OPTIONAL SCRAMBLING
IN CHILD AND ADULT UKRAINIAN

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Abstract of the Dissertation

Optional object scrambling in child and adult Ukrainian

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This dissertation investigates *direct object scrambling* in Ukrainian. Examination of various syntactic structures has demonstrated that Ukrainian speakers observe semantic/pragmatic constraints on scrambling insofar as only partitive/definite objects are shifted. However, it appears that the syntactic movement is applied only optionally given that objects can remain *in situ* even when appropriate semantic/pragmatic conditions for movement are met.

This research investigates the hypothesis that what underlies scrambling is an obligatory grammatical process, but one that may be expressed in at least one of two ways: by syntactic movement or by prosodic (re)contouring. Apparent 'optionality' of scrambling thus results from its simply being one of the means available to speakers for achieving the same end. This hypothesis is supported with novel data on scrambling and prosody collected in three experiments: elicited production of scrambled structures by children and adults, elicited production of prosodic contours by adults, and prosodic analysis of various syntactic structures by children.

The dissertation contributes to modern theoretical linguistics by developing and testing an innovative approach to scrambling, an area of intense investigation in the field for over 40 years. It also constitutes the first comprehensive study in a generative framework focusing on Ukrainian syntax and semantics. In the area of language acquisition, it provides new experimental evidence probing main factors contributing to the acquisition of word order in Ukrainian.

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List of Abbreviations

ACC - accusative case
ADJ – adjective
AUX - auxiliary
DAT - dative case
FEM - feminine gender
FUT - future tense
GEN - genitive case
IMP - imperfective
INF – infinitive
INST - instrumental case
M - masculine gender
NEG - negation
NEUT - neuter gender
NOM - nominative case
PART – particle
PAST - past tense
PERF - perfective
PL - plural
PR - present tense
PROG -progressive
Q-Part - question particle
REFL - reflexive
SG - singular
1, 2, 3 - person marker

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CHAPTER 1
INTRODUCTION

1.1. Optionality and Variability of Scrambling

This dissertation investigates the syntactic phenomenon of scrambling, which has been observed in a wide range of languages (Japanese, Russian, German, Dutch, Yiddish, Hindi, Hungarian, Selayarese, to name but a few). Despite the pervasiveness of this phenomenon and considerable interest of linguists in it, there nonetheless remain many unresolved issues concerning scrambling types, their main unifying features, and possible analyses.

The difficulties that investigators face arise both from the complexity and the heterogeneity of the phenomenon. Indeed, even the definition of scrambling raises issues. Originally, this term was assigned only to the stylistic reordering of words observed in languages like Latin (Ross, 1967). Later, it came to be applied to a much broader variety of word order permutations, such as 'Japanese' scrambling SOV -> OSV (Saito, 1992), 'Germanic' object shift over an adverb or negation (Grewendorf & Sternfeld, 1990), 'Slavic' scrambling SVO -> OVS or VSO (Bailyn, 1995), among others. Currently, it is often used to describe word order change in general (see overview in Thráinsson (2001)). In the latter extended use, "scrambling" reduces to a pre-theoretic term, one that does not imply a common syntactic analysis either cross-linguistically or language-internally.

Cross-linguistically, scrambling can involve different elements: negation, adverbs, verbs, objects or subjects; but even reordering of the same constituent (e.g., direct object) can generate various syntactic structures. As shown in

examples below, the direct object in various languages can be relocated to positions before negation (1), adverbs (2), or the subject (3).[1]

Icelandic (Thráinsson, 2001):

(1) Nemandinn las **bókina** ekki bókina.
student-the read book-the not
'The student didn't read the book.'

Dutch (De Hoop, 1992):

(2) …dat Tarzan **leeuwen** vaak leeuwen eet.
that Tarzan lions often eats
'…that Tarzan often eats lions.'

Hindi (Dayal, 2003):

(3) **kitaab** anu kitaab paRh rahii hai.
book Anu read-PROG-PR
'Anu is reading the book.'

Language-internally, scrambling can also produce several structures with different syntactic and semantic properties. For instance, Ukrainian exhibits considerable freedom in positioning sentence constituents, and it is not immediately evident whether we are dealing with the same phenomenon in (4-7), even though in all sentences the direct object appears in pre-verbal position.[2]

Ukrainian:

(4) **Cju** **kartu** **svitu** prynis odyn učen'.
this map.ACC world.GEN brought one student
'A student has brought this map of world'

[1] Hereafter, the direct object will be marked in **bold**, the constituent that it appears over (e.g., adverb or verb) will be underlined, and an element pronounced with a distinct intonation (focused/stressed) will be given in SMALL CAPITALS.

[2] Examples (1)-(7) are given only for illustration, and do not exemplify all types of scrambling cross-linguistically or language-internally. It should be also noted that the Ukrainian examples represent very common structures that are easily interpretable even without extensive context.

(5) Učora **meni** telefonuvala Olja. Ja **jiji** vže davno ne bačyv.
yesterday me.DAT call Olja. I her already long-time not see
'Yesterday, Olja called me. I haven't seen her for a while.'

(6) Dyvys': ja **tvij** **portret** namaljuvav.
look I your portrait.ACC drew
'Look! I drew your portrait.'

(7) **Novy** **sekretarku** vybyrano za konkursom.
new secretary.ACC was.chosen in competition
'The new secretary has been chosen from a number of candidates.'

Despite the multifaceted and perplexing nature of scrambling, this phenomenon as a whole still stands out comparing to other word order phenomena. Scrambling exhibits syntactic, semantic and prosodic properties that set it apart from other kinds of movement phenomena and give it particular interest.

Among syntactic properties, *optionality* and *variability* are among the most puzzling. Scrambling is usually optional (see e.g. de Hoop (2000); Miyagawa (1997 & 2003); Neeleman & Reinhart (1998); Saito (1985) on the issue).[3] This is unlike *wh*-movement, which, in a given language, is typically either required or forbidden. Scrambling also appears to target a variety of positions, depending on scrambling type. In Slavic languages, for instance, sentence structure allows a variety of potential landing sites admitting all six possible variants of major constituents: SVO, SOV, OVS, OSV, VSO, and VOS.[4] Again, this is unlike *wh*-

[3] Notice, however, that in this dissertation, optionality of scrambling is not taken for granted as the phenomenon under analysis does not completely coincide with the definition given in Zuckerman (2001: 30):

i) «Optionality: S and S' are optional structures if and only if :
   i. a specific numeration set n yields both S and S'
   ii. both S and S' converge at the interface
   iii. the derivations leading to S and S' yield identical LF representations."

Scrambled structures and the base structure from which they derive do not have identical semantic-pragmatic properties, and thus scrambling cannot be totally optional.

[4] Kallestinova (2007) shows, however, that Russian native speakers give strong preference to only three structures, i.e., SVO, SOV, and OVS, while other theoretically possible structures OSV, VSO, and VOS have a degraded status (see more in Chapter 3).

movement, which usually targets CP-spec, resulting in a structure like *wh*-Word S V (although some variations are also possible).

Semantically, scrambling appears to associate with a range of different *interpretive effects* including topicality, focus, giveness, aboutness, familiarity, definiteness, specificity, and partitivity (Bhatt, 1999; Bhatt & Anagnostopoulou, 1996; Chomsky, 2001; Dayal, 2003; De Hoop, 1992; Diesing & Jelenek, 1993, Enç, 1991; Karimi, 2003; Kim, 1993; Lee, 2004; Lee & Cho, 2003; Van Geenhoven, 1998, *inter alia*). Here, too, it diverges from other movement phenomena, e.g., *wh*-movement, which is chiefly associated with interrogative semantics, and from which other types of *wh*-interpretation (relativization) are historically derivative.

Prosody of scrambled structures also deserves special attention as it differs from the prosody of nonscrambled structures. For instance, the default prosodic realization of the direct object in its base position is usually described in terms of the Nuclear Stress (NS): NS falls on the object as the most embedded element (Cinque, 1993; see also Zubizarreta (1998) and many others for similar proposals). However, when the direct object occurs in a scrambled position, it might be either stressed (under contrastive focus) or destressed depending on the language or a type of scrambling (Büring, 2007; Reinhart, 2006; Selkirk, 1995; Vallduvi, 1992, *inter alia).* These intonational patterns are considerably more subtle than the prosodic realization of interrogative sentences.

Given the complex nature of scrambling, its syntactic analysis has posed a serious problem for linguists. Proposed analyses of scrambling have differed depending on the type of word order change, the theoretical framework, or the language under consideration. In the generative framework, scrambling has been analyzed as 'semantically-vacuous' word order rearrangement, as topic or focus movement, or as A- or A'-movement (Bailyn, 2001; Corver & van Riemsdijk, 1994; Diesing, 1992; Grewendorf & Sternfeld, 1990; Holmberg, 1999; Mahajan, 1991; Miyagawa, 2001; Saito, 1992 & 2003, among many others). Within Slavic linguistics, scrambling has been traditionally associated with discourse-related concepts of *Information Structure (IS)* and often viewed as a word order permutation at a post-syntactic level (see an extensive overview in Kallestinova (2007)). The theory of information structure at its core was advanced by functionalists from the Prague School (Adamec, 1966; Daneš, 1974; Firbas, 1992; Hajičová, 1974; Sgall, 1972, inter alia), who further developed ideas of discourse-word order relevance (*aktualni členeni*) offered by traditional grammarians (e.g., Mathesius, 1936 & 1939). The idea was that sentence structure represents information structure in that the elements known from the context precede the

elements which are new in the discourse. Sentence constituents, then, have been categorized as *old - new, theme – rheme* or *topic - focus* in subsequent literature.[5]

Several attempts have been made to integrate functional approaches with formal generative insights in investigations of variable word order. Two 'waves' of such studies based on Slavic data took place in 90s, when King (1993), Bailyn (1995), Kondrashova (1996) and Sekerina (1997) presented analyses of Russian word order; and more recently, when similar topics have been raised again in dissertations by Kallestinova (2007), Slioussar (2007) and Dyakonova (2009) on Russian and Kučerova (2007) on Czech. Most of these recent studies describe different types of syntactic structures as derived from the basic SVO word order via movement (but see Van Gelderen (2003) for a different approach). However, it appears to be extremely difficult to present a unified account of all of them or even generalize their properties language-internally.

Thus, scrambling is a puzzling phenomenon, which has been extensively investigated, but many questions regarding its nature remain to be unanswered. The general theoretical question addressed in this dissertation is one that has occupied linguists for more than 40 years: *How to account for scrambling?* The research strategy I employ to answer this question is to proceed by:

(8) a. narrowing the phenomenon examined to one particular scrambling type,
    b. expanding the data set to include experimental results from adult and child speech, and
    c. providing a unifying analysis of syntactic, semantic and prosodic properties of this type of scrambling.

[5] The *theme-rheme* dichotomy was developed and modified by a number of linguists such as Daneš (1964 and 1974), Firbas (1964), Adamec (1966). *Theme* was defined as known information in a given situation, and *rheme* represented new and informative part of a sentence. Another pair of terms which has been widely used in the literature is *topic-focus*. The term 'topic' means old information presented in a sentence, and it can be specified as contrastive topic, partial topic, or purely implicational topic (see e.g. Büring, 1999; Gundel, 1999; and others). The term *focus* has been often related to the discourse notion of rheme (Erteschik-Shir, 1997; Jackendoff, 1972; Lambrecht, 1994; Zubizarreta, 1998). However, for some authors focus is a primarily phonological phenomenon (e.g., E´. Kiss, 1998; Gussenhoven, 2006; Rochemont, 1998; Rooth, 1985 & 1992; Selkirk, 1984). Sometimes, the term *focus* is used only in the narrow phonological sense: to denote the material marked by the pitch accent(s) (see Steedman (2000) and Kawamura (2007) for further discussion).

1.2. Middle Object Scrambling as a Coherent Scrambling Type

This dissertation focuses specifically on one word order transformation schematized in (9) as placement of a direct object between the subject and the verb (or adverb).

(9) S O (Adv) V O

Given that this reordering occurs within clause boundaries, the term "*object shift"* could be used. However, this term is usually reserved for Scandinavian languages and has been used to refer to a process that is dependent on the position of the main verb: e.g., there is no object shift in constructions with periphrastic tenses or in embedded clauses (Holmberg, 1999). It is not evident, however, that there is such a restriction concerning verb raising and object scrambling in other languages, e.g., Slavic. Therefore, to avoid unjustified terminological associations, I hereafter use the term "*Middle Object Scrambling" (MOS),* which is defined as the movement of a direct object from its base position within the VP to a higher pre-verbal (*Middlefield*) landing site.[6]

Focus on this type of scrambling is justified given that the SOV structure is common in various languages, including Slavic, and shows distinctive syntactic and semantic properties.

1.2.1. Special status of SOV structure

Typologically, the SOV structure is one of the most prevalent. It is a base word order in a great many languages world-wide (e.g., in 69 out of the sample of 171 (Siewierska, 1997; see also Hawkins (1988) and others), and it is also known as a common alternative to the base word order (see e.g., Corver & van Riemsdijk (1994) for an overview). Many 'scrambling' languages do not allow movement to a high position (e.g., to TP-spec or CP-spec), but clause-internal NP or pronominal movement to "just out of" the vP is much more frequent, as summarized for Scandinavian and German/Dutch languages in Thráinsson (2001, 158). This holds for both SVO and SOV languages with the major

[6] Middlefield in Slavic languages (*Mittelfeld* in the grammatical tradition of Germanic languages) can be defined as the area between the T' and the lexical verb in v' (see e.g. Sturgeon (2006) on Czech).

difference that in SOV languages some landmarks of vP-edge are needed, i.e., adverbs or negation, to actually detect the object movement.

Slavic languages, which are usually considered to be head-initial SVO languages, also employ the SOV structure very frequently (see e.g. Kallestinova (2007) or Slioussar (2007) for experimental and corpus data from Russian, discussed in detail in Chapter 3). Noticing the great number of pre-verbal objects in available corpus data, Slioussar even suggested that colloquial Russian might be shifting towards a head-final OV language. The special status of SOV structure in Russian is also highlighted in Dyakonova (2009) and Van Gelderen (2003), who observe its puzzling properties. Van Gelderen wonders "why is it that SVO and SOV behave differently from the other orders", and suggests that SOV in Russian results from the same process as object shift/scrambling in Germanic languages. Dyakonova points out that although in general word order variability in Russian can be accounted for with rules of information structure, these rules seem to be violated in some cases (e.g., SOV is allowed in "all-new" contexts, or pronouns are always placed in an immediate pre-verbal position).

Nonetheless, the mentioned studies on Russian did not go far beyond the surface observation of the fact and did not provide a thorough analysis of SOV structure. In other Slavic languages, the 'middle' object movement has not received sufficient treatment, either, although it appears to be quite a coherent type of scrambling both syntactically and semantically.

1.2.2. Syntactic properties

Middle Object Scrambling (MOS) differs both from Long-Distance Scrambling (LDS) and from Short Object Scrambling (SOS). LDS is a syntactic movement out of the clause, resulting in an OSV structure with possible landing sites in CP-spec (or, alternatively, in TP-spec) (see e.g. Bailyn (2001), Corver & Riemsdijk (1994), Kitahara (1997) on languages like Russian, Hindi, Japanese and others). SOS, on the other hand, can be defined as a short, vP-internal, syntactic movement possibly found even in fixed-word-order languages like English (see e.g. Takano (1998) on object shift in ditransitive sentences).

