated*, implying that a demonstrative with or without the noun, the definite article, and the indefinite article can be used in that context, even though these forms would clearly come across as over-specific. This entails that, in naturalistic data, since in children's speech it is the *here and now* that is usually discussed, children have more opportunity for being over-specific than under-specific.

It would thus seem that children are more similar to adults in naturalistic data, while in specific experimental settings they are still lacking some pragmatic aspects of the interlocutor's expectation of what RE should be used. The reason for this might be that naturalistic data does not provide the contexts that are set up in the experimental data, the referents are available one way or another, and therefore the children have less opportunity to misuse a RE. Either way, it seems that children are not very likely to use reduced expressions when they are unsure, and would rather be over-specific than under-specific, which means that they are sensitive to the listener's perspective.

To sum up, when compared to the studies that investigated the effect of givenness on word order, the effect that givenness has on referring expressions seems more consistent. This entails that children are sensitive to givenness but might not apply it to word order as many other factors can interfere, such as animacy or weight, while referring expressions are guided mostly by givenness. A study that investigates the effect of newness (givenness) on both global and local markers is Hickmann et al. (1996): they analyse the utterance structure and nominal determiners in speakers of English, French, German, and Chinese (both adults and various age groups of children). Their results show that local markings emerge first, due to the greater functional complexity of global markers. The obligatory markers differed among the languages investigated in Hickmann et al. (1996);

Chinese was the only language which had obligatory global markers but optional local markers. The study revealed that, even in Chinese, local newness markings were used earlier than global ones (Hickmann et al., 1996, p. 615). Thus, local nominal determiners and use of referring expressions are easier for children to grasp than the movements related to givenness.

Thus, returning to the studies referred to in section 3.2.1 (which investigated the effect of givenness on word order in ditransitive structures), I will now describe what the REs used in these tasks were. Anderssen et al. (2014) did not divide the responses based on their referring expressions when conducting the analysis, but they report on omissions. Anderssen et al. (2014) found a clear effect of givenness on omissions, as children omitted only given objects. Stephens (2015, p. 416) categorised the responses into indefinite NP, definite NP, and pronoun. She also reports a correlation between givenness and pronominality, since [+given] arguments were realized as pronouns 80% of the time. Additionally, the pronominal form influenced word order, as pronominal themes occurred first, even if they were new. Pronouns were also used as responses in the study conducted by Mykhaylyk et al. (2013), but unfortunately the study does not report to what extent these were related to givenness. However, Mykhaylyk et al. (2013) found a givenness effect in the omissions in Russian and Ukrainian children similar to the one found by Anderssen et al. (2014) in Norwegian.

Overall, it seems that children mark givenness more readily through local markets, be that RE of definiteness, than on global markers, i.e. word order.

3.4 Summary of the effects of animacy and givenness on word order

Animacy and givenness have the following general effect on word order: [+animate] arguments precede [-animate] arguments, and [+given] arguments precede [-given] ones. From the data presented in the previous sections, it seems that children are faster to acquire and apply the *animate-first order* than to follow the *given>new principle*. The literature also suggests that children acquiring a language with case marking are less adult-like in their choice of object order, as they over-produce IO-DO and pay little attention to

givenness in the ordering of the objects. On the other hand, children acquiring a language with dative alternation use the PD in a wider context than the DOD, just like adults. However, the impact of givenness is reflected equally in the omission rate of Norwegian(Anderssen et al., 2014) and of Russian and Ukrainian (Mykhaylyk et al., 2013). As it was seen in section 3.3.1, Previous studies also suggest that marking givenness more locally, i.e. through REs, surfaces earlier than the given>new order; and I have suggested at the beginning of section 3 that omissions can be seen as an intersection between global and local markers.

Summarising, previous research has found a bigger effect of the semantic factor, animacy, than the pragmatic factor, givenness. This is due to the fact that children are attentive to animacy from early on, from the age of two, according to de Marneffe (2012). Furthermore, animacy is not contextually variable. Givenness, on the other hand, is context-dependent, and children have been argued to lack the Principle of Non-Shared Assumptions (Schaeffer and Matthewson (2005). Additionally, local givenness markers emerge earlier than global ones (Hickmann et al., 1996). Consequently, I expect that the Croatian pre-schoolers will also take animacy into consideration more than givenness, and also that givenness will be more easily expressed locally than globally.

4 Goals of the present study

Having presented the state of the art with respect to the key notions of this dissertation, this section aims to outline the rationale behind this research. It has been found that animacy is acquired early and that children are attentive to it (de Marneffe, 2012). At the same time, the findings of the research conducted on givenness show divergent results and no general age consensus, even though effects of givenness have been found in various domains of the linguistic production (De Cat, 2009; Gordishevsky & Avrutin, 2004; Gundel & Johnson, 2013; Matthews et al., 2006; Wittek & Tomasello, 2005), including ditransitives (Anderssen et al., 2014; Stephens, 2015). Nevertheless, the effects found on ditransitives

are stronger in the domain of (given) object omission than object ordering (Anderssen et al., 2014; Mykhaylyk et al., 2013).

The studies that I have presented in the previous sections did not explicitly compare a semantic/non-contextual factor to a pragmatic/contextual factor in child acquisition. This is a rather interesting combination since, on the one hand, the majority of the studies that investigate the acquisition of pragmatics or the attentiveness to context, disregard the animacy hierarchy. On the other hand, animacy is researched with regard to structure choice (active vs. passive, of/'s genitive) irrespective of other factors in the context. Thus, considering both animacy and givenness as part of the context in a series of studies that balance one or both of these factors, presents a fresh approach to already amply researched factors.

The research of the effect of givenness on word order finds fertile ground in Croatian as the topic/focus distinction (relatable to given/new) was originated by Mathesius in the Prague School Linguistics for Czech, for which it was claimed that topic and focus are the prevailing factors that determine word order (Hajičová, 1994). Accordingly, other Slavic languages have been found to comply to that order (Dyakonova, 2007; Grzegorek, 1984; Kallestinova, 2007; Kučerová, 2007; Siewierska, 1998). Thus, the effect of givenness was first investigated in the adult data, in order to make a more general contribution to the given>new order in Croatian and thus also to the Slavic Languages. Nevertheless, givenness was investigated also in terms of its effects of referring expressions due to the divergent results that were found in acquisition on a global and local level. Additionally, Croatian is an understudied language, especially in the domain of language acquisition, thus the results are relevant for placing Croatian on the map of linguistic research in general.

The understudied status of Croatian leads me to explain the choice of the participants: this research was conducted both on adults and on children. The latter are the main focus of this dissertation but, with very scarce data available on Croatian ditransitive structures, a study only on the adult judgments was necessary in order to help formulating the research questions of the tasks targeted directly on children.

Ditransitive structures were a fit choice for this research as the two structures are both amply used in the target language. The ditransitive structures were also widely studied

with regard to givenness in other languages, therefore adding Croatian to this line of literature will foster comparisons at a cross-linguistic level. Moreover, the two objects exhibit a more balanced relationship in terms of thematic role than the subject and the object do; as Arnold (2001, p. 139) claims, thematic role influences accessibility so that subject referents are more accessible that the object referents.

Thus, the purpose of this study is to shed light on the dynamics of the acquisition of Croatian ditransitive structures and what effect animacy and givenness have on word order and the choice of referring expressions. The more general findings that might accompany this research is the interplay of semantic and pragmatic factors as triggers for movement.

Based on the presented findings, I predict that children will be more attentive to animacy because this is not a contextual factor. Givenness might have an effect, depending on whether the children pay attention to the contextual factors in the given task. I have set up two different tasks: one has givenness in terms of prior mention, the other one has it in terms of discourse topic. I expect the latter to have more impact because it is a more consistent form of givenness. Nevertheless, based on the studies presented in the previous section, I expect the effect on local markers, i.e. referring expressions, to be more evident than the effect on global markers, i.e. word order. For the adults, if givenness is marked with word order in Croatian, I expect that they will conform to the given>new principle.

5   The papers and their main findings

In this section I will outline the main findings of each paper contained in this dissertation. This dissertation consists of four papers, with the following publication status:

1. "The influence of Animacy, Givenness, and Focus on Object Order in Croatian Ditransitives": under review *Studia Linguistica*
2. "Acquisition of ditransitive structures in Croatian child language": accepted in *FDSL 2015 Proceedings*

4   Ditransitive structures in Croatian adult and child language

3. "Object Order Variation in Croatian with regard to Animacy and Givenness: A Ditransitive Elicitation Task": under review *Journal of Slavic Linguistics*

4.   "The effects of discourse topic on global and local markers in Croatian ditransitives": under review *Glossa*

However, before outlining the papers (section 5.2), I will describe the Double Object Database project (section 5.1) which was a proved to be a crucial baseline for the entire project.