Syntactic properties of MOS include clause-boundness of movement and a relatively limited choice of landing sites. Considering object scrambling in Germanic languages, Corver & van Riemsdijk (1997) define such a position in general terms: "the landing site is somewhere within what has been called *Mittelfeld* ('middlefield')". For instance, in Dutch, which exhibits mostly clause-bounded scrambling (e.g., SAdv/NegOV -> SOAdv/NegV), the moved object is

likely to land between the T' and the vP phrase, immediately to the left of a sentential adverb or negation (see further discussion in Thráinsson (2001)). Although in Slavic languages, non-clause-bounded (LDC) scrambling is also possible, the shorter syntactic movement SVO->SOV is likely to target positions similar to Germanic middlefield that could be marked with additional elements (e.g., adverbs), but does not require them.

In more recent studies, which assume that syntactic derivation occurs by phase, the object landing site is associated with a single syntactic position - roughly, the vP edge (as proposed in Chomsky (2001) for Scandinavian object shift, see also Mykhaylyk & Ko (2008) for Ukrainian)**.** Thus, we can pose more precise questions about the nature of the operation: Why the vP edge target? and What is the structure of attachment in this landing site? The investigation, then, is focused on a particular type of syntactic movement involving a limited number of implicated elements and landing sites.

1.2.3. Semantic/pragmatic properties

Middlefield area (or vP-edge in other terms) has been claimed to have certain interpretational correlates (e.g., Chomsky, 2001).[7] Particularly, in Germanic languages, it has been shown that object scrambling over an adverb or negation correlates with loss of nonspecific readings (De Hoop, 1992; Diesing, 1992 & 1997; Diesing & Jelenek, 1993 Van Geenhoven, 1998, *inter alia*). This strongly suggests that nonspecific direct objects *do not appear* at the vP-edge. However, there is still much controversy regarding i) semantics of objects that *appear* in scrambled position; ii) specificity as a 'triggering feature' or 'side effect' of movement; and iii) universality of interpretational properties of the vP-edge.

The semantics of scrambled objects has been variously analyzed and labeled as 'specific' (in the sense of Enç, 1991), 'referential' (as in Fodor & Sag, 1982), 'partitive' (as in Ko, Ionin, & Wexler, 2008), 'presuppositional' (Diesing, 1992), or 'definite' (De Hoop, 2003). Some of these terms will be repeatedly used in this dissertation and thus need to be defined.

The semantic features of definiteness and specificity have received closest attention in languages with articles. Since many languages (including English)

[7] The difference between semantics of other types of scrambling (LDS or SOS) and MOS will not be described here, but it is likely that LDS and MOS are associated with distinct properties. While both movements have some interpretational correlates that link them to the previous discourse, it seems that the LSD correlates primarily with information structure, topicality or aboutness, while MOS is associated with specificity, definiteness or familiarity (see more in Dyakonova (2009)).

base their article systems on the definiteness/indefiniteness distinction, the definition of definiteness seems to be well established.

(11) DP is *definite* when the speaker presupposes the existence of a unique individual in the set denoted by NP and assumes that the hearer shares this presupposition (based on Heim (1991) and Ionin (2003)).

The concept of specificity appears to be more difficult to categorize in semantic terms (although it is intuitively simple when described in pragmatic terms as 'speaker knowledge'). Based on recent advances in linguistic theory, it can be defined in two ways:

(12) a. *Specificity as Referentiality*: a DP is referential when a speaker intends to refer to an individual in the set denoted by NP and considers this individual to possess some noteworthy property (based on Fodor & Sag (1982) and Ionin (2003)).

b. *Specificity as Partitivity*: a DP is partitive when an individual in question is a part of a set introduced in previous discourse (based on Enç (1991), Diesing (1992), Ko, Ionin & Wexler (2008)).[8]

"Specificity" has been often used as a cover term in studies on scrambling. However, it seems that in some studies the two features defined in (12) either are not distinguished at all, or the term "specific" is used with the meaning of "partitive" and not "referential". To avoid any confusion, in this dissertation, I will operate with the terms 'definite' (as in (11)), 'specific' (as in (12a)), 'partitive' (as in (12b)) and combinations of them, e.g., definite specific, indefinite partitive, indefinite specific and indefinite nonspecific (see more in Chapters 2 and 3).

While it is known that indefinite nonspecific objects do not scramble, the state of art with the other semantic types is not as clear. Regrettably for linguists trying to rule out optional operations from the grammar, the syntactic movement of definite and/or specific objects has been shown to be optional in different languages (see Thráinsson (2001) for an overview). The direct object does not have to scramble to be interpreted as definite or specific; this reading is available

[8] Enç (1991) analyzes specificity essentially similarly to 'D[iscourse]-linking'(proposed by Pesetsky (1987)), namely as a reference to a previously mentioned set. Diesing, on the other hand, emphasizes identification of specificity with presuppositionality (implying that partitivity is its subtype).

both in a vP-edge position and *in situ*. This fact has received different accounts. For instance, de Hoop (2003: 202) explicitly states that scrambling in Dutch is not "interpretation-driven" or "triggered by anything", but when NP scramble, they must be of a certain type. This claim, however, does not contribute much to our understanding of optionality in scrambling, as the author simply asserts 'freedom' of word order variations without accounting for it. Dyakonova (2009), on the other hand, underlines that scrambling in Russian *is* triggered 'to encode referential giveness', but later admits that the same reading can be achieved without movement. The role of semantic features in optional scrambling, thus, is still a very intriguing issue that requires further research.

It is also remain unsettled whether the vP-edge has the same semantic properties cross-linguistically, i.e., whether the same semantic effects can be obtained in various free-word-order languages, particularly in Slavic. The role of specificity and definiteness in word order has been investigated in Russian (Avrutin & Brun, 2001; Brun, 2005; Dyakonova, 2004 & 2009), Serbo-Croatian (Ilić & Deen, 2004), Czech (Biskup, 2006), and Ukrainian (Mykhaylyk & Ko, 2008). However, the results are rather inconsistent with regard to the definition of involved semantic features and syntactic positions of a scrambled element. The present study will show which of previously mentioned features can be attributed to a particular type of syntactic movement – Middle Object Scrambling.

1.3. Prosody and Word Order

Limiting research to one type of scrambling allows us not only to narrow the focus of investigation, but also to examine various aspects of the structure in detail. Although scrambling is a word order phenomenon, and thus its syntactic properties are crucial for the analysis, semantic and prosodic properties should be considered as well. Prosodic correlates of the process are of particular importance in accounting for optionality of scrambling.

The interaction between prosody and word order has been of significant cross-linguistic interest in generative linguistics (Büring, 2007; Cinque, 1993; Reinhart, 2006; Selkirk, 1995; Vallduvi, 1992; Zubizarreta, 1998, *inter alia*). With regard to object scrambling in Germanic languages it has been claimed that this process is incompatible with focal stress, and that the object undergoes syntactic movement to escape the Nuclear Stress (see e.g. Grewendorf & Sternefeld (1990)

and others). However, it remains unclear whether the same is true for other languages exhibiting scrambling, particularly, for head-initial SVO languages.

In Slavic languages (until recently), the effects of prosody on word order permutations in general, and object scrambling in particular, have received limited attention. Although a number of studies have refered to the role of intonation, stress, or focusing on sentence interpretation, often times these claims were based on authors' intuition and not supported by experimental results. Recent advances in experimental methods have led to research in prosody based on solid empirical data (Féry, Paslawska & Fanselow, 2007; Zybatow & Mehlhorn, 2000; Alter, Mleniek & Richter, 2001; Arnaudova, 2001); nevertheless, studies directly addressing the correlation of scrambling and prosody in various Slavic languages are scarce.

One of the major questions addressed in this dissertation is whether prosody operates as an alternative to scrambling, or in other words whether the absence of scrambling in certain semantic contexts is represented by a distinct prosodic contour. The answer to this question will be provided through examination of Ukrainian scrambling.

1.4. Ukrainian: Key Data Source

1.4.1. Language facts

Ukrainian is characterized by a number of features which make it interesting for the study of scrambling. It is one of East Slavic languages, and thus has all advantages attributed to Slavic word order compared to Japanese or Germanic scrambling (see Sekerina (2003) for relevant discussion). Similarly to other East Slavic languages, Ukrainian exhibits considerable freedom of word order in its colloquial variant, allows unrestricted object movement with respect to the position of the verb, and does not require additional elements to detect object movement to Middlefield. In addition, Ukrainian offers some language-specific features which distinguish it from closely-related languages, e.g., it allows a distinct structure "Passive Accusative", frequently uses demonstrative/definite and indefinite pronouns and other lexical markers of NP semantics, and replaces Accusative with Genitive in both negative and affirmative constructions (see more in Chapter 2).

The crucial aspect of Ukrainian grammar relevant to this study is the interpretational consequences of the change from SVO to SOV word order, which are reminiscent of Germanic facts described above in 1.2.

In Ukrainian, the direct object can take different positions in the sentence, and since the base structure of the language is SVO (see discussion in Chapter 2), all other orders of constituents are considered derived. The direct object in a simple transitive SVO structure (as in (13)) can be interpreted in at least two ways: as some object unknown to the hearer or as an object specified by previous or following discourse.

(13) Taras čytaje **knyžku**.
Taras reads book.ACC
'Taras reads a/some/a certain/the book.'

When the direct object occurs before the verb in an SOV structure, the sentence might diverge in its interpretive possibilities from the basic order (assuming that everything else is kept constant).[9] Specifically, the scrambled sentence (14) could not be uttered by Ukrainian speakers intending to convey that 'Taras was reading some book, and that the speaker does not know (or does not care) which one; i.e., where what matters is that reading took place, and not what was read'.

(14) Taras **knyžku** čytaje.
Taras book.ACC reads
'Taras reads a certain/the book.'

Another property of Ukrainian that is also exhibited in many object-shift languages is pronominal scrambling: pronouns show a strong tendency to appear in a pre-verbal position, as in (15):

(15) Taras **jiji** čytaje.
Taras 3.SG.FEM.ACC reads
'Taras reads it (the book).'

[9] For now I assume that the structures in (14) has the most neutral prosodic realization with a sentence-final stress. Change in the prosody, addition of context or other elements (such as adverbs, negation or (in)definite pronouns) would make the sentence semantics more salient for interpretation, but at the same time these modifications might obscure the role of scrambling itself. See Chapters 2 and 4 for discussion.

Experimental results presented in Mykhaylyk & Ko (2008) have also suggested that Ukrainian possesses the semantic/pragmatic properties that others have attributed to object shift/scrambling. Crucially, they indicate that scrambling is optional, but not random, either in child or adult speech. The highest rates of scrambling were detected in definite and specific/partitive contexts; while the lowest rates were exhibited in indefinite nonspecific contexts. Essentially, these results constitute supportive evidence for the semantic functions of object scrambling in Ukrainian. In the current research, I will expand the empirical base by including more experimental data from Ukrainian.

1.4.2. Child and adult data

In addition to data from adult native speakers, typically examined in theoretical linguistics, data from children can also provide us with important clues to the analysis of scrambling. In the case of Ukrainian, scrambling is used mostly in a colloquial variant of the language, while formal instruction and prescriptive grammars do not treat this phenomenon directly. Furthermore, since the educational system promotes a standard form of the language, it ultimately limits the use of deviations from the basic syntactic structure. Adult speakers, then, try to produce 'correct' basic-word-order sentences when confronted with an experimental task. As several pilot experiments with adult native speakers have shown, the linguistic data collection in a controlled environment results in a limited set of scrambled structures (see also Kallestinova (2007) for a strong bias of Russian speakers to an SVO structure). On the other hand, analysis of the corpus data is also not satisfactory because of typical drawbacks of a study of spontaneous speech: there might be too many intervening factors, and a written version of the language usually differs from its colloquial version. Therefore, the strategy used in the current research is to conduct experiments with children, who are truly naïve with regard to the scientific goals of an experimenter. This allows us not only to enhance the adult data and provide evidence for theoretical claims, but also to investigate the developmental path in acquisition of scrambling.

1.4.2. Developmental path

Child language is interesting as reflection of the emerging grammar at a particular stage of its development, and as such it can be subject of an

independent acquisition study. Experimental data collected from 2-6-year-old child learners of Ukrainian could clarify previously reported inconsistencies regarding developmental path in the acquisition of scrambling.

Some previous studies have shown that children start using various structures in a target-like way from the beginning (Avrutin & Brun, 2001; Barbier, 2000; Kornfilt, 1994; Otsu, 1994; Penner, Tracy & Weissenborn, 2000). Others have suggested that children may start from one word order and acquire other permutations later (Bailyn, 1995; Clahsen, 1990; Hoekstra & Jorden, 1994; Schaeffer, 2000). Different potential causes of a non-target-like child grammar have been proposed in these studies. They ranged from children's cognitive immaturity to a lack of abstract features in their grammar, but pragmatic deficit has been one of the most commonly discussed.

More recent studies, however, suggest that optionality of syntactic movement is not directly related to a pragmatic deficit, and that children's problems with encoding old-new information might be exaggerated (Anderssen et al., 2010; De Cat, 2003 & 2009; Dyakonova, 2004; Gordishevsky & Avrutin, 2004; Ilic & Deen 2004; Westergaard, 2008). Although the authors account for the optionality of the process in different terms their findings suggest that the reason of child errors might be other than cognitive immaturity.

The current research will contribute to this discussion through analysis of acquisition of scrambling in Ukrainian. Specifically, I will consider several factors influencing development of scrambling and probe whether optionality, vP targeting, interpretive effects, context-sensitivity and sentential intonation have a maturational schedule. I believe that the nature of scrambling can be better understood by comparing two stages in language development (child and adult grammars), which potentially allows one to distinguish "given by nature" from "learned through experience". These are only a few of the advantages of incorporating child data in the investigation.

1.5. Proposal and Dissertation Structure

To summarize, this dissertation investigates the nature of optional Middle Object Scrambling by addressing a number of research questions allied to two main issues:

(16) A. Semantics of scrambled structures
B. Prosody of nonscrambled structures

Related to the first group of research questions, the aim is to define factors contributing to MOS and to verify whether semantic features of definiteness, partitivity and referentiality correlate with syntactic movement in Ukrainian. Considering the second group of questions, it is imperative to examine nonscrambled structures with regard to their prosodic properties when all semantic conditions for scrambling seem to be satisfied. This approach allows us to bring together syntax, semantics and prosody in order to present a unified analysis of object scrambling and to account for its optionality.

From theoretic point of view, this dissertation is based on the logic of Phase Theory and the interpretational function of the Edge (Chomsky, 2001; Legate, 2003; Pesetsky & Torrego, 2001; Rackowski & Richards, 2005, and others). It is hypothesized that scrambling in a particular language (Ukrainian) is not absolutely optional, but constrained. Moreover, scrambling is regarded as just one means of executing/expressing an underlyingly obligatory process (agreement). Prosodic (re)contouring is considered as another option comparable with object scrambling for achieving the same interpretative effect. This further suggests that alternative mechanisms for realizing the same process may exist within a single language, giving the appearance of optionality in individual cases.

In the area of language acquisition, this research provides new evidence for an early mastery of properties related to scrambling and demonstrates the limitations of acquisition theories based on cognitive/pragmatic development. It also presents the first (thus far) comprehensive experimental study of Ukrainian syntax-semantics in the generative framework.

The novelty of this research is not (or not only) in the newly defined questions and surprising findings, but in the experimental approach used to answer long-standing questions and in empirical findings predicted through the theoretical analysis. Until recently, linguists working in the generative framework often relied on their own intuition or on informally collected grammaticality judgments as supportive evidence for their theories. A new emerging field of experimental linguistics takes data collection more seriously aiming to collect a significant amount of data from a number of naive native speakers in order to be able to obtain quantifiable results. Following this new trend in language investigation I tested a large number of Ukrainian speakers and learners in several experimental tasks and analyzed obtained data using statistical and acoustic-analysis tools. The results of my research are presented in this dissertation, which is structured as follows.

Chapter 2 justifies the research strategy by defining the main syntactic and semantic properties of object scrambling, and by presenting relevant examples

from Ukrainian – a 'free'-word-order Slavic language. The ground is set for the following application of previous findings to new Ukrainian data. This chapter also comprises a fundamental part of the thesis, as it includes the proposed syntax-semantic analysis of scrambling and predictions for the experimental studies. Here the main hypothesis about INT-as-a-contextually-defined-feature (ICDF) is presented, and the possible consequences of such a move for Ukrainian are discussed.

Chapter 3 presents supportive evidence for the semantic/pragmatic correlates in scrambling. Experiment 1 with two groups of participants (adult Ukrainian speakers and monolingual children acquiring Ukrainian) is described, and generalizations about the role of contextually defined semantic features in scrambling are made.

Chapter 4 is a discussion about the role of prosody in scrambling. Experiment 2 (conducted with a group of adult Ukrainian speakers) and Experiment 3 (acoustic analysis of child data from Experiment 1) show that prosodic restructuring might be considered as an alternative to syntactic movement in certain (i.e., definite and partitive) contexts.

Chapter 5 summarizes the results of experiments and analyzes them with regard to the proposed hypothesis and predictions. The final part of the thesis presents implications of the study for linguistic theory and language acquisition and indicates possible directions for further investigation.

CHAPTER 2:
DIRECT OBJECT SCRAMBLING IN UKRAINIAN

2.1. Introduction

In this chapter I discuss theoretical aspects of scrambling. The data under analysis come from Ukrainian, a Slavic language exhibiting considerable freedom of word order in its colloquial variant (Shevelov, 2003). Given the complex nature of this phenomenon, I narrow my investigation to only one of its types, defined as Middle Object Scrambling (MOS). This strategy, justified in the previous chapter, affords a detailed examination of various properties of scrambling on a micro-level. MOS is scrutinized with regard to its syntactic aspects (e.g., position of a scrambled object) and semantic properties (e.g., possible interpretations of an object). Semantic features associated with scrambling are particularly emphasized, as it is believed that semantics of the moved element plays an important role in the process. The apparent optionality of scrambling is analyzed in connection with prosodic effects related to the same semantic features.

This chapter attempts to account for various theoretical issues related to the syntax, semantics, and prosody of MOS in Ukrainian by means of the Phase Theory. I start with a brief overview of Ukrainian syntax from the perspective of generative linguistics: i.e., I introduce my theoretical assumptions regarding basic word order, position of adverbs and auxiliaries, the issue of verb movement, and other language-specific features. Next, I describe syntactic and semantic properties associated with MOS. Finally, I present my account for the phenomenon and propose the main hypothesis concerning the context-

dependent nature of scrambling. I argue for a possible alternative to scrambling – prosodic (re)countering, and further propose a unified analysis of syntactic, semantic and prosodic correlates of scrambling. I conclude the chapter with research questions and predictions for the following experimental study.

2.2. A Brief Overview of Ukrainian Syntax

2.2.1. Basic word order

Ukrainian allows various orders of constituents in a sentence with some of them are more marked than others. Traditional grammars distinguish *priamyj poriadok sliv* ('direct' word order) and *nepriamyj poriadok sliv* (indirect/inverse word order) (Hryshchenko, 1997; Shul'zhuk, 2004; Vyxovanec', 1993, and many others). Ukrainian syntax has not been investigated extensively in a generative framework. Typically, the basic facts and their analysis are either assumed to be similar to Russian, a closely related and a better investigated language, or are treated in line with the few Ukrainian grammars available in English (e.g., Pugh & Press, 1999; Shevelov, 1993 & 2003). According to the available sources, the basic (canonical, standard, unmarked, 'direct') word order in Ukrainian exhibits patterns in (1):

(1) a. the subject precedes the verb;
    b. the verb precedes its objects;
    c. the attributive adjective precedes its head noun;
    d. the preposition is placed before the noun phrase, etc.

These are illustrated in sentence in (2).

(2) Marija poklala knyžku na najvyšču polycju.
    Maria put book on highest shelf
    'Maria put the book on the highest shelf.'

Other variants of the sentence in (2) could involve placement of the direct object before the verb (3) or before the subject (4), PP constituent movement (5), NP split, etc.

(3) Marija knyžku poklala na najvyšču polycju.
Maria book put on highest shelf
'Maria put the book on the highest shelf.'

(4) Knyžku Marija poklala na najvyšču polycju.
book Maria put on highest shelf
'Maria put the book on the highest shelf.'

(5) Na najvyšču polycju Marija poklala knyžku.
on highest shelf Maria put book
'Maria put the book on the highest shelf.'

Departures from basic word order are widely employed in colloquial Ukrainian, so that, as Shevelov (2003:978) states, "paradoxically as it may sound, the standard word order is omnipresent, but more through departures from it than through straight adherence to it". That is, all deviations from the word order rules in (1) are semantically/pragmatically/phonologically marked in some way.

Following generative tradition, I assume that Ukrainian, similarly to other Slavic languages, has an SVO basic word order, and all other possible variations are derived by movement. Claims of a VSO basic structure for Russian (King, 1993) or base-generated scrambling variants in Russian (Boskovic & Takahashi, 1998) have been convincingly refuted by Bailyn (1995, 2001, 2003), and they will not be considered viable for Ukrainian either. In the following sections, I will concentrate on simple transitive sentence with the object that follows the verb and will describe its syntactic properties. I will start by conducting a number of tests to establish basic positions of adverbs, verb, auxiliaries, and other elements in Ukrainian.

2.2.2. Adverb placement

Adverb positioning in the clause plays an important role in the mapping of syntactic structure. Cinque (1999) proposes a detailed hierarchy of adverbs,

arguably universal across languages. According to this hierarchy, the various types of adverbs enter the derivation in a certain rigidly defined order.[10]

In this research, only some adverb types will be considered, depending whether they are relevant to the main topic – direct object scrambling. Depending on the position of a particular adverb, we can define the vP edge boundary and the available landing sites for a scrambled constituent.

In Ukrainian, epistemic adverbs precede frequency adverbs, which in turn, precede manner adverbs.[11] They are exemplified in Table 1:

Table 1. *Adverb types.*

Epistemic	**Time/Frequency**	**Manner/Duration**
mabut' 'apparently, probably'	*často* 'often'	*oxajno* 'neatly'
napevno 'probably, certainly'	*завжди* 'always'	*švydko* 'quickly'
	zazvyčaj 'usually'	*povil'no* 'slowly'
	inodi 'rarely'	*dovho* 'for a long time'
	dviči 'twice'	

Adverbs usually precede the main verb in a typical transitive structure S-Adv-V-O, and if all three types of adverb are used, they are ordered as shown below:

(6) Marija napevno завжди dovho vybyraje odjah.
Maria probably always for-a-long-time choose clothes
Maria probably always takes time to choose her clothes.

On first insprection, it is not evident whether there are structural differences between the three main types of adverbs, for example, whether they are attached at different points. Ellipsis tests provide us with the data clarifying adverbial

[10] There are also other approaches to the adverb ordering, see e.g. Bobaljik (1999); Ernst (2002); Nilsen (2003); Svenonius (2002), and Alexiadou (2002) for an overview, but whether they are applicable to Ukrainian is an issue for a separate investigation.

[11] Epistemic adverbs could also be called 'high', frequency adverbs can be defined as 'middle' vP-level adverbs, and manner adverbs are considered to be 'low' VP-level adverbs.

locations in Ukrainian.[12] In particular, vP-ellipsis tests show that if the epistemic adverb *napevno* 'probably' is elided as in (7), the sentence is degraded. Thus, it is plausibly situated outside of vP:

(7) Taras napevno čytatyme (cju) knyžku, a Ivan napevno ni.
Taras probably will.read (this) book but Ivan probably not
'Taras is probably going to read the book, but Ivan probably will not [read the book].'

(8) # Taras napevno čytatyme (cju) knyžku, a Ivan ni.
Taras probably will.read (this) book but Ivan not
'Taras is probably going to read the book, but Ivan will not [read the book].'

In contrast, preserving the manner (low) adverb *dovho* 'for a long time' in a vP-ellipsis context makes the sentence ungrammatical (compare (9) to (7) and (10)), which suggests that it is a vP-internal element:

(9) * Taras dovho čytatyme knyžku, a Ivan dovho ni.
Taras for-a-long-time will.read book but Ivan for-a-long-time not
'Taras will read a book for a long time, but Ivan will not [read a book for a long time].'

(10) Taras dovho čytatyme knyžku, a Ivan ni.
Taras for-a-long-time will read book but Ivan not
'Taras will read a book for a long time, but Ivan will not [read a book for a long time].'

Interestingly, time adverbs (which could be considered 'high'/TP-level adverbs in English) pattern with the manner adverbs in Ukrainian:

(11) * Taras včora čytav knyžku, a Ivan včora ni.
Taras yesterday read book but Ivan yesterday not
'Taras read a book yesterday, but Ivan did not [read a book yesterday].'

[12] Since Ukrainian lacks auxiliaries *does*/*doesn't* which are typically used in ellipsis tests in English, I employ other structures, proposed for Russian, Polish and Czech by McShane (2000). Specifically, these structures have a negation element *niet*/*nie*/*ne*/*ni* 'not' – words that arguably function as independent, non-elliptical predicates.

(12) Taras <u>včora</u> čytav knyžku, a Ivan ni.
Taras yesterday read book but Ivan not
'Taras read a book yesterday, but Ivan did not [read a book yesterday].'

The same result is obtained with other frequency and manner adverbs, suggesting important structural similarities among them. I conclude, then, that in Ukrainian, these types of adverbs are adjoined to the left at the vP edge, so that they linearly occur between the subject and the finite verb in *v* in the following order:[13]

(13)

Subject>Epistemic adverb>Time adverb>Frequency adverb>Manner adverb>Verb>Object

Considering the results of ellipsis tests presented above, I thus assume minimally that the vP-domain boundary is positioned below epistemic adverbs. Other details of the structural ordering are left for future research.

2.2.3. Verb position

Another important issue concerns the position of the verb in Ukrainian, which is base-generated in the vP-domain, but whose further behavior must be determined. The following tests suggest that Ukrainian does not have V-to-T movement. Unlike in French, but similarly to English, Ukrainian negation and adverbials precede the verb (see examples from Pollock (1989: 367)):

(14) a. Jean (n') aime pas Marie. (French)
b. * John likes not Mary. (English)
c. * Ivan ljubyt' ne Mariju.[14] (Ukrainian)

Sentence (14a) involves negation, which takes a post-verbal position in French due to the v-to-T movement. But such a structure is not acceptable in English (14b) or Ukrainian (14c), which indicates that the verb does not move as high as T. Nonetheless, given that there is no agreement with regard to the NegP and the

[13] See a similar conclusion about time adverbs in Czech by Kučerova (2007). However, unlike in Czech, in Ukrainian, manner adverbs do not follow the verb and thus do not adjoin to VP.

[14] The sentence is ungrammatical if a sentential negation is intended, but it is fully acceptable with a constituent negation reading (*John loves someone else, not Maria*).

location of the negation marker itself, other tests from Pollock (1989) would be useful to see the verb position in Ukrainian.

Sentences (15c-d) show that to form a polarity question, Ukrainian employs the interrogative particle *chy* 'if' and does not move the verb, as in French (15a).

(15) a. Aime-t-il Marie? (French)
b. * Likes he Mary? (English)
c. # Ljubyt' vin Mariju? (Ukrainian)
d. Čy vin ljubut' Mariju? (Ukrainian)

And finally, the adverbial test proposed by Pollack to demonstrate the V-to-T movement fails in Ukrainian as well. In French, the verb usually precedes an adverb (16a); in Ukrainian, however, such an ordering (as in (16c)) makes the sentence degraded or unacceptable (depending on a speaker).

(16) a. Jean embrasse souvent Marie. (French)
b. * John kisses often Mary. (English)
c. # Ivan ciluje často Mariju. (Ukrainian)

These data strongly suggest that in Ukrainian, the basic position of the main verb is in the vP phrase, and that the main verb does not move higher to T.[15] The situation with the auxiliary verbs is more complicated, though, and thus deserves separate mention.

2.2.4. Auxiliaries

Ukrainian has a number of verbal auxiliaries that contribute certain semantic or grammatical meanings to the sentence. Some of them have modal semantics (*mohty* 'can.INF', *musyty* 'must.INF', *maty* 'have to'), while others are parts of the tense form (future tense auxiliary verb and infinitive *bude pysaty* 'be.FUT.3.SG. write.INF' or past tense auxiliary and past participle *bulo pysav* 'be.PAST.3.SG. write.PAST.M.SG.)[16]. Although the semantics of these auxiliaries resembles that of their counterparts in English, their grammatical (morphological and syntactic)

[15] See also Bobaljik & Thrainsson (1998) for their theory of verb raising and split IP correlation in a number of SVO and SOV languages. Based on their classification, Ukrainian also belongs to the group of languages that cannot have the verb raising.

[16] There are many other auxiliaries in Ukrainian, but they are not discussed here.

properties differ. In Ukrainian, unlike in English, all of these elements are fully-inflected forms similar to the lexical verb. The most noticeable difference between the auxiliary and the lexical verb is that the former always takes a VP complement, while the latter can have an NP complement. At this point, it is not clear where exactly the auxiliary is generated. For this study, I take it to be base-generated within the vP domain, approximately where aspect phrases are normally generated. I also follow Sturgeon (2006) who suggests that Czech modals *(moct* ('can.INF'), *muset* ('must.INF'), and the future form of *být* ('be.INF)) do not raise to T, but remain within the vP domain. Evidence for such a view comes from a number of structures constructed with various types of adverbs preceding or following the tense auxiliary and modals.

As was demonstrated by ellipsis tests in 2.1.2, some adverbs are located in the vP domain and can be labeled as 'low'(VP-adjoined) or 'middle'(vP-adjoined) adverbs (e.g., *dovho* 'for-a-long-time' and *často* 'often'), while others adjoin above the vP edge, and can be considered 'high' adverbs (e.g., *napevno* 'probably'). If the auxiliary belongs to a vP-domain, it should not precede the 'high' epistemic adverb. As the sentences in (17) show, this is indeed the case: (17b) with the future tense auxiliary in a pre-adverbial position is degraded compared to (17a), with the auxiliary following the epistemic adverb.

(17) a. Ivan napevno bude ciluvaty Mariju.
Ivan probably will kiss Maria
b. # Ivan bude napevno ciluvaty Mariju.
Ivan will probably kiss Maria
'Probably, Ivan will kiss Maria.'