5.1 The Double Object Database

In addition to the submitted work, I have created a Double Object Database (DODB), in order to get a structured insight into the spontaneous production of ditransitive structures in Croatian child language and child-directed speech. The DODB (Velnić, 2014) can be found online and is available for browsing[14]. The data it contains constitute the foundation of every study presented in this dissertation.

The DODB contains ditransitive occurrences obtained from the child corpus on Croatian (Kovačević, 2004) in CHILDES (MacWhinney, 2000). The corpus contains speech from three children, two girls and one boy, age range 0;10–3;2. The DODB is divided into child-directed speech (CDS) and child speech, and categorised according to object order (IO-DO and DO-IO) or omissions (overt IO and overt DO), referring expression (NP, pronoun, and clitic), and object case. The cases that I have accounted for are: Accusative that marks the DO or the IO in the Accusative/Instrumental alternation (Zovko- Dinković, 2007), the Genitive that marks the DO if it is a mass noun, the Dative that marks the IO, and the Instrumental that can mark the DO. As previously mentioned, most of the productions were combinations of Accusative and Dative. I have also marked the prepositions linked to an object, when present.

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[14] https://marta.velnic.net/double-object-database

The DODB contains a total of 1141 occurrences, divided into 35 different categories, based on the criteria specified above. The children's occurrences amount to 563 entries, while CDS constitutes the remaining 578 entries. Paper 2 goes into more detail comparing the production of the two types of speaker, and I will not discuss this matter any further here. The list of all categories and the number of occurrences they contain is shown in Table 3; the '/' sign signals an omission.

Table 3: Categories contained in the DODB and the total occurrences contained (both types of speakers).

DO-IO			IO-DO		
1st object	2nd object	Number of occurrences	1st object	2nd object	Number of occurrences
DO CL ACC	/	6	IO CL ACC	/	1
DO CL ACC	IO NP DAT	1	IO CL DAT	/	253
DO NP ACC	/	151	IO CL DAT	DO NP ACC	243
DO NP ACC	IO CL DAT	29	IO CL DAT	DO NP GEN	64
DO NP ACC	IO NP DAT	18	IO CL DAT	DO PR ACC	53
DO NP ACC	IO PR DAT	1	IO CL DAT	DO CL ACC	12

DO NP ACC	IO NP ACC +Prep.	2	IO CL DAT	DO CL GEN	4
DO NP GEN	/	25	IO CL DAT	DO NP INS +Prep.	3
DO NP GEN	IO CL DAT	2	IO NP DAT	/	57
DO NP INS	/	1	IO NP DAT	DO NP ACC	50
DO NP INS	IO CL DAT	1	IO NP DAT	DO NP ACC +Prep.	1
DO PR ACC	/	36	IO NP DAT	DO NP GEN	5
DO PR ACC	IO CL DAT	18	IO NP DAT	DO PR ACC	3
DO PR ACC	IO NP DAT	2	IO PR DAT	/	49
DO PR ACC	IO PR DAT	4	IO PR DAT	DO NP ACC	34
DO PR ACC	IO NP GEN +Prep.	1	IO PR DAT	DO NP GEN	6
DO PR GEN	/	1	IO PR DAT	DO PR ACC	2
			IO PR DAT +Prep.	/	2
Total	299		**Total**	842	
Grand total		1141			

If we break these down into four macro-categories consisting only of object order and omission, we can see that the IO-DO clearly is the predominant object order (Table 4). The distribution hold also when we separate the occurrences per speaker type (adults and children) presented in table 5.

Table 4: Distribution in four macro-categories

IO-DO	DO omitted	DO-IO	IO omitted
480	362	79	220
1141			

Table 5: Distribution in four macro-categories divided per speaker type

Adults	Children

IO-DO	DO-om	DO-IO	IO-om	IO-DO	DO-om	DO-IO	IO-om
241	161	60	116	239	201	19	104
578				563			
1141							

The naturalistic data contained in the DODB also shows how the IO is predominately expressed as a clitic: 74% when the IO is overt. This poses the biggest limitation to our observations of naturalistic speech, because the clitic is fixed in second position in Croatian (Schütze, 1994), and thus, in the majority of occurrences, it is syntax and not pragmatics that determines the object ordering.

The occurrences inserted in the DODB were obtained by searching various forms of a ditransitive verb (not lemma) in the Kovačević corpus (Kovačević, 2004) present in the CHILDES corpora (MacWhinney, 2000). The verbs included in the searches are (given in order of frequency in the DODB): *dati* 'give', *donijeti*/*donesti* 'bring', *pokazati* 'show', *baciti* 'throw', *nuditi* 'offer', and *prodati* 'sell'. The verb 'give' was chosen because it is the prototypical ditransitive verb and all the studies on ditransitive structures discuss it; 'bring', 'show', and 'throw' were chosen for their high possibility to appear in Child Directed Speech: children are often asked to bring/show/throw something. The verb 'offer' was selected due to its possibility to be presented with an Accusative/Instrumental structure; while the verb 'sell' was chosen because it was noticed during the searches for other verbs and it seemed to be more attested compared to others. For each verb, I searched for various forms, including the imperative, past perfect for masculine and feminine gender, present 3rd person singular, infinitive, and optative.

In addition, every object, including the omitted ones, was marked for an array of properties (including some which I do not focus on in this dissertation). However, I start by describing the properties from the ones most relevant to this dissertation.

Given, *present*, and *salient* can all be regarded to fit under the umbrella term of *accessible* (Hughes & Allen, 2013), and an object that can be described as neither *given, present* nor *salient*, would be considered new. Newness was not explicitly marked, but the absence of the accessible markings signals that an object is *new*. *Given* is defined as being previously mentioned within the last five utterances before the target utterance, and it thus

signals linguistic givenness; *present* means that the object is physically present in the immediate space, while *salient* entails that the object is at the centre of attention (for example, a ball would be salient if the interlocutors are currently playing with it). The second relevant cluster of properties is *human* and *animate*: *human* signals that the referent is human, while *animate* indicates that it is an animal, but is also extended to dolls, since they have a superior level of animacy to the objects that are truly inanimate. A lack of marking indicates that the object is *inanimate*.

Moving on to properties that were not taken into account for this dissertation, I have also marked the objects for *weight*; this was only possible in utterances with both overt objects, as an object can only be heavy with respect to the other object. Weight was defined in terms of syllables (if an object was longer than the other object by five or more syllables, it was considered heavy). *Focus* and *contrastive focus* were marked only in terms of intonation, and not in relation to the background>focus structure. The utterances were listened to and changes in intonation or stress were marked. This marking was unfortunately not possible for all the files contained in Kovačević (2004), as some of the audio files were not available. *Last mention* was marked when both objects were [+given], and it signalled which object was the one mentioned last in previous discourse. *Caused motion* was marked to indicate that the ditransitive action involved change of location. The absence of this marking entailed *caused possession,* which was considerably more numerous in the DODB. Finally, objects were marked for *syntactic persistence,* which entailed that the structure (word order) was the same as the immediately preceding utterance.

Each occurrence in the DODB is categorised according to the parameters seen in Table 3; it contains the text of the ditransitive occurrence, and it is also marked by verb (lemma) and keyword (actual form of the verb). Crucially, the occurrences are also marked for the speaker type (child or adult), and for the corpus location: the file they are contained in and the line. The latter is crucial for locating the occurrence at any time, and checking the context if needed. Note that all the properties mentioned in the previous paragraph were marked based on the wider context where the occurrence appeared.

Overall, the DODB has proven to be a crucial tool for investigating how children use ditransitive structures: it has provided a neat overview of the productions and the

categorisation was extremely helpful for assessing which structures were being produced and how it related to the two factors I am focusing on. It provides a vital gaze on how the naturalistic data is structured and what it can and cannot give us in terms of researching the effects of animacy and givenness. Nevertheless, it has a number of limitations, which is why experimental tasks were key to discovering the true effects of animacy and givenness. The main limitation of the data contained in the DODB was the lack of animacy balance (only the IOs were animate) and an abundance of givenness balance (most of the objects were in some way accessible). In addition to that, the majority of referring expressions included a clitic IO, which heavily influenced object order. The DODB can still be extended by introducing new data, or refined, by marking other categories. A future project is to add ditransitive occurrences from HrAL (Kuvač Kraljević, 2016), which is a corpus of Croatian adult spoken language, thus facilitating three-way comparisons between children's speech, CDS, and adult-adult speech. It can also be adapted to include data from languages other than Croatian, by adding a *language* tier.

5.2 Outline of the papers

In this section, I provide an outline of each paper from the list in section 3.