On the other hand, the auxiliary must precede vP-internal elements, as shown in (18) and (19). The lower the position of an adverb in the structure (e.g., as for the manner verb in (19)), the less likely the future auxiliary would follow it (19b)[17].

(18) a. Ivan bude často ciluvaty Mariju.
Ivan will often kiss Maria
b. ? Ivan často bude ciluvaty Mariju.

[17] It should be noted that in all word order tests, grammaticality judgments are not absolute. Certain word orders make the sentence unacceptable or degraded, but not absolutely ungrammatical. Furthermore, only the most neutral intonation is considered here. Sentences can often be made acceptable if some elements (particularly, adverbs) are focused.

Ivan often will kiss Maria
'Ivan will kiss Maria often.'

(19) a. Ivan bude dovho ciluvaty Mariju.
Ivan will for-a-long-time kiss Maria
b. # Ivan dovho bude ciluvaty Mariju.
Ivan for-a-long-time will kiss Maria
'Ivan will kiss Maria for a long time.'

Assuming that the manner adverb is adjoined to VP and the epistemic adverb adjoins higher, but below the subject, the tense auxiliary is likely to be situated somewhere in the middlefield - between the T and the lexical verb in v.

The next step would be to locate the modals in the structure and to define their position related to the tense auxiliary and to the 'middle' adverb. The sentence in (20) has all of these elements, and the most neutral word order is Aux>Modal>Adverb>Verb (as in (20a)).

(20) a. Vin bude **musyty** zavždy zakinčuvaty te, ščo zaplanuvav.
he will must.INF always finish.INF that that planned
b. Vin zavždy bude **musyty** zakinčuvaty te, ščo zaplanuvav.
he always will must.INF finish.INF that that planned
c. # Vin bude zavždy **musyty** zakinčuvaty te, ščo zaplanuvav.
he will always must.INF finish.INF that that planned
'He will have to always finish everything he planned.'

It appears, that the adverb *zavždy* 'always' may precede the tense auxiliary (as in (20b)), but it cannot intervene between the two auxiliary verbs (as in (20c)). This suggests that the modal 'must' takes a position immediately bellow the tense auxiliary. In addition, as the sentences in (21) indicate, all these elements are situated above the VP-level. The manner adverb 'quickly' cannot appear above the modal (21b) or above the tense auxiliary (21c).

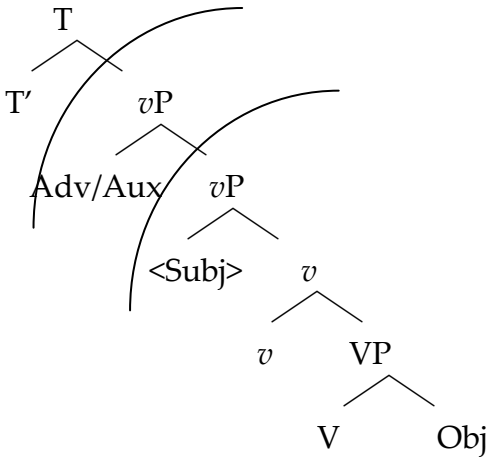
(21) a. Taras bude **musyty** švydko navčytysia pysaty i čytaty.
Taras will must.INF quickly learn.INF.REFL write.INF and read.INF
b. # Taras bude švydko **musyty** navčytysia pysaty i čytaty.
Taras will quickly must.INF learn.INF.REFL write.INF and read.INF
c. # Taras švydko bude **musyty** navčytysia pysaty i čytaty.
Taras quickly will must.INF learn.INF.REFL write.INF and read.INF
'Taras will have to learn quickly how to read and write.'

The same conclusion can be made for many other forms of modals 'must', 'have to' and 'can': they must precede the manner adverb, as shown in (22).

(22) a. Ja **maju/mav** <u>švydko</u> ruxatysja.
I have to/had to quickly move
'I have to/had to move quickly.'
b. Ja **možu/mih/zmih/zmožu** <u>švydko</u> ruxatysja.
I can/could/could.PERF/can.FUT quickly move
'I can/could move quickly.'
c. Ja **mušu/musyv/musytymu** <u>švydko</u> ruxatysja.
I must.PRES/must.PAST/must.FUT quickly move
'I must move quickly.'

To summarize, the linear ordering of the constituents discussed above can be given as follows: Subject>Epistemic Adverb>Future AUX>Modal>Manner Adverb. Since the vP-level adverbs (e.g., *always*) can precede the tense auxiliary, it is likely that all auxiliaries in Ukrainian are vP-internal elements and do not raise to T. To verify that this is indeed the case, more research will be required. However, it is important to emphasize that the structure accepted for well-studied languages with the fixed word order (i.e., English) cannot be mechanically applied to other languages, particularly those with the free word order. Given that in Ukrainian (as compared to English) the morphological properties of auxiliaries and the syntactic positions of adverbs are clearly distinct, the Middlefield structure might differ as well. In this study I assume that the vP-edge could be an extended domain (just like the IP-domain) that can host vP-level adverbs or auxiliaries, as shown in (23).

(23)



2.2.5. Language-specific syntactic properties

Thus far, the discussion of Ukrainian facts has followed familiar views widely accepted in Slavic generative linguistics. Since a number of properties of Ukrainian syntax resemble those of other Slavic languages (i.e., Russian, Polish, Czech, or Serbian) their analyses are also convergent. However, Ukrainian employs some particular constructions that are not common in related languages. This in turn suggests that Ukrainian has a distinctive syntactic structure, investigation of which can shed light on some complex theoretical issues. A few language-specific properties relevant to the following discussion of scrambling are: Passive Accusative, Genitive-Accusative alternations, and use of demonstrative pronouns.

2.2.5.1. "Passive Accusative"

"Passive Accusative" is a subject-less construction with an impersonal verbal form on *–no/-to* and a direct object in the Accusative.[18] An example of such construction from Sobin (1985) is given in (24).

(24) Cerkvu (bulo) zbudova**no** v 1640 roci.
church.FEM.ACC was.NEUT built in 1640 year
'There was built a church in 1640.'

The most puzzling property of the structures with the verbal form on *–no/-to* is the combination of the morphosyntax of impersonals with the morphosemantic of passives (Blevins, 2003; Shevelov, 1963). Because of this 'hybrid' property, some linguists (e.g., Sobin, 1985) have treated *–no/-to* forms as a distinctive type of impersonal passive, parallel to a more familiar passive construction in which a [structural] subject NP-NOM agrees in gender and number with the auxiliary and verbal participle, shown in (25).

(25) Cerkva bula zbudova**na** v 1640 roci (Lesevym).
church.FEM.NOM was.FEM built.FEM.SG in 1640 year Lesiv.INST
'The church was built in 1640 by Lesiv.'

[18] The term 'direct object' is used here just to indicate structural properties of the NP in Accusative.

Shevelov (1963) noticed that originally Ukrainian *-no/to* forms had past interpretation and did not co-occur with auxiliaries or instrumental agents (as (25), suggesting that structures like (24) were rather impersonals than passives. In such view, the sentence with *–no/-to* and a pre-verbal NP-ACC could be analyzed as a scrambled structure without an overt subject. Lavine (2005), however, argues that Ukrainian *–no/-to* structures are passives formed by the A-movement of a non-generic, indefinite NP-ACC to the SpecTP position. According to Lavine, this instance of movement allows a sentence-focus projection, and a sentence with a pre-verbal argument (as in (24)) can be appropriately uttered in an "out-of-the-blue" context. On the other hand, the sentence with a post-verbal NP-ACC (as in (26)) is not acceptable.

(26) # Bulo zbudovano cerkvu v 1640 roci.
was.NEUT built church.FEM.ACC in 1640 year
'There was built a church in 1640. '

Although I do not adapt Lavine's syntactic analysis of the 'object NP-ACC movement to the SpecTP position', his observation regarding the word order in the Passive Accusative construction is accurate: the verb-initial order for Ukrainian *-no/-to* is awkward, and the NP-ACC must move over the verb. Furthermore, according to Blevins (2003), in sentences like (24), the pre-verbal direct object is definite/specific, as the speaker and the hearer can identify the church, while the suppressed subject is not specified or receives an indefinite, but not exclusively human or even agentive interpretation. Leaving aside details of existing syntactic-semantic accounts for the Ukrainian Passive Accusative, the main language facts seem to be straightforward: the NP in ACC moves out of vP and is interpreted as definite/specific – and this will become relevant in the discussion of object scrambling in 2.3.

2.2.5.2. "Affirmative" Genitive – Accusative alternation

Another interesting property of Ukrainian syntax is the parallel use of Genitive and Accusative case for singular masculine direct objects (including inanimate nouns in affirmative sentences). For instance, a sentence like in (27) can have the direct object DP 'new computer' in either Accusative or Genitive:

(27) Viktor kupyv sobi novyj **kompjuter** / novoho **kompjutera**.
Viktor bought self new computer.ACC / new computer.GEN
'Victor bought a/the new computer.'

This language fact has not received much attention in generative linguistics, but the possibility of such variation raises an important question of semantic interpretation of the two involved forms: is there semantic difference between direct object in ACC and GEN in sentences like (27)?[19]

There is an extensive body of the literature on a similar phenomenon - Genitive of Negation in Russian, which suggests that the NP in Genitive has a distinct semantics compared to the same NP in Accusative if there is negation in the clause (Bailyn, 1997 & 2004; Brown, 1999, Partee & Borschev, 2004, and many others). Specifically, most researchers agree that Genitive-marked NPs under negation, as in (28b) below, receive a nonspecific/existential/indefinite reading, while Accusative-marked NPs in the same structure have a specific/presupposed/definite semantics.

(28) a. On ne polučil **pis'mo**. (Russian)
he NEG received letter.ACC
'He didn't receive the (or 'a specific') letter.'
b. On ne polučil **pis'ma**.
he NEG received letter.GEN
'He didn't receive any letter.'

Ukrainian patterns with Russian in that it also exhibits Genitive – Accusative alternation in sentences with negation. Like in Russian, in Ukrainian, the direct object *lyst* in (29a) also has a clear referential meaning 'a certain specific letter':

(29) a. Vin ne otrymav **lyst**. (Ukrainian)
he NEG received letter.ACC
'He didn't receive the (or 'a specific') letter.'
b. Vin ne otrymav **lysta**.
he NEG received letter.GEN
'He didn't receive any letter.'

[19] Native speakers' judgments concerning this issue differ, and I will not attempt any reconciliation here, as it requires a separate study, but I will present some suggestive observations below.

However, unlike in Russian, in Ukrainian, the same alternation is possible without negation.Even an affirmative sentence can have a direct object either in ACC (30a) or in GEN (30b):[20]

(30) a. Vin otrymav lyst.
he received letter.ACC
'He received the (or 'a specific') letter.'
b. Vin otrymav lysta.
he received letter.GEN
'He received (some?) letter.'

While the interpretation of the ACC form in (30a) is undoubtedly specific, the semantics of the same object in GEN (30b) seems to be somewhat obscure. Minimally, it is not exclusively nonspecific, as it might be expected from the results on Genitive of Negation. Addition of other elements to the structure, however, makes its semantics more transparent.

(31) a. ? Vin otrymav odyn lyst (a ne decjat').
he received one letter.ACC
'He received one letter (and not ten).'
b. Vin otrymav odnoho lysta (jakoho davno chekav).
he received one.GEN letter.GEN
'He received a letter (which he has been expecting).'

For some reason (unclear to the moment) the sentence in (31) sounds more natural with the direct object NP in Genitive (as in (31b)) which is likely to be perceived as specific-partitive-indefinite: 'there is a certain letter which was expected by the receiver, but the hearer doesn't know which one'. Vyxovanec' (1993) suggests that the semantics of such forms (Genitive masculine singular inanimate nouns) can be defined as 'temporal partitivity' when they follow certain verbs, but in colloquial speech Genitive and Accusative forms are used interchangeably. Why does the same morphological marker of Genitive case exhibits seemingly asymmetric behavior in negated and affirmative structures?

[20] In fact, in Russian, direct objects in GEN can also be used in some affirmative sentences, but only with certain intentional verbs (see examples below). Neidle (1988) define such objects as opaque:

i) On ždet otveta na vopros.
he waits answer.GEN.M.SG to question
'He's waiting for an answer to the question.' (NP *de dicto*)

This question requires further investigation, as the speakers' judgments differ, and the existing literature does not provide a straightforward account of these facts.

2.2.5.3. Use of demonstratives and other lexical markers

Ukrainian lacks articles, but there are lexical items that mark NP semantics. These are demonstrative/indicative pronouns, indefinite pronouns, and various particles or adverbial elements marking focused constituents in a sentence. For instance, demonstrative/indicative pronouns can be used to refer to a referential definite in some contexts. As shown in (32), demonstratives such as *cej, cia, ce, ci* 'this' and *toj, ta, te, ti* 'that' strongly imply shared knowledge between the speaker and hearer about a particular individual.

(32) Čy ty bačyla tu ihrašku, jaka meni spodobalasia?
Q-Part you saw that toy that I.DAT liked
'Have you seen that/the toy that I liked?'

Note, however, that in Ukrainian, no demonstrative is used to mark definiteness even when the uniqueness presupposition is satisfied for the object 'author':

(33) Ja xoču zustrity avtora cijeji kartyny, ale ja ne znaju, xto vin.
I want to meet author this painting but I not know who he
'I want to meet the author of this painting, but I do not know who it is.'

Indefiniteness can be based on the speaker's knowledge only, as in (34) (specific reading), or it can be related neither to the speaker nor to the hearer, as in (36) (nonspecific reading). In Ukrainian, the cardinal numeral 'one' in its various gender and number forms *odyn, odna, odne, odni* can have a specific meaning of 'a certain', and thus it often serves as a specificity marker (cf. (32) for the use of demonstratives which are reserved for definite/specific contexts):

(34) Cej recept meni dala **odna žinka**, jaku ty ne znaješ.
this recipe me gave one woman that you not know
'I got this recipe from a woman who you do not know.'

The same lexical items *odyn*, *odna*, and *odne* might be used in partitive contexts (as in (35). Structures like *odyn z nyx* 'one of them' or *odyn z* NP 'one of NP' clearly mark an individual which is a part of a previously introduced set:

(35) Taras namaljuvav try kartyny, a potim vin **odnu z nyx** prodav.
Taras drew three pictures and then he one of them sold
'Taras had drawn three pictures, and then he sold one of them.'

Nonspecific interpretation is usually associated with the commonly used indefinite determiner *jakyjs', jakas', jakes',* and *jakis'* ('some/any') or other indefinite pronouns *byd'-jakyj, dejakyj, jakyj-nebud'* with the reinforced indefinite meaning 'whichever'.[21]

(36) Cej recept napysala **jakas' žinka**, jaku ja ne znaju.
this recipe wrote some woman that I not know
'This recipe was written by a woman who I do not know.'

Even though demonstrative pronouns are not obligatory, Ukrainian makes broad use of some of them. According to Shevelov (1963: 253), the function of the indicative pronoun 'that' (*toj-* masc, *ta* -fem; *te*-neuter; *ti* -pl) resembles that of the definite article: "[…] Pronoun *toj* […] is very common in comparisons. There it does not have a deictic/indicative meaning, but brings the concept closer to the reader or listener, presenting it not as something new, but something well-known". An example of demonstrative pronoun *ta* in its 'non-deictic' reading is shown in (37).

(37) Divčyna vyrosla, jak **ta** kvitočka.
girl grew up as that little flower
'The girl grew up [and became beautiful] like a flower.'

This pronoun is also often used when the object is mentioned for the second time, which coincides with the concept of 'definite by previous mentioning':

(38) Ty zrosteš sobi na **slavu**… A poky rosty ty budeš,
you will.grow self on glory and until grow you will
ta ***tu*** **slavu** rozdobudeš, ja ne spliu, tebe kachaju.
and that glory will.gain I not sleep you rock
'You will grow up to your own **glory**… But until you grow and gain ***that*** **glory,** I am not sleeping and rocking you'. (From Shevelov (1963))

[21] Cummins (1998) provides description and classification of similar pronouns in Czech. In Ukrainian, too, they differ slightly in the degree of indefiniteness.

Ukrainian also employs many other lexical elements that indicate intended interpretation of an object or individual as old/new or known/unknown to the hearer and/or speaker. In traditional grammars these elements have been classified as pronouns, particles or adverbs with expressive or reinforcing meaning, and have also been called 'rheme-indicators' and 'theme-indicators'.[22] Investigation of their role in Ukrainian grammar is presented in Merkulova (2006). Merkulova follows the Prague-school tradition and defines several means of marking old/given or new/unknown information in the discourse (i.e., phonetic, syntactic, and lexical), but according to her, the role of lexical markers is clearly preeminent (at least in colloquial and belles-lettres styles). She focuses, then, on a particular group of such markers - rheme-indicators. These items are used as clues for hearers that the information to follow is new/unknown, and thus indefinite, e.g., *inšyj* 'another', *zrodu* 'never (in one's life)', *zovsim* 'at all', *ščos'* 'something' + ADJ, *navit'* 'even', etc. Presence of such words in a sentence reinforces various nuances in semantics of a constituent: e.g., (in Merkulova's terms) 'pure' indefiniteness (*ščos'* 'something', *xtos'* 'someone'), 'absolute' indefiniteness (*zovsim* 'at all', *zrodu* 'never (in one's life)') or 'approximate' indefiniteness (*majže* 'almost', *troxy* 'a bit'). (39) is an example of such a structure:

(39) … v očax svitylos' **ščos'** kotiačoho.
in eyes shined something cat-like-GEN
'… something cat-like shined in (his) eyes.' (From Shevelov (1993))

Another group of lexical elements can be defined as theme-indicators. Their function is to indicate that the object/individual is known or present in the context. There are many particles and pronouns with deictic or reinforcing meaning is this group: e.g., *os'* 'here', *ot* 'here/there', *to* 'it/that', *on* 'there', *oce* 'this (in close proximity)', *ce* 'it/this', *takyj* 'such'. Adverbial elements are also often used to mark so called 'absolute' definiteness: e.g., *jakraz* 'right', *same* 'just/exactly', *točno* 'exactly', *vlasne* 'actually', *spravdi* 'really', *dijsno* 'really'.[23]

(40) Same po cij dorozi vezly kolys' slyvy.
exactly on this road transported some-time-ago prunes
'This is exactly that road where prunes were transported some time ago.'

[22] These elements can also be called 'focus markers' and 'topic markers'.

[23] It is extremely difficult to give the exact translation of some of these words, as their meaning differs from context to contexts, especially as particles are concerned (see more examples of such contexts in 2.3.) Thus, the given gloss is the closest approximation to the most common reading.

These lexical markers are widely used mostly in colloquial speech and might be more pertinent to some dialects or registers than to others, but they will prove useful in testing various syntax-semantics correlations in the analysis of Ukrainian word order that follows. Moreover, the abundance of demonstrative pronouns, quantifiers and various particle-like elements in the language suggests that although Ukrainian is an article-less language, its noun phrase structure is complex, and it can express a range of semantic meanings which make it comparable to languages that employ articles.

To conclude section 2.2., let us recap its main results regarding Ukrainian syntax.[24] Ukrainian has an SVO basic structure, whose main focus for us is the vP phrase, direct object NP and the 'middlefield area' (which can be called a vP-edge). The vP-domain includes the main verb, which does not rise to T, and the manner/frequency adverbs that are situated at the inner edge of a vP-phrase. Verbal auxiliaries, which also do not rise to T, belong to the extended vP-edge domain as well. The direct object might be in Accusative or Genitive, and the difference between these two case forms is still to be defined. The Accusative case ending can also be preserved in passive constructions, labeled as "Passive Accusative". Finally, the nominal phrase in Ukrainian does not include articles, but there are many lexical elements that play role of determiners and mark semantics of arguments. Adverbs, auxiliaries and determiners will be used as important landmarks in the following discussion of syntactic and semantic properties of scrambled structures, which is the main goal of the research presented in this chapter.

2.3. Syntactic Properties of Middle Object Scrambling

In Ukrainian, the direct object can take different positions in the sentence, but since the base structure of the language is SVO, all other orders of constituents are therefore derived. In the current study I am concerned mostly with an SOV structure that exhibits direct object scrambling to a position higher than the verb, but lower than the subject (Middle Object Scrambling), as in (41):

[24] It has to be emphasized that Ukrainian syntax has never been systematically studied in the generative framework, and thus all these assumptions have to be verified further. However, even if some of them would be modified later, this should not undermine the general proposal concerning scrambling in Ukrainian.

(41) Taras **knyžku** čytaje knyžku.
Taras.NOM book.ACC reads
'Taras is reading a certain/the book.'

To locate the landing site of a scrambled object, it is necessary to find elements that can indicate the moved position of the object. Adverbs figure prominently as such landmarks (Thráinsson, 2001), so they can be used in order to detect the landing site of the scrambled object.

Assuming that manner adverbs are situated in the vP domain in Ukrainian (see 2.2.2.), their positions in scrambled structures such as (42) indicate that the landing site of the scrambled object is (at least) as high as the edge of *v*P. Sentence (43), on the other hand, is degraded because the scrambled object landed in a lower position.

(42) Taras (cju) knyžku dovho čytatyme cju knyžku.
Taras (this) book for-a-long-time will.read
Taras will read the book for a long time.'

(43) # Taras dovho (cju) knyžku čytatyme cju knyžku.
Taras for-a-long-time (this) book will.read
'Taras will read the book for a long time.'

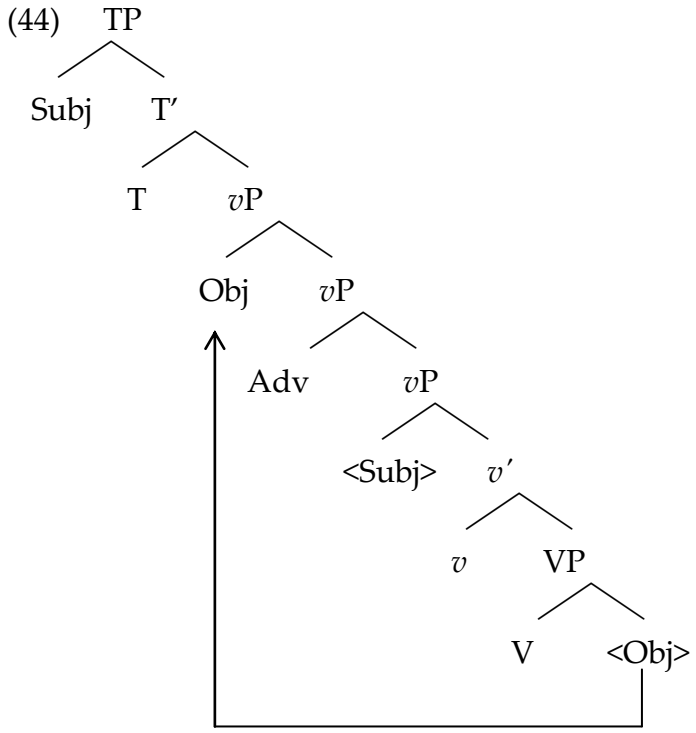
Experimental results from Mykhaylyk & Ko (2008) show that a scrambled object can be placed after an adverb (as in (43)), but such structures were infrequent compared to the structure in (42): SOAdvV was used about 12 times more often than SAdvOV by adult native speakers (35% vs 3%) and about 10 times more often by English-Ukrainian bilingual children (41% vs 4%).

Recent studies of word order in Russian also show a clear preference for a certain position of an object relative to an adverb. For instance, Kallestinova (2007: 83) tested the adverb position in the three most common and most felicitous word orders in Russian: SVO, OVS and SOV. Native speakers of Russian provided grammaticality judgments of various structures on a scale from 1 to 5, where the maximal acceptability was 5. In SOV sentences, the position after the object and right before the verb (SOAdvV) received the highest scores among the speakers (averaging at 3.9). These scores were significantly higher than the scores of adverbs in the position between the two arguments (SAdvOV) – average 3.2. The postverbal position (SOVAdv) received the lowest scores averaging at 2.1. Furthermore, there was no significant difference between manner and frequency adverbs in those positions. These findings provide

evidence for the preferred order of scrambled objects relative to adverbs which is achieved when the object moves over the adverb (SAdvOV -> SOAdvV).

When a direct object moves to a pre-verbal position via scrambling (i.e., *v*P adjunction), the linear order of the sentence becomes Subject > Direct Object > Verb, as shown in the tree (44). Assuming that the low adverb marks the structural border of *v*P in Ukrainian, when scrambling occurs, the object aims at the position right above these elements. The phrase then goes to Spell-out and is pronounced with the appropriate linear order. Note, that this mechanism does not preclude the direct object from moving to a higher position in the structure if conditions for the next step in the derivation are met.

(44)



Since I am mainly concerned with the Middle Object Scrambling, I conclude that the change from the basic SVO structure to SO(Adv)V involves the direct object moving to the left edge of the vP, which is clearly detectable if the sentence contains low adverbs.

For completeness of the overall structure, however, it should be noted that the direct object can undergo a few types of movement. In Ukrainian, auxiliaries (e.g., *bude* 'will' or modal verbs) may occur with a non-finite main verb, as in (45). In such cases, the object may scramble to the left of the low adverb, as in (46), or it may scramble further to the left of the auxiliary, as in (47).

(45) *Basic Structure with auxiliary*
Subject>Auxiliary>Main Verb>Direct Object.
Taras bude čytaty knyžku.
Taras will read book.ACC
'Taras will read a book.'

(46) Subject>Auxiliary>Direct Object>Main Verb
Taras bude knyžku čytaty.
Taras will book.ACC read
'Taras will read a book.'

(47) Subject>Direct Object>Auxiliary>Main Verb
Taras knyžku bude čytaty.
Taras book.ACC will read
'Taras will read the book.'

As was suggested in 2.2.4, the vP-edge can be an extended domain that can host adverbs, auxiliaries, and negation. Hence, the object scrambling in (46) is likely to be a vP-internal 'short' movement, while the structure in (47) is an example of the Middle Object Scrambling to the outer edge of an extended vP domain. It is also likely that these two types of scrambling have different interpretational properties, but in this study I focus only on the syntactic and semantic characteristics of the middle one - MOS.

2.4. Semantic Interpretation of the Direct Object

2.4.1. Dutch-Ukrainian parallels

Word order permutations have never been considered absolutely "free" in Slavic languages insofar as they are known to alter interpretation in the broadest sense. However, the interpretational correlates of various syntactic structures have often been described in somewhat vague terms, difficult to define. When grammarians working in a formal framework try to operate with notions developed by advocates of functional or communicative approaches to language study, they face the problem of defining the main semantic/pragmatic properties of scrambled vs. nonscrambled constituents. Intuitively, an 'old', 'given', 'known' or 'familiar' object is one the speaker knows about. This 'familiarity' is

marked by positioning a word denoting this object somewhere near the beginning of the sentence. On the other hand, an object representing 'new' or 'unknown (at the moment of speech)' information is marked by placing the constituent toward the sentence-final position. Although this description of the phenomena is in principle correct, many questions remain unanswered. What is "known" information? Is it known only by the speaker, or also by the hearer? How 'old' (or rather 'recent') should the 'old' information be? Does the 'given' object mean the one that has 'one and only one' salient antecedent in a previous sentence or can it be 'one of many' previously mentioned objects? Furthermore, as has been frequently pointed out (see Zubizarreta (1998) and the references within), the question is: Do the discourse notions (old/new) have any direct grammatical import?

The cross-linguistic approach to variable word order is potentially a useful addition to the traditionally functional 'Slavic' accounts of the phenomenon. Considering that many other languages allow various sentence structures and employ reordering of the main constituents in the sentence to achieve a certain interpretation, we could work on a unified account of these facts. Particularly, in the extensive literature on object scrambling/shift in Germanic (as well as many other languages, see Chapter 1), involved objects have often been described using semantic features that can also be applied to other phenomena in non-scrambled languages, such as articles in English. Scrambled objects have been variously labeled as 'specific', 'referential', 'partitive', 'presuppositional', or 'definite' (see the exact definitions in Chapter 1). In Ukrainian, these semantic features are not always marked directly by specific lexical items, such as articles in English or German (but see 2.2.5.3. for the discussion of demonstrative pronouns). However, since concepts of definiteness, specificity and partitivity seem to be universal and comprehensible to speakers of various languages, they must be expressed in some way even in article-less languages. As has been noticed in some Slavic languages (see Biskup, 2006; Ionin, 2003; Lyons, 1987; Mezhevich, 2001), definiteness and/or specificity can also be encoded by changes in word order. Particularly, placement of an argument before the verb is strongly associated with a specific-partitive interpretation. Post-verbal elements can be specific (e.g., definite NP, partitive NP, specific indefinite NP) or nonspecific (i.e. nonspecific nonpartitive indefinite NP).[25]

[25] It has also been argued for Russian that all preverbal elements are interpreted as specific while postverbal elements are interpreted as non-specific (Avrutin & Brun, 2001:71) (Note that 'specific' in Avrutin & Brun (2001) actually refers to 'definite'). Crucially, however, Ukrainian direct objects can be either specific or nonspecific in their base post-verbal position.

I argue that in Ukrainian, Middle Object Scrambling is also used to mark a change in the semantic interpretation of the direct object. This approach is based on Dutch/Ukrainian parallels. In Dutch, an indefinite direct object scrambled over a high adverb (and/or negation) always receives a specific interpretation for the speaker, as shown in the example (48b) from (Schaeffer, 2000).[26]

(48) a. dat Marieke gisteren **een (of ander) boek** gekocht heeft.
that Marieke yesterday a/one or other book bought has
'…that Marieke bought some book or other yesterday.'
b. dat Marieke **een (bepaald/zeker) boek** gisteren gekocht heeft.
that Marieke a certain book yesterday bought has
'…that Marieke bought a certain book yesterday.'

Corresponding Ukrainian examples are given in (49), where (49b) is parallel to Dutch in that it is understood as 'Maria bought a certain, specific book yesterday', although there is no determiner in (49b), compared to (48b).

(49) a. Marija včora kupyla **knyžku**.
Maria yesterday bought book
'Maria bought a book yesterday.'
b. Marija **knyžku** včora kupyla.
Maria book yesterday bought
'Maria bought a certain book yesterday.'