Paper 1 "The influence of Animacy, Givenness, and Focus on Object Order in Croatian Ditransitives"

The first paper, "The influence of Animacy, Givenness, and Focus on Object Order in Croatian Ditransitives", tested how animacy and givenness, in addition to focus, influence the word order preference of adult speakers of Croatian. This study was conducted in order to gain some insight into how adults use ditransitive structures, and what their preferences were with regard to the factors that are investigated in this thesis. I also wanted to see if the factors were equally strong. The methodology consisted of an acceptability judgment

task (AJT), in which we tested four word orders: VID, IVD, VDI, and DVI. All three factors (*animate-first*, *given>new*, *background>focus*) had an effect on word order. The participants were 82, with an age range of 18-53 years of age (mean age=23). Firstly, the data indicates that, when the factors are neutral, the DO-IO is preferred (VDI and DVI to the same extent). This order is also preferred when only animacy is neutral. Focus only strengthens the effect of givenness—more precisely, the preference for a certain word order is stronger when the new argument is also in focus (i.e. being explicitly asked about). In terms of the strength of the factors, it seems that animacy is stronger than givenness as it guides the general level of acceptability of IO-DO and DO-IO orders, and givenness operates within a single animacy setting. The results indicate that focus is stricter than givenness, as the conditions with explicit focus had clearer preferences when compared to conditions of a simple given/new contrast, where both object orders were judged more similarly to each other. Additionally, in the focused examples, the effect of animacy was visible only when neither object was in focus (subject focused); thus indicating that focus, or a combination of focus and givenness, is stronger than animacy.

Paper 2 "Acquisition of ditransitive structures in Croatian child language"

The second paper, "Acquisition of ditransitive structures in Croatian child language", focuses on comparing child utterances to CDS, in the occurrences with no omission inserted in the DODB (Table 6). The main finding is that children overgeneralize what is most frequent in the input in terms of verb ('give'), object order (IO-DO), and object form (IO=clitic), thus resulting in a high frequency of *daj mi DO* ('give me-cl DO') structures. However, I claim that this most frequent production is not acquired as a chunk, but is productive, as children use the verb and a variety of clitics in different contexts. In the other productions, children seem to mirror the frequency of the adults with regard to which object order is mostly produced with a certain order of referring expressions. This is evident from Table 6 (Table 3 in Paper 2), reproduced from the paper.

Table 6: The distribution of object forms within the two object orders

Form	Adult IO-DO	Adult DO-IO	Child IO-DO	Child DO-IO
NP-NP	55	18	0	2
NP-PR	3	0	0	1
NP-CL	0	26	0	6
PR-NP	15	2	25	1
PR-PR	0	3	2	1
PR-CL	0	10	0	8
CL-NP	144	1	170	0
CL-PR	15	0	38	0
CL-CL	12	n/a	4	n/a
Total	244	60	239	19
Total	304		258	

The study also looked at *animacy* and *accessibility*, and found very little variation with regard to these factors, as all recipients were animate, and most of the objects were accessible. Nevertheless, there were two examples of DO-IO order in the child data, in which the DO was not accessible. This indicates that, around the age of 2;4, children still do no take the listener's perspective into account at all times.

Paper 3 "Object Order Variation in Croatian with regard to Animacy and Givenness: A Ditransitive Elicitation Task"

In the third paper, "Object Order Variation in Croatian with regard to Animacy and Givenness: A Ditransitive Elicitation Task", I conducted an elicitation task in order to obtain the contexts of givenness and animacy that were lacking in the naturalistic data of the DODB. Hence, this setting tested four conditions of givenness, intended as previous mention: *No object given*, *DO given*, *IO given*, and *both objects given*; it also tested two conditions of animacy: *prototypical* (IO-animate DO-inanimate) and *balanced* (both

animate). The participants were 59 monolingual Croatian children (mean age=4;4) and 36 adult controls (mean age=21). In both adults and children, a givenness effect was found in the condition for given DO, but the givenness of the IO did not impact the results. In the condition with prototypical animacy, givenness had the opposite effect in the two groups: adults structured their utterance given>new, and children prefer the order new>given. Both groups show increasing use of DO-IO when animacy is balanced. This is attributed to the effect that animacy has in both children and adults. Adults had a strong preference for the DO-IO when animacy was balanced, in line with what was found in Paper 1. These points will be important in the discussion in the next section. Based on the results of this study, I argue that the general IO-DO preference found in children's production is the result of a strong animate>inanimate preference.

Paper 4 "The effects of discourse topic on global and local markers in Croatian ditransitives"

In the fourth paper, "The effects of discourse topic on global and local markers in Croatian ditransitives", I have used the concept of discourse topic (DT) to observe the effect of givenness. A DT will obviously be [+given], and can be seen as a topic that is maintained throughout a longer stretch of discourse, since the argument that is the DT has been established throughout the discourse as a [+given] referent. Note that, here, animacy was not balanced, and the prototypical setting of animacy (in which the recipient is animate but the theme is not) was used. The participants included 58 monolingual Croatian children (mean age= 4;4) and 36 adult controls (mean age=21). This study does not find an effect of DT on object order in the child data, as children produce IO-DO in the same proportion when the IO is the DT and when the DO is the DT. Nonetheless, an effect was found in the adult word order. However, there was an effect of the DT on referring expression in both types of speaker, as an argument is more likely to be omitted or expressed as a clitic when it is the DT. The difference between adults and children was a more over-specific use of REs by the children (they used more NPs overall), but the children did not use the clitic

form to refer to the DO, while the adults did. This might be related to the fact that the DO was inanimate.

Overall, both adults and children are sensitive to animacy, but, with regard to givenness, it affects adults both on a global (word order) and local level (referring expressions), while children are affected by it only at a local level. This can be summarised in Table 7.

Table 7: Summary of the effects of animacy and givenness found on global and local markers.

	Adults		Children	
	Global	Local	Global	Local
Animacy	Weak	No	Yes	Yes (?)
Givenness	Yes	Yes	No	Yes

A note on animacy is also necessary. We have seen in section 3.2 that the animacy scale can contain many levels, depending on how we choose to look at it, with the central ones being Human, Animate, and Inanimate. Nevertheless, animacy is treated as a binary feature in all of the experimental studies of this dissertation, the naturalistic data from the double object database being an exception. The acceptability judgment task conducted on the adults distinguishes between human and inanimate arguments, while the two tasks that also had children as participants set the distinction at an animate/inanimate level. In the latter tasks, the animals depicted in the task have anthropomorphic properties, so their animacy level might be designated above the 'animate' level, but since there are no humans in the task, the distinction remains binary, regardless of where exactly we place the animal referents.

I now move on to discuss the unified result of the four papers, and what we can learn about the use of ditransitive structures in Croatian and the effects of animacy and givenness.

6 Discussion of the results

The goal of this dissertation was to establish how children acquire ditransitive structures with respect to the order of the two arguments and the realisation of REs, and how animacy and givenness affect their choices as compared to adult speakers. The papers that are included in this dissertation analyse different angles of this issue but the obtained results are coherent as the findings are reconfirmed in all the tasks. The findings of the papers outlined in section 5.2 can be summarized in the following way:

1. A discrepancy between the object order preferred in the AJT and the most frequent word order in spontaneous production;
2. The effect of animacy on word order and DO-IO as the underlying word order;
3. The effect of animacy on child language;
4. The effect of givenness.

These findings do not come from different individual studies, but rather can be seen when looking simultaneously at the results from several of the papers in this dissertation (based on different methodologies). The IO-DO object order is more frequently attested both in the naturalistic data and in the elicitation tasks when animacy is prototypically distributed. Nevertheless, DO-IO seems to be the underlying order. This is apparent from the adult data in the AJT, and also from the object order they produce when animacy is balanced in one of the elicitation tasks. Animacy has an effect on object order in the language of both children and adults, but children are more sensitive to it. Also, when animacy is balanced, children also show a preference for DO-IO, that is, the neutral order. The effect of animacy can be observed in all of the tasks: in the AJT, very much so in the naturalistic data, and in both elicitation tasks. The effect of givenness comes out as less obvious. The adults were not sensitive to the manipulation of givenness in the elicitation task in Paper 3, but its effects are obvious from the AJT and from the elicitation task in Paper 4, where it influenced both adults' word order preferences and their choice of referring expressions. The children have been shown to be less sensitive to givenness, as it did not influence object order consistently. Both new>given and given>new object orders were found in both

the naturalistic and the experimental data. However, the children did exhibit sensitivity to givenness, as it affected their choice of referring expressions just like in the case of the adults. These findings will be discussed in turn. Finding regarding the effect of animacy and the underlying order are discussed together, due to the close connection of the results.