Another example from Unsworth & Helder (2008) also illustrates the semantic effects of scrambling over the adverb 'twice' in Dutch. In (50a), the indefinite object remains in its base position, and it is interpreted nonspecifically. In (50b), the object has moved to a scrambled position, where it is obligatorily interpreted specifically. As the gloss indicates, to unambiguously express a specific interpretation in English an adjective such as "certain" is needed.

(50) a. Het meisje heeft twee keer **een bal** gegooid.
the girl has two times a ball thrown
'The girl threw a(ny) ball twice.'

[26] Schaeffer mentions that indefinite objects with the indefinite article *een* 'a' are slightly awkward in pre-high-adverb position, and the sentence sounds better if the determiner *één* 'one' is used. Unsworth (2005), however, notes that there is a clear interpretational difference between scrambled and nonscrambled word orders in both cases.

b. Het meisje heeft **een bal** twee keer gegooid.
the girl has a ball two times thrown
'The girl threw a (certain) ball twice.'

Identical effects are obtained in Ukrainian. In (51a), there could be two throwing events of the same specific ball or there might be two balls which were thrown, while in the sentence (51b) the last interpretation is not available.

(51) a. Divčynka dviči kynula **mjačyk**.
girl twice threw ball
'The girl threw the/a certain ball twice.'/ 'The girl threw a ball twice.'
b. Divčynka **mjačyk** dviči kynula.
girl ball twice threw
'The girl threw the/a certain ball twice.'

Furthermore, pronouns that are considered to be inherently specific-referential (see also Koopman (1998)) must raise in both Dutch (52) and Ukrainian (53):[27]

(52) dat Marieke **haar** niet gezien heeft.
that Marieke her not seen has
'…that Marieke didn't see her.'

(53) Marija **jiji** ne bačyla.
Maria her not seen
'Maria didn't see her.'

In addition, other types of direct object NPs seem to behave similarly in Dutch and Ukrainian. Definite NPs, quantificational NPs, proper names scramble optionally, while indefinite NP usually do not (Unsworth, 2005, and others).

Hence, the general observation concerning Ukrainian is that object scrambling alters the sentence interpretation, restricting possible semantic properties of the object in pre-verbal position. This observation can be supported by a number of tests which are presented in the following section.

[27] These examples are used as additional evidence of object scrambling, but the nature of pronominal movement is more complex than the movement of DP and needs a more careful investigation.

2.4.2. Lexical markers and syntactic movement

As was mentioned in Section 2.2., Ukrainian employs a number of lexical items that indicate intended reading of sentence constituents. Their use with scrambled and non-scrambled structures provides us with important information regarding possible syntax-semantic combinations.

In particular, *cja* 'this.FEM' and *jakas'* 'some' or *bud'-jaka* 'any' can be used to test whether there is any change in the meaning of scrambled sentences as compared to non-scrambled ones. In the basic structure (54), any of these determiners is acceptable and the sentence can have the following readings: (a) there is *a certain book* that will be read by Taras *or* (b) there will be some event of reading *of any book*.

(54) a. Taras švydko čytatyme [cju] knyžku.
Taras quickly read.FUT this book
'Taras will read the/this book quickly.'
b. Taras švydko čytatyme [jakus'/ bud'-jaku] knyžku.
Taras quickly read.FUT some /any book
'Taras will read a/any book quickly.'

After object scrambling, however, the sentence in (55b) becomes unacceptable with *jakas'* 'some/any' (unless it receives a drastically distinct prosodic realization – to be discussed in Chapter 4). This indicates that only a specific interpretation is possible with the scrambled object.

(55) a. Taras [cju] knyžku švydko čytatyme [cju] knyžku.
Taras this book quickly read.FUT
'Taras will read the/this book quickly.'
b. # Taras [jakus'] knyžku švydko čytatyme [jakus'] knyžku.
Taras some/any book quickly read.FUT
'Taras will read a book quickly.'

Other examples also strongly suggest that object scrambling is not absolutely optional because an object in a preverbal scrambled position usually has a more restricted set of semantic properties than an object in its basic post-verbal position (recall Zukerman's definition of optionality in Chapter 1).

For instance, use of lexical markers defined as rheme-indicators (assuming that they mark indefinite items, i.e., new for a speaker and a hearer) should be incompatible with scrambling. The sentences in (56) demonstrate that the

pronoun *inshyj* (another) with the indefinite/nonspecific meaning 'anyone who is not like a previous one' normally appears in a post-verbal position (provided the intonation is neutral).

(56) a. My šukajemo **inšoho vykladača** (ne takoho, jak my maly raniše).
we search another professor (not that as we had before)
'We are searching another professor (anyone who is not like a previous one would be fine).'

b. # My **inšoho vykladača** šukajemo (ne takoho, jak my maly raniše).
we another professor search (not that as we had before)
'We are searching another professor (anyone who is not like a previous one would be fine).'

When the NP *inšoho vykladača* 'another professor.ACC' is placed in a preverbal position (57), the sentence will make sense only if *inšoho* is stressed, and the context implies that the individual is 'someone who we know, but not the one you are thinking about', hence – specific indefinite (or contrastively focused).

(57) My INŠOHO **vykladača** šukajemo.
we another professor search
'We are looking for another professor (someone who we know, but not the one you are talking about).'

Another language-specific construction mentioned in 2.2. has a clearly indefinite/nonspecific reading: *ščos'* (something) + Adjective. This constituent prefers a nonscrambled position, as in (58a). The scrambled structure with the same DP (as in (58b)) sounds atypical.

(58) a. Sered toho hamoru vona počula **ščos'** **znajome**.
amid that noise she heard something familiar
'She heard something familiar amid that noise.'

b. # Sered toho hamoru vona **ščos'** **znajome** počula.
amid that noise she something familiar head
'She heard something familiar amid that noise.'

On the other hand, constructions with direct objects accompanied by lexical elements indicating something familiar, given, or known from previous discourse show that the most natural representation is a scrambled one. The

sentences in (59) have three lexical markers suggesting definiteness of the direct object *ce* 'it': *vlasne* 'actually', *same* 'exactly', and *j* (reinforcing particle), and thus its preferred position is before the verb, as in (59a).

(59) a. Čolovik vlasne same **ce** j rozpovidaje.
man actually exactly this PART tells
'This is exactly what this man is telling.'
b. #Čolovik vlasne j rozpovidaje same **ce**.
man actually PART tells exactly this
'This is exactly what this man is telling.'

One might argue that the direct object in (59) is a pronoun, and pronouns usually precede the verb in Ukrainian, regardless of other 'indicators'. However, even if we replace the pronoun *ce* 'it' with the nominal phrase *cju kazku* 'this story.ACC', the effect is very similar – the structure in (60b) is degraded compared to the one in (60a):

(60) a. Čolovik vlasne same **cju kazku** j rozpovidaje.
man actually exactly this story PART tells
'This man is telling exactly this story.'
b. # Čolovik vlasne j rozpovidaje same **cju kazku**.
man actually PART tells exactly this story
'This man is telling exactly this story.'

Sentences with adverbial elements suggesting familiarity with the direct object (*zrodu* 'never in one's life' and *os'* 'here') also exhibit preference for the scrambled structure. In (61), the nature of such preference might be complex, as this structure has a negation marker, two adjuncts and the definite pronoun *taka* 'that/such', but the result of the test is clear: (61b) is degraded comparing to (61a).

(61) a. Ostap šče zrodu **takoji krasuni** ne bačyv.
Ostap yet never such beauty not saw
b. # Ostap šče zrodu ne bačyv **takoji krasuni**.
Ostap yet never not saw such beauty
'Ostap has never seen such a beauty yet.'

The examples in (62) provide an even more clear-cut picture: addition of the only one adverbial particle *os'* 'here' has a dramatic effect on the syntactic structure judgment. The meaning of the direct object is clearly referential, and its

most natural position is a scrambled one as in (62a). When it remains in its basic position (as in (62c)), however, particle *os'* makes it fully unacceptable.[28]

(62) a. Ja os' **lysta** otrymav – čytajte.
I PART letter.GEN received read.IMP.PL
'I received a letter. Here, read it.'
b. # Ja os' otrymav **lysta** – čytajte.
I PART received letter.GEN read.IMP.PL
c. # Ja otrymav (*os') **lysta** – čytajte.
I received PART letter.GEN read.IMP.PL

To conclude, all of the above tests indicate that: i) word order is not absolutely free in Ukrainian; there are many sentences which sound degraded or even ungrammatical under a change of constituent position; ii) general predictions about the correlation between syntactic structure and object semantics have been confirmed; iii) objects scrambled to the middle position cannot be interpreted as new or unknown by speaker and/or hearer and thus they are likely to be definite or specific. The next three sections are devoted to the more fine-grained analysis of the scrambled object semantics, where three features, specificity, definiteness and partitivity, are considered.

2.4.3. Specific objects

Based on recent advances in linguistic theory, specificity can be defined in two ways: as referentiality or as partitivity.

(63) *Specificity as Referentiality*: a DP is referential when a speaker intends to refer to an individual in the set denoted by NP and considers this individual to possess some noteworthy property (based on Fodor and Sag (1982) and Ionin (2003)).

Referential element should take wide scope over intentional/modal operators, such as *look for, must, ought to, would, want* and others. Hence, structures with

[28] A separate issue with the last three examples concerns the Genitive marker ***–a*** on the direct object *lyst-**a**.* There is no negation in the sentence, and normally we would expect the direct object to be in Accusative (which has a Nominative inflection for inanimate masculine singular: *lyst* 'letter'), but that is not the case for (62), which sounds more naturally with the object in GEN. These data require more detailed investigation, but are not analyzed here.

these lexical items can be used for testing scopal characteristics of direct objects. Contrastive pairs of SVO and SOV structures accompanied by appropriate contexts show that while *in situ* objects can be ambiguous (as in (64a-b)), objects in a pre-verbal position (as in (64c-d)) are more likely to refer to an individual known to the speaker:

(64) What are you doing?

a. Ja <u>šukaju</u> **zakolku**, xoču volossja zakoloty, bo vono meni zavažaje.
I <u>look.for</u> hair clip want hair to clip because it me bothers
'I am looking for a hair clip; I want to clip my hair because it bothers me.'

b. Ja <u>šukaju</u> **zakolku**, i ne možu zhadaty, kudy ja jiji poklala .
I look-for hair clip and cannot recall where I it put
'I am looking for a certain hair clip; but I cannot recall where I put it.'

c. Ja **zakolku** <u>šukaju</u>, i ne možu zhadaty, kudy ja jiji poklala .
I hair clip look-for and cannot recall where I it put
'I am looking for a certain hair clip; but I cannot recall where I put it.'

d. #? Ja **zakolku** <u>šukaju</u>, xoču volossja zakoloty, bo vono meni zavažaje.
I hair clip <u>look-for</u> want hair to clip because it me bothers
'I am looking for a/any hair clip; I want to clip my hair because it bothers me.'

The judgments on (64d) differ, and most native speakers I consulted would like to know the previous context, change the prosody or add some determiner before the scrambled object, e.g., *svoju/moju zakolku* 'self/my hair clip.ACC'. This suggests that scrambling might be one of the means of marking object referentiality, but not the primary one. On the other hand, the contrast between scrambled and nonscrambled structures is reinforced when the lexical item 'one' (which can function as a specificity marker, see Ionin (2003) for Russian) is used along with a scope-marking element. In its basic position, the direct object 'one book' can take either wide scope (if 'one' is an unstressed article-like element, as in (65a)) or narrow scope (if 'one' is a stressed numeral, as in (65b)) over 'has to':

(65) a. Marija <u>maje</u> pročytaty **odnu knyžku**, ale ne može jiji znajty.
Maria has to read one book but not can her find
'Maria has to read a (certain) book, but she cannot find it.'

b. Marija <u>maje</u> pročytaty **odnu knyžku**, ale šče ne vyrišyla jaku.
Maria has to read one book but yet not decided which
'Maria has to read a (one) book, but she hasn't decided yet which one.'

When the direct object 'one book' is moved over the modal in (66a), it obviously receives a wide scope reading associated with specificity. The sentence in (66b), however, is not acceptable since it provides contradictory information: the scrambled object implies specificity, while the following context reinforces its nonspecific narrow reading:

(66) a. Marija **odnu knyžku** maje pročytaty, ale ne može jiji znajty.
Maria one book has to read but not can her find
'Maria has to read a (certain) book, but she cannot find it.'
b. # Marija **odnu knyžku** maje pročytaty, ale šče ne vyrišyla jaku.
Maria one book has to read but yet not decided which
'Maria has to read a (certain) book, but she has not decided yet which one.'

Nevertheless, some speakers might argue that the last sentence sounds acceptable. It is possible if they stress the lexical marker 'one' implying that it is a numeral and reinforcing contrastive meaning of the direct object (there exists one book, and not two). Whether this reading precludes referentiality of the object is not clear, but in any case there is a contrast between two structures in (66) and this contrast is due to the word order change.

It also appears that the effects of scrambling are still evident even if we avoid using 'one' in contexts where is it unnecessary. The direct object in (67) can be interpreted only as 'a certain, one boy' if there is no lexical marker used, and its position is preferably pre-verbal.

(67) a. Marija **xlopcja** pokoxala i vyjšla za njoho zamiž.
Maria boy loved and married-him
'Maria fell in love with a (certain) boy and married him'.
b. # Marija **xlopcja** pokoxala, ale nixto ne znaje, xto vin.
Maria boy loved but nobody not know who he
'Maria fell in love with a (certain) boy but nobody knows who he is'.

If in (67a), the direct object 'boy' remained *in situ*, the sentence would sound degraded. However, addition of the nonspecific-indefinite pronoun *jakohos'* 'some' saves it, as it clearly marks nonreferential semantics of the object:

(68) Marija pokoxala #**(jakohos') xlopcja**, ale nixto ne znaje, xto vin.
Maria loved some boy but nobody not knows who he
'Maria fell in love with some boy, but nobody knows who he is.'

It is also likely that the direct object 'boy' in (67a) is known not only to the speaker, but also to the hearer, and that it was mentioned earlier in the conversation, suggesting that this noun is not only referential, but also presupposed. If it is so, than the scrambled object 'boy' is both specific and definite.

2.4.4. Definite objects

As was already pointed out in section 2.2., definiteness is another property associated with scrambled objects. Its definition is repeated below:

(69) A DP is *definite* when the speaker presupposes the existence of a unique individual in the set denoted by NP and assumes that the hearer shares this presupposition (based on Heim (1991) and Ionin (2003)).

The following sentences in (70) show that when the direct object 'car' is clearly marked as definite by the definite pronoun 'this' and is unique through previous mentioning, its most natural place is a scrambled position:

(70) Look, what a nice car, but it doesn't run.

a. Ja **cju mašynu** možu poremontuvaty i zabraty sobi.
I this car can fix and take self
'I can fix this car and take it for myself.'

b. # Ja možu poremontuvaty **cju mašynu** i zabraty sobi.
I can fix this car and take self
'I can fix this car and take it for myself.'

The next sentence has no lexical marker of definiteness (such as 'this' or 'that'), but still the most acceptable position for the direct object 'roof' is a scrambled one. The nature of the contrast between (71a) and (71b) might be complex, but since the direct object is mentioned in a previous sentence, indicates a unique individual and is definite, this suggests that there exists a definiteness-scrambling correlation.

(71) Our house has a red roof and green windows.

a. Ja **dax** by tež pofarbuvav zelenoju farboju, ale ne maju na ce času.
I roof would also paint green paint but not have on this time
'I would paint the roof in green, too, but I don't have time for this.'

b. # Ja by tež pofarbuvav **dax** zelenoju farboju, ale ne maju na ce času.
I would also paint roof green paint but not have on this time
'I would paint the roof in green, too, but I don't have time for this.'

Definiteness in languages with articles can be encoded not only by previous mentioning, but also by association and entailment (see e.g., Ko, Ionin & Wexler (2010) for English). For example, the definite article is required in the following contexts: "I went to a wedding yesterday. **The bride** was beautiful"; or "I bought a house. **The roof** of my house is grey". It appears, however, that such contexts do not trigger scrambling in Ukrainian. Although 'bride' is definite (through association with the wedding), its movement to a pre-verbal position in (72) makes the sentence non-acceptable. Similarly in (73), although the direct object 'Moon' is unique and definite, its use in a scrambled position sounds odd (assuming neutral prosody).

(72) There was a <u>wedding</u> by the church.
Ty **narečenu** mohla by pobačyty, jakby pryjixala raniše.
you bride could would see if came earlier
'You could see the bride, if you would come earlier.'

(73) Astronauts went into <u>space</u>.
Tam vony **Misjac'** sfotohrafuvaly.
there they Moon took-a-picture
'There, they have taken a picture of the Moon.'

The two last examples suggest that although definiteness can be a semantic property of a scrambled object (as was shown by Brun (2005) for Russian), not all types of definiteness are compatible with scrambling. Particularly, there is no direct correlation between object scrambling and uniqueness. This further suggests that what matters semantically/pragmatically for scrambling is not definiteness, but partitivity.

2.4.5. Partitive objects

Previous mentioning of an individual that is not necessarily unique, but is a member of an established set (even if the set consists of one member) has been defined as partitivity.

(74) *Specificity as Partitivity*: a DP is partitive when the individual in question is part of a set introduced in previous discourse (based on Diesing (1992) and Enç (1991)).

In English, partitivity is marked by 'a' with the meaning 'one of many', as in the following example from De Hoop (1998):

(75) Carl had dinner with <u>three students</u> and two professors yesterday.
A/*the student brought the wine they drank.

To verify whether partitivity is associated with a specific position in Ukrainian sentence structure, we can use a test with existential sentences from De Hoop (1998:9). De Hoop shows that in Dutch, existential constructions can contain both overt and covert partitives. The sentence in (76) has an overt partitive 'two of the books', while the sentence in (77) is ambiguous in that the 'many books' can be interpreted existentially (there exist many books) or partitively (there are many of the books from a previously defined set).

(76) Er zijn **twee van de boeken** die je moet lezen, in de bibliotheek aanwezig.
there are two of the books that you have to read in the library present
'In the library, there are two of the books that you have to read.'

(77) Er zijn **veel boeken** in de bibliotheek.
there are many books in the library
a. 'In the library there are many books'
b. 'Many of the books are in the library'

The last example can be used as a test for word order/partitivity interaction in Ukrainian. The sentence in (78) is a typical existential structure in Ukrainian. The NP 'many books' is sentence-final, and its interpretation is nonpartitive, nonspecific, indefinite:

(78) U biblioteci je **bahato knyh**.
in library is many books
'There are many books in the library.'

However, when the set of 'books' is established by a previous context, the word order should be changed to the one in (79). The NP 'many books' now

takes a sentence-initial position and its interpretation is 'many of the recommended books from the list', which makes this NP partitive:

(79) Here is the list of recommended books for this class.
Bahato knyh je v biblioteci = **Bahato z cyh knyh** je v biblioteci.
many books is in library = many of these books is in library
'There are many (of these) books in the library.'
* 'There are many books in the library.'

Similar effects are obtained with direct object scrambling in other types of syntactic structures. The sentences in (80) illustrate such a scrambling-partitivity correlation.

(80) Five journalists had been invited to the party, but I have noticed only one of them.
a. Ja tež **odnoho** **žurnalista** bačyv.
I also one journalist saw
'I have also seen a journalist / one of the journalists.'
b. Ja tež bačyv **odnoho** **žurnalista**.
I also saw one journalist
'I have also seen one journalist.'

The object 'one journalist' is a part of a set of 'five journalists' which is established in the discourse. In (80a), the constituent 'one journalist' is moved over the verb and has a partitive interpretation. When this direct object is used in a post-verbal position (as in (80b)), 'one' can be also perceived as a numeral, and then 'journalist' might not belong to the group of five journalists mentioned in a previous sentence. If there is a third speaker to continue the conversation, his intention to refer to the same journalist will be marked by the article-like pronoun 'that', and, predictably, the direct object will occur in a scrambled position. In this case it will be interpreted as definite, partitive and referential:

(81) I ja **toho** **žurnalista** bačyv.
and I that journalist saw
'I have also seen the (same) journalist.'

Summarizing, in Ukrainian, scrambled objects are usually perceived presuppositionally, while nonscrambled objects are often interpreted existentially. A presupposed object can be either definite or partitive, but since

not all types of definiteness are associated with a scrambled position, this implies that only partitive scrambled objects show the most consistent behavior. We can conclude, then, that among all semantic features involved in object scrambling, partitivity (or specificity in terms of Enç (1991)) is the most critical.

2.4.6. Complex semantics of scrambled objects

Semantic-pragmatic effects of direct object scrambling have been shown cross-linguistically; however, in the Slavic languages they have typically been related not to semantic features, but to notions of information structure. The tests used to show the information structure at work usually involve a question-answer pair, as in (82) (translated from Kallestinova (2007)).

(82) a. What happened?

Olja	rozbyla	**vazu**.	All-focus
Olja	broke	vase.ACC	

'Olja broke a vase.'

b. Who broke the vase?'

Vazu	rozbyla	OLJA.	Subject-focus
vase.ACC	broke	Olja.NOM	

'Olja broke the vase.'

c. What did Olja break?

Olja	rozbyla	**VAZU**.	Object-focus
Olja	broke	vase.ACC	

'Olja broke a vase.' = 'It's a vase that Olja broke.'

The question in (82a) usually triggers a discourse-neutral answer, also called an 'all-focus' or 'all-new-information' SVO structure. Questions in (82b-c) trigger discourse-dependent answers that can have different syntactic or prosodic structures. For instance, the question in (82b) is answered with an OVS structure, where the 'new-information' subject appears in the sentence-final 'focus' position. The answer to (82c), on the other hand, contains new information about an object, which is marked primarily prosodically in an SVO structure.

Although it is obvious that in Ukrainian different types of questions trigger different answers in terms of word order, I would use 'question-answer' test with some caution. First, the syntactic structures of sentences as in (82) are somewhat artificial. In a real conversation, the answers would have many elided

elements (83b) and variable prosody (83c), and their reconstruction might not lead to the predicted 'correct' word order (as in 82).

(83) a. Xto rozbyv vazu?
who broke vase.ACC
'Who broke the vase?'
b. Olja.
c. OLJA rozbyla.
Olja.NOM broke
'Olja broke.'

Furthermore, under the discourse-syntactic approach the dichotomy 'old-new' comes down to only one type of semantic-pragmatic effect – so called 'previous mention'. With regard to direct object scrambling, such an approach would predict that any object recently mentioned in a previous discourse (although it is not clear how recently) will be scrambled, and those that were not mentioned would never appear in a pre-verbal position. Some language-specific constructions commonly used in Ukrainian suggest that this prediction is of limited power, and that actual syntactic variability goes beyond it.

For instance, use of an NP with the negative particle *ni…ni* 'not…not' (which is likely to be a polarity item), reinforces the interpretive effects of scrambling[29]. Sentence (84a) means that Ivan has nothing to study with, and it does not presuppose the existence of some specific book or notebook, so the sentence can have a neutral continuation. However, when the direct object constituent is placed before the verb, its reading is clearly specific (84b).

(84) a. Ivan ne prynis **ni knyžky ni zošyta** – dobre, ščo sam pryjšov u školu.
Ivan not brought not book not notebook good that self came to school
'Ivan brought neither book, nor notebook; it is good that he himself came to school.'
b. Ivan **ni knyžky ni zošyta** ne prynis, xoč znav, jaki z nyx potribni.
Ivan not book not notebook not brought but knew which of them needed
'Ivan brought neither book, nor notebook; although he knew which of them are needed.'

[29] Use of *ni…ni* yields sentential negation, and thus direct objects in such sentences can be in Accusative or Genitive. As was mentioned before, in Ukrainian, use of an Accusative form strongly implies specific semantics of NP, but the NP in Genitive is not necessary nonspecific. In the examples in (84) Genitive marker is used consistently, but still (84b) stands out from other structures in that the direct object is interpreted as specific.

c. # Ivan **ni knyžky ni zošyta** ne prynis – dobre, ščo sam pryjšov u školu.
Ivan not book not notebook not brought good that self came to school
'Ivan bring neither book, nor notebook; it is good that he himself came to school.'

The sentence continuation suggests that we are dealing with a covert partitive: apparently there was some list of supplies of which Ivan was aware of. The nonspecific/nonpartitive reading is not available for a scrambled structure, as shown in (84c).

Another language-specific structure labeled as "Passive Accusative" is also relevant in the discussion (recall section 2.2.5.1.). The Passive Accusative construction has the verb in a participle-like form on *–no/-to*, no subject (agent), and the direct object in Accusative. Interestingly, this structure exhibits the same semantic effects as a nonpassive structure. Consider (85), where the object 'new secretary' is in a post-verbal position, and can be either nonspecific or specific.[30] The context that follows disambiguates its semantics and suggests that it is nonspecific.

(85) Rik tomu na robotu bulo pryjnjato **novu sekretarku**.
year ago on job was accepted new secretary
'A new secretary was hired a year ago". (The company needed someone who knew English; that is why some changes in our personnel occurred.)

However, when the object appears in a pre-verbal position (which is usually reserved for a subject-agent), its interpretation is definite (86) or specific/partitive (87):

(86) **Novu sekretarku** pryjnjato na robotu rik tomu, jiji zvaty Nina.
new secretary.ACC accepted on job year ago her name Nina
'The new secretary was hired a year ago. Her name is Nina'.

[30] The sentence with PPs in a low position is ungrammatical for independent reasons:

* Bulo pryjniato **novu secretarku** na robotu rik tomu.
was accepted new secretary.ACC on job year ago
'A new secretary was hired a year ago'.

(87) **Novu sekretarku** pryjnjato na robotu rik tomu. Jiji vybraly iz desjaty kandydativ.
'A new secretary was hired a year ago. She was chosen out of ten candidates.'

Note that the last two sentences (as well as some others above) are weakly marked in terms of information ordering, and nonetheless, they have scrambled direct objects which can be defined as specific definite or covert partitive. This suggests that the traditional information-based approach can be complemented with more transparent notions of semantic features, which, in turn, would allow us to account for various word order structures in the formal framework.

2.4.7. Summary

Observation of Ukrainian data shows that the direct object moves over the verb in certain contexts. These contexts can either precede or follow the sentence with scrambling. Scrambled direct objects can be interpreted as specific-referential (specified in the following context), definite (through previous mentioning), or partitive (one from a set of existing individuals). This suggests that the generalizations stated in Thráinsson (2001) about the relationship between the semantics of the direct object and its movement to a scrambled position applies to Ukrainian as well:

(88) Generalization 1: a weak/existential reading is incompatible with Object Shift (or scrambling), *but*
Generalization 2: objects with a strong/quantificational/specific reading do not necessarily have to shift or scramble.

There are cases when a scrambled position is clearly the best for a definite-partitive object, and then the object in its basic position is either degraded or interpreted as indefinite/nonpartitive. However, the optionality of scrambling remains a problem which has been merely described, but not accounted for thus far. Moreover, these observations are made for sentences pronounced with mostly neutral intonation, and a change in a pitch contour can modify the sentence interpretation and add even more variability into existing syntax-semantics correlation. The following section presents an attempt to use available theoretical notions of syntax, semantics and prosody in order to provide a possible unifying account of Middle Object Scrambling in Ukrainian.

2.5. Theoretical Considerations

The theoretical analysis pursued here employs Phase Theory as developed by Chomsky (2001), and in particular Chomsky's proposal that CP and vP nodes have a special status for the human computational linguistic mechanism (C_{HL}) insofar as they represent points in the derivation of linguistic structures where C_{HL} must compute and store (semantic) propositions. Thus according to Phase Theory, structure (89) will involve proposition computation for each of the substructures [$_{vP}$ John visit Mary] and [$_{CP}$ that John will John visit Mary] in the course of deriving the larger VP phrase.

(89) [$_{VP}$ say [$_{CP}$ that [$_{TP}$ John will [$_{vP}$ John [$_{VP}$ visit Mary]]]]]

The notion of a proposition has been discussed and debated within philosophy and semantics since at least Frege (1892) and Russell (1903). For present purposes, I focus on the widely-held view that propositions correspond to "complete thoughts," and hence that for a sentence to be able to express a proposition, all its parameters relevant for semantic interpretation must be fixed. Thus in order for (90) to express a proposition, the values of *he*, *it*, *there* and the speech time must be specified. Intuitively, until we know the references of *he* and *it*, where *there* is, and at what time the sentence was uttered, the sentence fails to express a determinate content that can be evaluated for truth or falsity.

(90) **He** left **it there** yesterday.

I assume (following Larson, in press) that vP corresponds to the computational stage where a basic truth-evaluable expression is determined (type t), and that the supra-vP field (e.g., TP-T) corresponds to stages where metalinguistic parameters (worlds, times) are set (essentially by type <s,t> elements) for final propositional content. This view implies that sentences containing context-sensitive elements (i.e., ones whose values are fixed by an assignment function or context of use) must have all relevant context-values determined by/at the time the phase node vP is reached in order to permit proposition computation.

Pronouns, proadverbs and tenses like those in (90), are not the only context-sensitive elements. As argued recently by Stanley & Szabo (2000) and Stanley (2002), contextual-determination is also involved in the restrictions of strong and weak quantifiers that are interpreted partitively/proportionally. For example, the

quantifier *every* in (91a) would typically be understood to range over only a subset of the children, and not the whole collection. Stanley & Szabo argue this to be a context effect comparable to that found in (91) – in effect, the reference of *children* is contextual.

(91) a. **Every child** had a good time.
b. **A child** was scolded, namely Luke.
c. The teacher recommended two books and five articles. John read **a book.**

This view can be extended to specificity effects under a generalization of Schwarzschild's (2001) proposal that singleton indefinites are maximally restricted quantifiers. Thus it can be conjectured that indefinites understood specifically like (91b) involve the noun *children* being contextually restricted to a single, individual child. Similarly, for the specific reading of (91c), where the reference of *book* in the second sentence shrinks to the set of two books mentioned in the first, and hence *a book* picks out one of them. Viewing these results in light of Phase Theory, it follows that strong and weak quantifiers and specific/partitive indefinites contained in vP (and CP) nodes must have their context-sensitive restrictions valued at/by the point those nodes are reached.

2.5.1. The ICDF Hypothesis and consequences

Current syntactic assumptions within the Minimalist Program require all movement to be feature driven (see also Grewendorf & Sabel, 1999; Miyagawa, 1997 & 2003, Kitahara, 2002; Ko, 2005, and others). Scrambling and shift of objects to vP edge position have, in particular, been hypothesized to involve two factors: EPP (a syntactic feature responsible for the movement) and Int (associated with some aspect of interpretation) (Chomsky, 2001).