6.1 Discrepancy between the object order preferred in the AJT and the most frequent word order in spontaneous production

In the DODB, there is a predominance of IO-DO productions for both adults and children, and this is consequently reflected in the NP-NP combinations analysed in Paper 2 which analyses the IO-DO and DO-IO occurrences from the DODB. Nevertheless, for now, I will take only the adult naturalistic data into consideration. The manipulation of animacy in the AJT reveals that the speakers prefer the DO-IO orders when the DO and IO have the same animacy value (both human or both inanimate). This part of the discussion relates to the role of animacy, and provides a setting that will be amply discussed in the following two sections. The preference for DO-IO was not observed in the DODB, because, as mentioned before, instances of such values were not present: the IO was always animate and the DO was almost always inanimate[15]. Thus, I cannot make any claims about what happens in the naturalistic data in cases of balanced animacy. Moreover, the recipient in the corpus was not simply human, but additionally 1st or 2nd person singular, typically one of the interlocutors. The speaker and the listener have been shown to have a special status in the discourse (Hughes & Allen, 2013), which means that the IO was also likely to be more accessible than the DO. This can explain the difference between the high acceptance of DO-IO in the neutral contexts, and the production of IO-DO in naturally-occurring prototypical contexts. Thus, once the standardised pattern of naturalistic language is manipulated, other preferences surface. Croatian speakers are attentive to animacy and the word order preferences change considerably once animacy is neutralised.

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[15] In cases where both objects are animate, the IO was still higher up on the animacy scale, as it was Human, while the DO was Animate (a pet or a doll).

However, the discrepancy between naturalistic usage and experimental preference I discuss here is more fine-grained: VID was the least accepted object order in the AJT, but it is overwhelmingly frequent in the naturalistic data. More precisely, the use of IO-DO is clearly guided by the animacy-first order. However, since VID is strongly disliked in the AJT, we might ask why the speakers use it so abundantly, since other IO-DO word orders (such as the more preferred IVD) could also be used to express a purely animate-first order.

Because of the difference between the spontaneous and experimental results in the studies in this dissertation, I will now look more thoroughly into the occurrences of the DODB, and divide them into word orders that also include the position of the verb. The current analysis consists of the comparison of the results in Paper 1 and Paper 2, and it is not part of any of the papers included in the dissertation. I have also looked into the HrAL corpus[16] (Kuvač Kraljević, 2016), because it provides adult-adult conversation, which might differ from CDS. Tables 8 and 12 represent the four word orders in the CDS of the DODB and in the instances taken from HrAL (Kuvač Kraljević, 2016), respectively.

However, as only NP-NP combinations were used in the AJT, the discrepancy might be caused by the difference in referring expressions used with ditransitives in the DODB and the AJT. Here, I explore the possibility that the use of NP-NP combinations is the cause of the discrepancy between word order preference and word order usage. This is why here I am considering only NP-NP combinations form the DODB and HrAL (Kuvač Kraljević, 2016). A reason for the high frequency of VID in naturalistic data could be related to the IOs often being expressed as clitics, and to the fact that clitics are fixed in second position (Schütze, 1994). Another possible reason is that the construction *daj mi DO* ('give me-cl DO'), which is very frequent, as discussed in Paper 2. In Table 8, I have grouped the occurrences in the DODB according to their word order, including only NP-NP combinations, and excluding the ones in which the IO is one of the interlocutors. The latter were excluded due to their special status in the discourse, discussed by Hughes and Allen (2013).

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[16] The searches were conducted on the verbs 'give', ' bring', and 'show' in the forms also contained in the DODB.

Table 8: NP-NP combinations in CDS that do not include 1st or 2nd person singular.

IO-DO		DO-IO	
VID	IVD	VDI	DVI
48% (13)	7% (2)	44% (10)	7% (2)
15		12	
27			

Table 8 shows that even when clitics and 1st and 2nd person objects are excluded, VID remains the most frequent word order. Hence, the discrepancy between the dis-preference for VID in the AJT and its frequent use in naturalistic data is still present.

I have also considered adult-to-adult speech, summarised in the tables 9 and 10.

Table 9: Occurrences of ditransitive structures in HrAL (all REs).

IO-DO			DO-IO		
VID	IVD	IDV	VDI	DVI	DIV
38% (69)	35% (63)	6% (11)	1% (4)	1% (3)	17% (30)
143			37		
180					

Table 10: Occurrences of ditransitive NP-NP structures in HrAL.

IO-DO	DO-IO	
IVD	VDI	DVI
33% (1)	33% (1)	33% (1)
1	2	
3		

In adult-to-adult communication, VID and IVD are used with almost the same frequency when all referring expressions are taken into consideration (Table 9). The word order distribution from HrAL still does not mirror the preferences we have observed in the experimental setting of Paper 2. The NP-NP combinations from HrAL are limited to three occurrences only, which is not surprising since the sample is small, but it is relevant to note that none of the occurrences has the VID order. Since the crucial occurrences were found to be limited, we can look into the NP-NP combinations obtained from the elicitation tasks in Papers 3 and 4. The word orders used in these papers are the offered in table 11.

Table 11: Distribution of word order in NP-NP combinations of the adult data in the elicitation tasks.

IO-DO		DO-IO		
VID	IVD	VDI	DVI	DIV
38% (206)	8% (44)	52% (283)	1% (8)	0,3% (2)
250		293		
543				

From the distributions of word order shown in table 11, it seems that VID is still a highly attested word order, so its dis-preference in the AJT cannot be justified by the use of NP-NP structures, because, even in NP-NP structures, it is highly attested. What is not attested, however, is a higher frequency of IO-DO, as the two word orders are represented to similar extents (46% vs. 54%), with the DO-IO orders being slightly more numerous.

Thus, the discrepancy between acceptability and production still holds, but it cannot be attributed to the factors investigated in this dissertation or to the different REs used in the naturalistic data vs. the AJT setting. Perhaps it relates to the more general asymmetry between comprehension and production in word order variants (McDonald et al., 1993). Through a series of repetition (production), and judgment (comprehension) tasks of English transitive and conjunctive sentences, McDonald et al. (1993) found that the speakers were more permissive in production than in comprehension, with regard to the animate-first order. They attribute this to the different role that speakers and comprehenders have: the former know the message behind the structure they are creating,

while the latter have to piece these interpretations together (McDonald et al., 1993, p. 221). Thus, a speaker may use a structure that is less preferred by the comprehender. This can be noted in the data presented in the current section: speakers use VID, but comprehenders dislike this structure. Gračanin-Yuksek (2006) claims that VDI and IVD are both base-generated, and that VID can be derived from both structures: the derivation from the former involves the movement of the IO, while in the latter it is the verb that moves. She claims that because of the two possible derivations, VID is contextually ambiguous between the two. This ambiguity is a potential reason for the observed discrepancy, as speakers use the ambiguous order in their production, but, as comprehenders, they dislike it, as they prefer unambiguous messages. More investigation is needed to determine the exact cause of this discrepancy.

6.2 The effect of animacy on word order and DO-IO as the underlying word order

Animacy is a central factor for the research contained in this dissertation, and we can thus find effects of it in all the papers. The issue regarding the underlying word order was not in the direct scope of my studies, and it has not been explicitly tested for. However, some of the results that have surfaced are worth discussing, especially in relation to the animacy factor. Based on the results of the AJT outlined in the previous section, it seems that, when animacy is controlled for, DO-IO surfaces as the underlying object order. This makes animacy a crucial factor for word order influence as it is obviously a trigger for movement. The approach under which the underlying object order in ditransitives was revealed is similar to the principle used by Müller (1999) in section 2.3. According to Müller (1999, p. 728), the more contexts a construction can occur in, the less marked it is. In Croatian, DO-IO surfaces as the least marked structure, and can thus be considered the underlying one.

Adults prefer DO-IO orders in conditions of balanced animacy. Moreover, from Paper 1, we can see that they are sensitive to the very fine distinctions of animacy, as they

respond differently depending on the way in which animacy was balanced. The participants provided different levels of acceptability to the available word orders when the referents were both inanimate or both humans. The difference in the judgments consisted in a stronger DO-IO preference with both animates, with the exception of the IO-given and both animate examples, which had an IVD preference. In the condition with both inanimate, the preference for DO-IO was less pronounced, but also less variable, as the contexts with no given objects and with the given IO displayed roughly the same average judgment. This indicates that the speakers are sensitive to the very fine distinction of how animacy is balanced. Specifically, note the examples presented in (27): example (27a) represents a condition with two inanimate objects (IO=silk dress, DO=dry cleaner) and example (27b) represents the condition with two animate objects (IO=principal, DO=student).

(27) a. Context:

Mrzim   kad   prljam   stvari.   Opet   moram…
hate-1ST.SG when dirty-1ST.SG things-ACC   again   must-1ST.SG
"I hate it when I dirty my things. Once again, I have to…"

VID: *odnijeti   kemijskoj   čistionici   svoju   svilenu haljinu*
bring-INF   chemical-DAT   cleaner-DAT   my-REFL.ACC   silk-ACC   dress-ACC

IVD: *kemijskoj   čistionici   odnijeti   svoju   svilenu haljinu*
chemical-DAT   cleaner-DAT   bring-INF   my-REFL.ACC   silk-ACC   dress-ACC

VDI: *odnijeti   svoju   svilenu haljinu   kemijskoj   čistionici.*
bring-INF   my-REFL.ACC   silk-ACC dress-ACC   chemical-DAT   cleaner-DAT

DVI: *svoju   svilenu haljinu   odnijeti   kemijskoj   čistionici.*
my-REFL.ACC   silk-ACC dress-ACC   bring-INF   chemical-DAT   cleaner-DAT

"…bring my silk dress to the dry cleaner's."

b. Context:

Danas je   učiteljica   bila   jako   nervozna.
Today is-AUX teacher-NOM   was   very   nervous

Zato   je   bez   razloga…

| because | | is-AUX | without | reason-GEN |

"Today, the teacher was very nervous. That's why, for no reason…"

| VID: | *poslala* | *ravnatelju* | *učenika.* |
| | sent-3RD.SG | principal-DAT | pupil-ACC |

VID: *poslala* *ravnatelju* *učenika.*
sent-3RD.SG principal-DAT pupil-ACC

IVD: *ravnatelju* *poslala* *učenika.*
principal-DAT sent-3RD.SG pupil-ACC

VDI: *poslala* *učenika* *ravnatelju.*
sent-3RD.SG pupil-ACC principal-DAT

DVI: *učenika* *poslala ravnatelju.*
pupil-ACC sent-3RD.SG principal-DAT

"…she sent a pupil to the principal."

The condition with two inanimate objects (27a) is not as balanced as the condition with two human objects (27b). First of all, the recipient in the former can be interpreted as a goal, and it is difficult to find a recipient that is truly inanimate but is not a location. Thus, the IO in (27a) can be either interpreted as a location or as the people at the dry cleaner's. Example (27b) truly has the two objects at the same level of the animacy scale; even if the principal could be interpreted as a location as well, the preference for DO-IO surfaces more clearly.

The relevance of animacy is confirmed by the results from the elicitation task in Paper 3, where the adult participants used the two orders in an equal proportion in the prototypical animacy condition, but, when the animacy was balanced, produced DO-IO at ceiling level.

The Croatian result is in line with the findings obtained by Røreng (2011) for German and Titov (2017) for Russian (outlined in section 2.3).

Thus, animacy seems to be a strong trigger of movement as it influences word order quite strongly in the adult language: there is a difference in judgment depending on whether the animacy is prototypical or balanced. Another indication for animacy as a trigger to movement is that the majority of the IO-DO productions from naturalistic data can be explained through the animacy of the IO. In the next section, I discuss the effect that it has

on child language, and how the two groups differ with regard to their sensitivity to it and their use of DO-IO.

6.3 The effect of animacy on child language

Here, I discuss the effect that animacy has on word order in child language, touching upon their acquisition of the underlying word order. Based on previous research, I have predicted that children should be more sensitive to animacy than adults are; this was confirmed by my findings, but a more in-depth discussion is warranted.

I will also claim that animacy is the cause of the apparent preference that children have for IO-DO. Previous studies, like Mykhaylyk et al. (2013) for Russian and Ukrainian and Höhle et al. (2014) for German, have found a preference for IO-DO in children's productions. A higher usage of IO-DO was also found in my studies: in the naturalistic data (Paper 2), in the elicitation task in the study on the DT (Paper 4), and in the prototypical animacy condition of the elicitation task in Paper 3. What all of these studies have in common is the prototypical animacy condition, which is unbalanced for animacy as the IO is animate but the DO is not.

We can see that the preference for IO-DO changes significantly when animacy is balanced. The study in Paper 3 provides a condition with balanced animacy (both animate), in which children use the DO-IO in higher proportions than the IO-DO. In the prototypical animacy condition, the word order distribution amounts to 73% in favour of IO-DO, while, when both IO and DO are animate, the use of this word order is only 48% [17]. This difference is statistically significant at p<0.001. If the children's preference for IO-DO in the unbalanced animacy condition was not due to the influence of animacy, children should exhibit a preference for the same object order in the task with balanced animacy. IO-DO should thus be preferred, both in the prototypical condition and in the balanced animacy

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[17] The values given here are the average of the percentiles across the givenness conditions; for more detailed data and statistics see Paper 3.

condition. Accordingly, children have started to acquire that DO-IO is used in balanced conditions, but are not yet adult-like.

Hence, animacy is the cause of the apparent preference that children have for IO-DO in both naturalistic and experimental data seen so far: naturalistic data usually has an imbalance of animacy, and the result is a high proportion of IO-DO. The studies mentioned earlier only tested conditions in which only the IO was animate, and this has thus lead to the conclusion that IO-DO is the preferred word order.

In light of my data, it would seem that the studies that claim to have found a preference for IO-DO in child language are more likely to have found an animacy-first effect. The preference for IO-DO is guided by a combination of the children's tendency to place animate objects in front of inanimate ones, and the fact that the recipient is highly likely to be animate, while the theme is not. From the results obtained by Paper 3, we can see that the children do not have a general preference for IO-DO, as previously believed. They are sensitive to animacy, and disregard the IO-DO order when animacy is balanced.

The results from Paper 3 also indicate that children are more sensitive to animacy than adults are, in agreement with Snyder's (2003) finding. This surfaces in relation to the fact that children are not adult-like with regard to the use of DO-IO in conditions of balanced animacy (the use of DO-IO is still significantly lower than in the adults). Thus, the different proportion of the responses in the two animacy conditions must be mostly animacy-driven, and children rely on this factor more than adults. Unfortunately, the children I have tested are too close in age and do not show different results based on age.

The fact that children rely more on animacy than adults is indicated also by the results obtained in Paper 4. This paper did not test animacy explicitly (it did not offer conditions other than the prototypical one), but it provides additional insight into the fact that children favour the IO-DO order in their responses. More precisely, the distribution of the two word orders in the baseline condition (neither object is the discourse topic) in the elicitation task in Paper 4 is the same as the average distribution of word order in the prototypical condition (of all the givenness conditions) in Paper 3: 72% IO-DO and 23% DO-IO (the remaining examples are omissions) in Paper 4. Recall that the average of the productions in Paper 3 was 73% and 27% in favour of the IO-DO.

The main finding with regard to animacy is that it shapes naturalistic data so heavily that it has obscured what seems to be the underlying object order (Paper 2). It is also a factor taken for granted, and it has not explicitly been taken into consideration by a majority of the research on ditransitive structures. Studies that only take spontaneous data into account, like corpora, will very likely face the same problems as the DODB, more specifically, an abundance of prototypical animacy. Even for the English dative alternation, the PD was claimed to be more contextually applicable, although Bresnan (2007) found that the DOD is more attested in corpora and claimed that this is caused by the animacy of the recipient. My findings suggest that animacy should more often be accounted for. Consequently, none of the studies referred to in section 3.2.1 (on the acquisition of givenness) had balanced animacy, and, in my opinion, this might have interfered with the findings regarding the preferred word order.

Thus, in light of the effect of animacy and the seeming preference of IO-DO found in Croatian child language, it is natural to return to the discussion from section 3.2.1, regarding the reason why German, Russian, and Ukrainian children seem to prefer IO-DO. In languages such as English, the choice between PD and DOD as alternating structures is not only context-bound. The DOD has been found to be more difficult to comprehend for the children (Cook, 1975), and also for the adults when presented in a new>given order (Brown et al., 2012; Clifton & Frazier, 2004; Kizach & Balling, 2013). Kizach and Balling (2013) claim that this is due to the complexity of the DOD. Consequently, animacy plays a less important role when it comes to the choice of word order in English. The reason for this might be that the word order favoured by animacy-first in the prototypical condition is DOD, but its complexity interferes in the word order choice. In the case of German and Russian, IO-DO and DO-IO have not been reported as being different when it comes to complexity, and animacy seems to plays a bigger role in object order choice. In these languages, the thematic roles are marked at all times on the objects through case. Thus, the different tendencies are dependent on animacy and complexity. in the languages that diplay an alternation between PD and DOD, the DOD (IO-DO order) is more complex due to its neutral alignment. In the languages that use case, the marking for the thematic role is available at all times and thus animacy can surface as a strong trigger for movement. Therefore, in a prototypical setting (recall that the studies did not balance animacy),

children that are acquiring a case-marking language will prefer IO-DO due to animacy-first, while children acquiring languages with dative alternation will prefer PD, because it is the less complex structure.

According to Snyder (2003), children were found to become less attentive to animacy as other factors begun influencing their word order choice. Givenness is one of these factors, and, in Snyder's corpus, children started paying attention to it around age four. The following section outlines the main findings regarding givenness in my own research.

6.4 The effects of givenness on word order and referring expressions in ditransitive structures

The effect of givenness on ditransitive structures is less clear-cut than the effect of animacy. I discuss the findings and the possible reasons for the obtained results here. I investigated the effect of givenness in two ways: on global markers that operate at the sentence level (object order) and on local markers, which influences the choice of referring expressions. I first discuss the findings related to the global markers, as they are present in all the papers, while the findings for the effect on referring expressions are confined to the elicitation task that looked into the effects of Discourse Topic (Paper 4).

In the AJT, conducted on adults only, an effect of givenness is found within every animacy condition (*IO animate*, *neither animate*, *both animate*), which suggests that animacy establishes the main trend of object order preference, and the effect of givenness is seen within this trend. More precisely, in the examples where the IO is animate and the DO is not, IO-DO orders are generally preferred, but the preference varies according to whether the IO, the DO, or neither object is given. The givenness effect is best observed in the prototypical animacy condition, and when both objects are animate. The AJT also tested the effect of focus, formulated as an explicit question: the referent that was being asked about was considered focused. A third of the test conditions had focus as a factor. An example of focused IO and given DO (prototypical animacy) is presented in (28).

(28) Context:

Kome	češ	pokloniti	ovu	šalicu?
whom-DAT	will-AUX	gift-2ND.SG	this-ACC	cup-ACC

"Who will you give this cup as a present to?"

VID:	Poklonit	ću	svome	ujaku	tu	šalicu
	gift-1ST.SG	will-AUX	my-REFL.DAT	uncle-DAT	that-ACC	cup-ACC

IVD:	Svome	ujaku	ću	poklonit	tu	šalicu.
	my-REFL.DAT	uncle-DAT	will-AUX	gift-1ST.SG	that-ACC	cup-ACC

VDI:	Poklonit	ću	tu	šalicu	svome	ujaku.
	gift-1ST.SG	will-AUX	that-ACC	cup-ACC	my-REFL.DAT	uncle-DAT

DVI:	Tu	šalicu	ću	poklonit	svome	ujaku.
	that-ACC	cup-ACC	will-AUX	gift-1ST.SG	my-REFL.DAT	uncle-DAT

"I will give this cup to my uncle."

Since in the AJT, the given and focused object were in complementary distribution, the focused object strengthened the effect of new information, and consequently the participants had a strong preference for having the given object first and the focused object last. Thus, having also focus as a trigger for movement made the speakers' preference much clearer. Within the focus conditions, the effect of animacy was only observed when neither object was in focus. Overall, the results from the AJT reveal that Croatian (adult) speakers are attentive to givenness, but it seems to be a weaker factor than animacy. Unless also focus is involved. Since we did not have examples with only focus but no givenness (all new but an argument also focused), it is hard to say whether the fact that focus seems to be a stronger factor than animacy is caused by focus only or by the combination of focus and givenness.

The corpus data (Paper 2) did not reflect the result obtained by the AJT, mostly because the data was uniform and there were few relevant contexts where only one of the

object referents was given. However, the corpus data revealed the possibility that children and adults behave differently: children had instances (n=2) of new>given, while adults produced only the given>new orders. However, the two occurrences in question have DO-IO order which could entail that the givenness trigger is not strong enough so they produce the underlying word order, but it does not explain why the animacy of the IO does not trigger movement in these two cases, as it is obvious that it usually does. Of course, no strong conclusions can be made based on the basis of only two occurrences. However, this observation is supported by the fact that children show a tendency for producing new>given orders in the elicitation task in Paper 3, while adults do not. This signals that children and adults behave differently with regard to givenness and word order.

Moving on to the elicitation tasks, in Paper 3 I tested four conditions of givenness: *nothing given* (all new), *DO given*, *IO given*, *all given*. The first and the last conditions were considered the baseline, while the conditions with one given object were the target conditions. An effect of givenness was found only in the *DO given* condition, in both adults and children. However, adults and children behave differently in this condition (with prototypical animacy), as the former increase their productions of DO-IO, as expected, while children produce fewer in comparison to the responses they give in the other conditions, thus revealing a tendency of new>given order. Recall that the IO was animate and the DO was given, which leads to the two factors tested (animate-first and given>new) having opposite effects; this can explain the special status of the *DO-given* condition for the child data. However, the effect that the givenness of the DO has on the production of object order in the child data changes when animacy is balanced. In these conditions, children increase the productions of the DO-IO order as compared to the other conditions, which is exactly what the adults did in the prototypical condition with respect to the given DO. Unfortunately, we cannot compare the effect of givenness for children and adults, as adults produced only DO-IO constructions when animacy was balanced, with no regards to givenness. The reason for this lack of givenness marking is possibly task-related and discussed in more detail in Paper 3.

The given DO thus seems to be a stronger trigger for movement than the given IO: the *DO-given* condition differed from the baseline, while the *IO-given* condition did not. The reason for this might be that the IO has a constant trigger (animacy) and compared to

that, the trigger that givenness provides is too weak. Nevertheless, my results cannot confirm this, thus the reasons behind givenness triggering movement differently when it is a factor of the DO or the IO remain in need of a more thorough investigation.

An effect of givenness (discourse topic) has been found in adults in the elicitation task in Paper 4. The effect consists of the participants using more IO-DO compared to the baseline when the IO is the DT, and more DO-IO with respect to the baseline when the DO is the DT. The distribution of object order in all three conditions (baseline and the two targets) is statistically significant. This entails that adults are attentive to givenness and it is possible that it was not set up as a strong enough trigger in the task reported in Paper 3. No effect on object order was found in the children's responses, where the object order was equally distributed in favour of the IO-DO in both target conditions. However, there was a noticeable increase of object omission in the two target conditions, with the omitted argument typically being the discourse topic. This brings us to the local effects of givenness in terms of the choice of referring expression, as an omission can be considered an intersection of global and local markings.

For the discussion of local markers, I focus only on the results from Paper 4, as it also tested the use of referring expressions. The use of DT proved to be quite successful, as it yielded an effect of givenness/DT on object order in the adults, unlike when givenness was tested only in terms of previous mention (Paper 3). As already discussed in the background section, given arguments and topics do not have a one-to-one correspondence, but topics are given even though they are not necessarily the only argument that is given (Reinhart, 1981).

The task revealed an effect of givenness on the use of referring expressions in both child and adult data, as the given element was more likely to be reduced, i.e. omitted or expressed with a clitic. The use of pronouns was extremely rare, confined to a few productions in the child data, but not in the adult data. We can thus define three types of RE in Croatian: full NP, clitic, and omission. We also found that the use of RE is related to argument type: subjects are typically omitted when they are the DT (there is no nominative clitic), while IOs are mostly expressed as a clitic or omitted. This was also observed in the corpus data (Paper 2). However, children do not cliticize the DO, while adults do it 17% of the time when it is the DT. Thus, the adults use three types of REs for

both DOs and IOs (NP, clitic, null), while children use these three types for the IO (NP, clitic, null) but only two of them (NP and null) for the DO and the subject. The results reveal that, overall, children use more NPs than adults, which is in accordance with what most of the studies outlined in the background (section 3.3.1) report with regard to under- and over-specification. Thus, Croatian children tend to be over-specific as well.

The results of this study show that children are attentive to givenness, but they express it more consistently with REs. This entails that the marking of givenness starts from a local level, and then develops as the children start applying givenness to the global level at a later stage. Unfortunately, none of the studies in this dissertation show when givenness marking emerges at a global level. For this, older children need to be tested.

With regard to omissions, which can be considered an intersection between global and local markers, children exhibit sensitivity to givenness in their use of omissions, as they do not omit new objects. This effect of omissions has also been found in other studies that aimed to test the effect of givenness on word order (Anderssen et al., 2014; Mykhaylyk et al., 2013), but these studies found a clear effect of givenness on the omissions. In addition, my research also finds that the children are cautious with how they use their REs, exhibiting a tendency be over-specific in their use of nominal referents.

7 Open questions and further research

The research reported on in this dissertation makes a contribution to the on-going discussion of the use and the acquisition of ditransitive structures. Based on the results reported here, we now have a clearer understanding of what the underlying word order in ditransitives might be in Croatian, and how these structures are affected by animacy and givenness in both child and adult language. Nevertheless, many questions still remain, opening up interesting possibilities for future research.

The data I have presented points strongly in the direction of DO-IO being the underlying order of the two objects, but more evidence is needed in order to establish this with full certainty. For example, structures other than the Accusative/Dative ditransitives could   be   investigated   such   as   the   secundative   structures   which   have

Accusative/Instrumental markings (section 2.4), and also structures of caused motion (Levin, 2008) that include a PP for marking the recipient/goal. By investigating the preferred orders in these structures with and without factors that trigger movement, we could establish with more certainty what the underlying order is.

All the studies show a clear effect of animacy on object order, but a bigger data set—containing more verbs and/or novel verbs, and tested in both prototypical and balanced conditions of animacy—would provide a deeper understanding of what guides the children's attentiveness to animacy such as the verb-type (Levin, 2008), or the type of balance (animate-animate vs. inanimate-inanimate). Examples of the former were observed in the AJT carried out with adults only, where the contrast between the conditions where both arguments were either animate or inanimate was found to be influential. Also, by testing older children, we could observe how the attentiveness to animacy changes until it reaches the target adult level. Furthermore, testing ditransitive structures with balanced animacy in other languages for which it has been claimed children have a IO-DO preference could reveal the true nature of the animacy effect cross-linguistically.

With regard to givenness, I have found that Croatian children mark givenness with local marking and not global marking. Increasing the age span of the children could reveal when exactly the children start using word order to mark givenness, and whether that affects the over-specification of RE that we see in Paper 4. However, it also seems that givenness is a stronger trigger when it is a factor of the DO than of the IO. The research in this dissertation is unfortunately unable to answer this question, but it is an interesting observation and further research can elucidate why this happens.

8   Conclusions

The main finding of this study is that the importance of animacy on the word order of ditransitive structures may have been underestimated. Animacy is a factor that is always at play in these structures, but rarely explicitly grammaticalized, and hence paid very little attention to. However, as all of my studies show, it plays a major role for every ordering choice in ditransitives. Children pay more attention to animacy, and thus behave

significantly different than adults in their word order choices. Children also have less experience with language and the world, and thus have had less exposure to the conditions necessary for producing DO-IO. Nevertheless, the children have started acquiring this and use the two object orders in different proportions based on the animacy condition. This was illustrated by the children's responses in Paper 3, when the DO-IO was predominantly used in the condition of balanced animacy. My results show how strongly animacy shapes the naturalistic data of ditransitive structures, but also how exposure to the predominant IO-DO order does not alter the preference for DO-IO when the triggers of movement (mostly animacy) are absent. Speakers are very attentive to animacy, but are also quick to disregard the IO-DO order once animacy is no longer a factor.

Thus, this set of studies also indicates that DO-IO is the underlying word order for Croatian ditransitives. I conclude this based on the fact that it surfaces when there are no factors that trigger movement of the IO across the DO. As seen in the papers of this dissertation (see Discussion), but also due to the fact that most of the IO-DO occurrences can be explained with reference to unbalanced animacy. The status of DO–IO as the underlying word order is in line with the results of previous research: Røreng (2011) for German and Titov (2017) for Russian claim that DO-IO is the underlying order due to its wide contextual applicability. In a study of German naturalistic data, Røreng (2011) has also found a predominance of IO-DO, but nevertheless has also found that the occurrences that are absent from triggers (animacy and focus) have the DO-IO order. Thus, she concludes that DO-IO is the underlying order. The conclusions regarding underlying word order and animacy are closely related, since when the animacy values are manipulated, we can see both how animacy is shaping word order, and how the speakers' preferences clearly change when it is balanced.

The effect of givenness was observed at a global and local level. At a global level, it had a stronger effect on adults than on children: the adults had a clear preference for given>new, while children also produced the opposite order. Givenness had a clearer effect at a local level for the children; Paper 4 showed that the effect of givenness is expressed through the choice of referring expression, rather than object order alternation. Thus, the data presented here indicate that givenness marking starts at a local level, that is, expressing

a given argument with a reduced form, and at a later stage, not revealed in the current studies, it is applied to a more global level that consists of reordering the arguments.

References

Anagnostopoulou, E. (2008). Notes on the Person Case Constraint in Germanic (with special reference to German). *Agreement restrictions, 15*, 15.

Anderssen, M., Rodina, Y., Mykhaylyk, R., & Fikkert, P. (2014). The acquisition of the dative alternation in Norwegian. *Language Acquisition, 21*(1), 72-102.

Arnold, J. (1999). Marking salience: The similarity of topic and focus. *Unpublished manuscript, University of Pennsylvania*.

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

Artstein, R. (1999). *Person, animacy and null subjects.* Paper presented at the Proceedings of Console VII, SOLE, Leiden.

Bailyn, J. F. (2010). *What's inside VP? New (and old) evidence from Russian.* Paper presented at the Formal Approaches to Slavic Linguistics.

Baker, M. C. (1988). Incorporation: A theory of grammatical function changing.

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

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

Bresnan, J. (2007). Is syntactic knowledge probabilistic? Experiments with the English dative alternation. *Roots: Linguistics in search of its evidential base*, 75-96.

Brown, M., Savova, V., & Gibson, E. (2012). Syntax encodes information structure: Evidence from on-line reading comprehension. *Journal of Memory and Language, 66*(1), 194-209. doi:http://dx.doi.org/10.1016/j.jml.2011.08.006

Browne, W. (1993). Serbo-Croat. The Slavonic Languages, ed. by Bernard Comrie and Greville Corbett., 306-387: New York: Routledge.

Campbell, A. L., Brooks, P., & Tomasello, M. (2000). Factors Affecting Young Children's Use of Pronouns as Referring Expressions. *Journal of Speech, Language, and Hearing Research, 43*(6), 1337-1349.

Choi, H.-W. (1996). Optimizing Structure in Context: Scrambling and Information Structure. doi:http://dx.doi.org/doi:10.7282/T3WH2NX2

Clark, H. H., & Haviland, S. E. (1977). Comprehension and the given-new contract. *Discourse production and comprehension. Discourse processes: Advances in research and theory, 1*, 1-40.

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

Collins, P. (1995). The indirect object construction in English: An informational approach. *Linguistics, 33*(1), 35-50.

Cook, V. J. (1975). A note on indirect objects. *Journal of Child Language, 3*(3), 435-437. doi:10.1017/S0305000900007315

Dahl, O., & Fraurud, K. (1996). Animacy in grammar and discourse. *Pragmatics and Beyond New Series*, 47-64.

De Cat, C. (2003). *Syntactic manifestations of very early pragmatic competence.* Paper presented at the Proceedings of the 27th Annual Boston University Conference on Language Development.

De Cat, C. (2009). Experimental Evidence for Preschoolers' Mastery of "Topic". *Language Acquisition, 16*(4), 224-239. doi:10.1080/10489220903190612

de Marneffe, M.-C., Grimm, Scott, Arnon, Inbal, Kirby, Susannah, and Bresnan, Joan (2012). A statistical model of the gramamtical choices in child production dative sentences. *Language and Cognitive Processes, 27*(1), 86.

Demuth, K., Malillo, M., Francina, M., & Christopher, O. (2005). Learning Animacy Hierarchy Effects in Sesotho Double Object Applicatives. *Language, 81*(2), 421-447.

Den Dikken, M. (1995). *Particles: On the syntax of verb-particle, triadic, and causative constructions*: Oxford University Press on Demand.

Drenhaus, H., & Féry, C. (2008). Animacy and child grammar: An OT account. *Lingua, 118*(2), 222-244.

Dyakonova, M. (2007). Russian double object constructions. *ACLC (Amsterdam Center for Language and Communication) Working Papers, 2*(1), 3-30.

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

Firbas, J. (1971). On the concept of communicative dynamism in the theory of functional sentence perspective.

Fukumura, K., van Gompel, R. P. G., & Pickering, M. J. (2010). The use of visual context during the production of referring expressions. *The Quarterly Journal of Experimental Psychology, 63*(9), 1700-1715. doi:10.1080/17470210903490969

Gennari, S. P., Mirković, J., & MacDonald, M. C. (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

Gordishevsky, G., & Avrutin, S. (2004). Optional omissions in an optionally null subject language. *LOT Occasional Series, 3*, 187-198.

Gračanin-Yuksek. (2006). *Double Object Construction in Croatian: Arguments against Appl0.* Paper presented at the Formal Approaches to Slavic Linguistics 15: The Toronto Meeting, Toronto.

Grzegorek, M. (1984). Thematization in English and Polish. A study in word order. *Uniwersytet Imienia Adama Mickiewicza w Poznaniu. Seria Filologia Angielska Poznan*(18), 1-148.

Gundel, J., & Johnson, K. (2013). Children's use of referring expressions in spontaneous discourse: Implications for theory of mind development. *Journal of Pragmatics, 56*, 43-57. doi:http://dx.doi.org/10.1016/j.pragma.2013.04.003

Gundel, J. K. (1988). Universals of topic-comment structure. In M. M. Hammond, Edith; and Wirth, Jessica (Ed.), *Studies in Syntactic Typology*. Amsterdam/Philadelphia: John Benjamins Publishing COmpany.

Gundel, J. K. (1999). On different kinds of focus. *Focus: Linguistic, cognitive, and computational perspectives*, 293-305.

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

Haider, H., & Rosengren, I. (2003). Scrambling: Nontriggered Chain Formation in OV Languages. *Journal of Germanic Linguistics, 15*(3), 203-267. doi:10.1017/S1470542703000291

Hajičová, E. (1994). Topic/focus and related research. *The Prague School of structural and functional linguistics*, 245-275.

Haspelmath, M. (2015). Ditransitive constructions. *Annu. Rev. Linguist., 1*(1), 19-41.

Hickmann, M., Hendriks, H., Roland, F., & Liang, J. (1996). The marking of new information in children's narratives: a comparison of English, French, German and Mandarin Chinese*. *Journal of Child Language, 23*(3), 591-619. doi:10.1017/S0305000900008965

Höhle, B., Hörnig, R., Weskott, T., Knauf, S., & Krüger, A. (2014). Effects of focus and definiteness on children's word order: evidence from German five-year-olds' reproductions of double object constructions. *Journal of Child Language, 41*(4), 780-810. doi:10.1017/S0305000913000196

Hovav, M. R., & Levin, B. (2008). The English dative alternation: The case for verb sensitivity. *Journal of Linguistics, 44*(1), 129-167. doi:10.1017/S0022226707004975

Hughes, M. E., & Allen, S. E. (2013). The effect of individual discourse-pragmatic features on referential choice in child English. *Journal of Pragmatics, 56*, 15-30.

Kallestinova, E. D. (2007). Aspects of word order in Russian. *Theses and Dissertations*, 165.

Kempen, G., & Harbusch, K. (2004). A corpus study into word order variation in German subordinate clauses: Animacy affects linearization independently of grammatical function assignment. *TRENDS IN LINGUISTICS STUDIES AND MONOGRAPHS, 157*, 173-182.

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

Kizach, J., & Mathiasen, T. (2013). The dative alternation in Danish and Polish–A learners perspective. *Poznań Studies in Contemporary Linguistics PSiCL, 49*, 487-507.

Kovačević, M. (2004). *Croatian Kovacevic Coprus* [Corpora].

Kučerová, I. (2007). *The syntax of givenness*: MIT.

Kučerová, I. (2012). Grammatical marking of givenness. *Natural language semantics, 20*(1), 1-30.

Kuvač Kraljević, J., Hržica, Gordana. (2016). CROATIAN ADULT SPOKEN LANGUAGE CORPUS (HrAL). . *FLUMINENSIA : časopis za filološka istraživanja,, 28*(2), 15.

Larson, R. K. (1988). On the Double Object Construction. *Linguistic Inquiry, 19*(3), 335-391.

Lempert, H. (1989). Animacy constraints on preschool children's acquisition of syntax. *Child Development*, 237-245.

Lenerz, J. (1977). *Zur Abfolge nominaler Satzglieder im Deutschen* (Vol. 5): TBL-Verlag Narr.

Levin, B. (2008). Dative verbs A crosslinguistic perspective. *Lingvisticæ Investigationes, 31*(2), 285-312.

Lyons, C. (1999). *Definiteness*: Cambridge University Press.

MacWhinney, B. (2000). *The CHILDES project: The database* (Vol. 2): Psychology Press.

Malchukov, A., Haspelmath, M., & Comrie, B. (2010). Ditransitive constructions: a typological overview. *Studies in ditransitive constructions: A comparative handbook*, 1-64.

Marantz, A. (1993). Implications of asymmetries in double object constructions. *Theoretical aspects of Bantu grammar, 1*, 113-151.

Matthews, D., Lieven, E., Theakston, A., & Tomasello, M. (2006). The effect of perceptual availability and prior discourse on young children's use of referring expressions. *Applied Psycholinguistics, 27*(03), 403-422.

McDonald, J. L., Bock, K., & Kelly, M. H. (1993). Word and World Order: Semantic, Phonological, and Metrical Determinants of Serial Position. *Cognitive Psychology, 25*(2), 188-230. doi:http://dx.doi.org/10.1006/cogp.1993.1005

Meinunger, A. (2000). *Syntactic aspects of topic and comment* (Vol. 38): John Benjamins Publishing.

Müller, G. (1999). Optimality, markedness, and word order in German. *Linguistics, 37*(5), 777-818.

Mykhaylyk, R., Rodina, Y., & Anderssen, M. (2013). Ditransitive constructions in Russian and Ukrainian: Effect of givenness on word order. *Lingua, 137*, 271-289.

Oehrle, R. T. (1976). *The grammatical status of the English dative alternation.* Massachusetts Institute of Technology.

Ortmann, A. (1998). The role of [±animate] in inflection. *Models of inflection, 388*, 60.

Orvig, A. S., Marcos, H., Morgenstern, A., Hassan, R., Leber-Marin, J., & Parès, J. (2010). Dialogical factors in toddlers' use of clitic pronouns. *First Language, 30*(3-4), 375-402. doi:doi:10.1177/0142723710379957

Prince, E. F. (1992). The ZPG letter: Subjects, definiteness, and information-status. *Discourse description: diverse analyses of a fund raising text*, 295-325.

Radić, T. (2016). *Population estimate of Republic of Croatia, 2015.* Zagreb: Croatian Bureau of Statistics.

Reinhart, T. (1981). Pragmatics and Linguistics: an analysis of Sentence Topics. *Philosophica, 27*.

Rescorla, L. A. (1981). Category development in early language. *Journal of Child Language, 8*(2), 225-238. doi:10.1017/S0305000900003160

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

Rozendaal, M., & Baker, A. (2010). The acquisition of reference: Pragmatic aspects and the influence of language input. *Journal of Pragmatics, 42*(7), 1866-1879. doi:http://dx.doi.org/10.1016/j.pragma.2009.05.013

Sauermann, A. (2016). *Impact of the type of referring expression on the acquisition of word order variation.* (Doctoral Thesis), Universität Potsdam, Potsdam.

Schaeffer, J. (1999). Articles in English child language. *LSA, Los Angeles*.

Schaeffer, J., & Matthewson, L. (2005). Grammar and Pragmatics in the Acquisition of Article Systems. *Natural Language & Linguistic Theory, 23*(1), 53-101. doi:10.1007/s11049-004-5540-1

Schütze, C. T. (1994). Serbo-Croatian Second Position Clitic Placement

and the Phonology-Syntax Interface*. *MIT Working Papers in Linguistics, 21*(Papers on morphology and Phonology), 101.

Siewierska, A. (1988). *Word order rules*: Routledge.

Siewierska, A. (1993). Syntactic weight vs information structure and word order variation in Polish. *Journal of Linguistics, 29*(2), 233-265. doi:10.1017/S0022226700000323

Siewierska, A., and Ludmila Uhlirova. (1998). An overview of word order in Slavic languages. In A. Siewierska (Ed.), *EMPIRICAL APPROACHES TO LANGUAGE TYPOLOGY* (Vol. 20, pp. 46). Berlin: Mouton de Gruyter.

Skopeteas, S., & Fanselow, G. (2010). Effects of givenness and constraints on free word order *Information Structure: Theoretical, Typological, and Experimental Perspectives*.

Snyder, K. (2003). *The relationship between *form and *function in ditransitive constructions.* (PhD), University of Pennsylvania. (3095944)

Snyder, W., & Stromswold, K. (1997). The Structure and Acquisition of English Dative Constructions. *Linguistic Inquiry, 28*(2), 281-317.

Stephens, N. (2015). Dative constructions and givenness in the speech of four-year-olds. *Linguistics, 53*(3), 405-442. doi:10.1515/ling-2015-0008

Sugisaki, K. (2007). Early acquisition of animacy agreement in Japanese. *Mie University*.

Tedeschi, R. (2008). Referring Expressions in Early Italian: A study on the use of lexical objects, pronouns and null objects in Italian pre-school children. *LOT Occasional Series, 8*, 201-216.

Titov, E. (2017). The canonical order fo Russian objects. *Linguistic Inquiry, to appear*.

Van Dijk, T. A. (1977). Sentence topic and discourse topic. *Papers in Slavic philology, 1*, 49-61.

Van Nice, K. Y., & Dietrich, R. (2003). Task sensitivity of animacy effects: Evidence from German picture descriptions. *Linguistics, 41*(5; ISSU 387), 825-850.

Velnić, M. (2014). *The Double Object Database -* http://linguistics-db.velnic.net:8080/user/login [Linguistic corpus].

Westergaard, M. R. (2003). Word order in wh-questions in a North Norwegian dialect: Some evidence from an acquisition study. *Nordic Journal of Linguistics, 26*(1), 81-109.

Westergaard, M. R. (2008). Verb movement and subject placement in the acquisition of word order. *Guijarro-Fuentes, P., MP Larrañaga and*.

Wittek, A., & Tomasello, M. (2005). Young children's sensitivity to listener knowledge and perceptual context in choosing referring expressions. *Applied Psycholinguistics, 26*(4), 541-558. doi:10.1017/S0142716405050290

Yamamoto, M. (1999). *Animacy and reference: A cognitive approach to corpus linguistics* (Vol. 46): John Benjamins Publishing.

Zovko- Dinković, I. (2007). Dative Alternation in Croatian. *SL, 63*, 65-83.