The EPP (Extended Projection Principle) was first introduced by Chomsky (1981) in general terms and later defined as a strong feature D on T that must be checked by an NP subject or expletive in the specifier of TP. The typology of EPP as a feature has been further developed by Alexiadou & Anagnostopoulou (1998); Bailyn (2003); Holmberg (2000); Miyagawa (2003); McCloskey (1996); Pesetsky & Torrego (2001), and others, so that EPP is now viewed as a "general uninterpretable feature requiring visibility in order to be erased" (Rosengren, 2002), and it can be satisfied by various types of elements in specifiers of such

functional heads as C, T or v. Under Chomsky (2001), C and v* are heads of strong phases that may have an EPP-feature, which provides a position for XP-movement. Particularly, some languages exhibiting object shift/scrambling (Icelandic and Mainland Scandinavian) have EPP in v*, but it is assigned "only if that has an effect on outcome". These effects on outcome were unified under the label "*Int*", apparently related to a new interpretation. However, the nature of *Int* (or INT in this dissertation) and its semantic contribution have not been clearly identified (although its presence is clearly motivated by the need to postulate some feature). Holmberg (1999), for instance, suggests that object shift is driven by the semantic interpretation of the shifted object (new/old information, specificity-definiteness, focus or topic, etc.; called the interpretive complex *Int)*. Chomsky (2001:32), on the other hand, finds it problematic that the movement operation is "driven by semantic properties of the XP that is raised, interweaving with phonological properties of the construction", and assumes that *Int* is simply associated with the phonological border of vP. In the case of XP-movement, this is the outer specifier of v or phase edge.

Based on the line of reasoning sketched above, I see Holmberg's proposal as worthy of reconsideration. I assume that INT is a semantically interpretable feature on v, which has to be checked via assignment of values to the elements with deictic/contextual parameters within the vP phrase.[31] In other words, the INT feature and feature-checking by it constitute a syntactic expression of the requirement that context values be fixed as a precondition to proposition computation at phase nodes. In this view, scrambling occurs only if the semantics of the scrambled element involves contextually defined parameters (observationally, these elements are pronouns or partitive/definite/specific NPs). For example, sentences in (92) have the direct object *knyhu* which is contextually defined as (implicit/covert) partitive (INT-marked) in (92a) or nonspecific/nonpartitive/indefinite (not INT-marked) in (92b).

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[31] Placement of the INT feature in *v* is justified by the fact that semantics of a direct object can be realized by verbal morphology in some languages. For instance, in Swahili, specificity is marked by an object agreement affix (OA) on the verb (Deen, 2006):

(i) Juma a- li- **mw-** on-a m- tu.
Juma SA.3sg- past- **OA.3sg**- see-IND I- person
'Juma saw the person/ *a person.'

See also Rackowski & Richards (2005) on Tagalog overt verbal morphology that signals movement of arguments to satisfy an EPP-feature on the head of the vP phase.

(92) a. My šče šukaly potribnu literaturu, a Ivan **knyhu** vže kupyv.
we still searched necessary literature but Ivan book already bought
'We were still searching for necessary literature, while Ivan has already bought a certain book (from the list of necessary literature).'

b. My šče šukaly podarunok, a Ivan uže kupyv **knyhu**.
we still searched gift but Ivan already bought book
'We were still searching for a gift, while Ivan has already bought a/some book.'

The direct object *knyhu* in (92a) occurs in a scrambled position where its interpretation as 'a certain book from the list of literature' is clearly perceptible. The same object in (92b), however, has no context-related parameters (its semantic properties are unspecified by previous context). Assuming that it does not carry the relevant INT feature, there is no prerequisite for scrambling; the outcome is the base structure.

The hypothesis which I suggest for structures like in (92) is stated below:

(93) **INT-as-Contextually-Defined-Feature (ICDF) Hypothesis**:
A. INT is a semantically interpretable feature on v;
B. The checking of INT on a scrambled phrase corresponds to assignment of values to deictic/contextual parameters within that phrase.

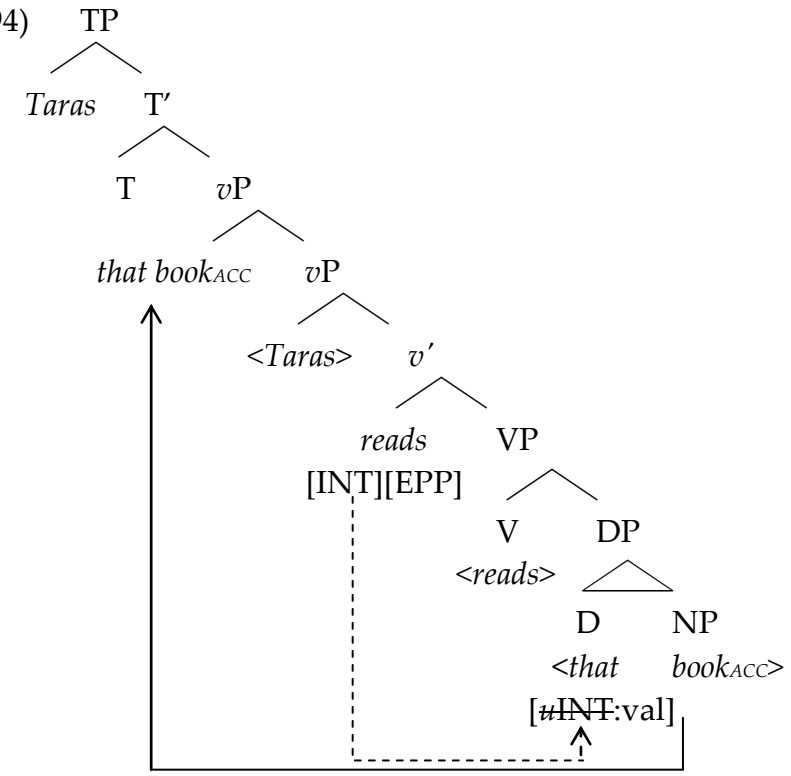
The ICDF hypothesis makes some strong predictions. Crucially for our purposes, if the interpretation of INT-checking is fixation of values for deictic components in a nominal, and if the latter is required for proposition computation, then INT-checking itself must be obligatory. Furthermore, if object-scrambling is triggered by INT, and INT-checking is obligatory, then scrambling cannot itself represent something truly optional since its result is required to produce an interface-computable object.

Under Chomsky (2001), movement uniformly involves agreement: a functional head H bearing an EPP feature together with a feature F probes its c-command domain for another instance of F (its goal). Upon finding F, H agrees with it and activates its EPP feature, drawing the bearer of F to its specifer position. In the context of INT and the ICDF, scrambling instantiates this view as follows: the functional head v bearing an EPP feature and INT probes its c-command domain for another instance of INT; upon finding one, v agrees with it and activates its EPP feature, drawing the bearer of INT to the vP edge.

In Ukrainian, this mechanism would proceed as shown in (94): Agree between the probe-goal is established between *v* and D for the [INT] feature; the

association between [INT] and EPP triggers movement of the DP *book* to the *v*P edge.[32] This proposal is in accord with Chomsky's view that movement to edge positions (e.g., *v*P-edges, CP-edges) yields discourse-related effects.[33]

(94)



The tree in (94) represents the derivation in which all relevant features (INT and EPP) are present and all syntactic operations (agreement/valuing and movement) proceed as predicted yielding grammatical and felicitous scrambled structure with a definite/partitive object in a pre-verbal position. This 'ideal' picture is likely to be obtained with pronominal direct objects. The reality might differ, though, as object scrambling of full NPs is known to be optional.

[32] I leave aside other details of derivation (i.e., case assignment; verb movement from V to v; subject movement from the spec of vP to TP (and then to CP); possibility of other projections, e.g. AspP), as they are not directly related to the main discussion. I assume, however, that the direct object moves to the outer edge of vP above the thematic specifier occupied by subject, so there is no "tucking-in" for the scrambled argument (see more on the issue in Chomsky (2001); Rackowski & Richards (2005), *i.a.*).

[33] For completeness of the overall picture, it must be mentioned that the direct object can undergo further movement to a position higher than the *v*P-edge under PIC (the Phase-Impenetrability Condition): The domain of H is not accessible to operations outside HP, only H and its edge are accessible to such operations (Chomsky, 2001:13).

Considering various possibilities in light of the theoretical proposal spelled out above, the full picture emerges as in Table 2:

Table 2. *Possible combinations and outcomes under ICDF.*

v	**Definite/Partitive DP [*u*INT:val]**	**Indefinite Nonspecific DP**
[INT]-[EPP]	Possibility 1: move	Possibility 4: *
[INT] (no [EPP])	Possibility 2: *in situ*	Possibility 5: *
(no [INT])	Possibility 3: **in situ*	Possibility 6: *in situ*

Under this picture there are at least three possibilities when a direct object bears context features associated with INT (definiteness/partitivity). Possibility 1 was presented in (94) and is summarized below in (95):

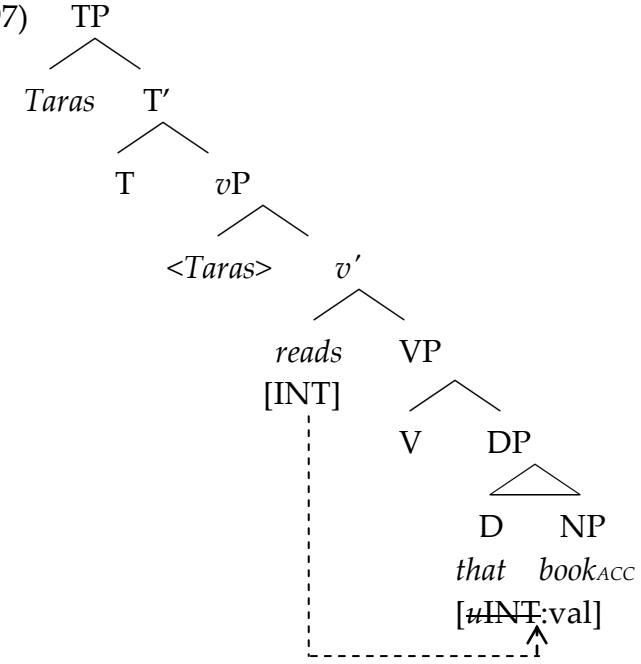
(95) Possibility 1: v has established an agreement relation with INT, v's EPP feature has been activated, and movement has occurred.

Possibility 2 differs from Possibility 1 in that it does not involve the EPP feature.

(96) Possibility 2: v has established a pure agreement relation with INT; no EPP feature is activated, and the direct object stays *in situ*.

The process described in (96) would yield a nonscrambled structure, as shown in (97).

(97)



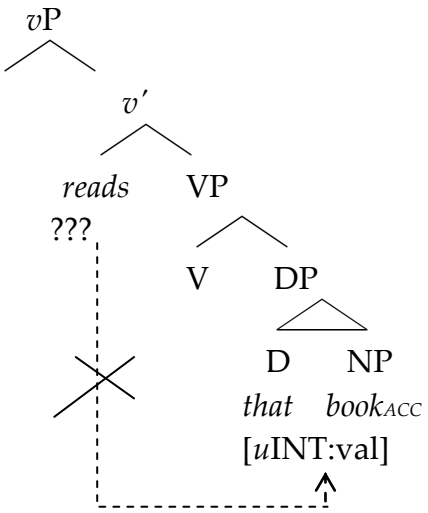
Note that in both cases (94) and (97), an agreement relation has been established from v to an INT-bearing nominal. Thus whether or not scrambling occurs, the derived structures will be grammatical and felicitous, provided they encode this relation within vP.

Possibility 3, however, does not yield any acceptable structure: either scrambled or nonscrambled.

(98) Possibility 3: v does not bear INT (and EPP associated with it); there is no agreement and no movement; and the structure is nonacceptable/ungrammatical.

This possibility is exemplified by the hypothetical derivation (99), as it would involve a structure with some kind of "defective" verb, not available in Ukrainian. For instance, if the verb morphology lacks some marker associated with INT-EPP, the derivation will crash even if a direct object is INT-valued.

(99)



It seems that such examples could be found in Tagalog. Rackowski & Richards (2005) show that if an object pronoun is present in the sentence, it must be shifted, and the form of the verb that makes the pronoun a ''topic'' must be used, as illustrated in (100a).

(100) a. S-in-ampal-**Ø** **ako** ng mandurukot.
-ASP-slap-**ACC** ANG.I CS pickpocket
'A/The pickpocket slapped me.'

b. * S-um-ampal ko ang mandurukot.
-NOM.ASP-slap CS.me ANG pickpocket
'The pickpocket slapped me.'

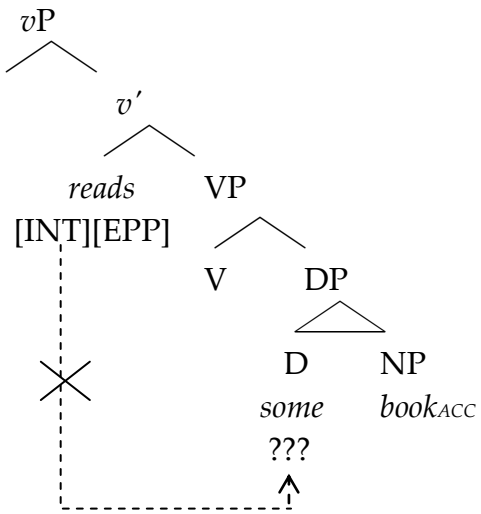
According to the authors, (100b) is ungrammatical because the verb morphology does not signal that the movement of the pronoun occurred, and thus the verb does not bear an appropriate marker associated with the EPP-feature. However, whether it is so, needs to be verified further with native speakers.

Other possibilities schematized in Table 2 involve indefinite nonpartitive/nonspecific direct objects, which are not context-dependent and do not carry an INT feature.

(101) Possibility 4: v bearing INT and EPP does not find the goal with INT, Agree cannot occur, and EPP feature is not activated; in this case INT fails to be valued and the derivation crashes.

This failed derivation is schematized in (102). It should be noted, however, that v might probe for another goal, and if there is an indirect object pronoun or definite/partitive $NP_{DAT,}$ v will agree with it and the derivation will proceed further following Possibility 1 or 2.

(102)

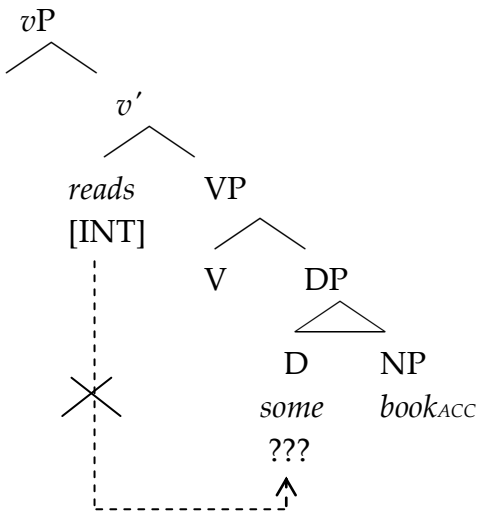


The derivation predicted by Possibility 5 would have a similar outcome to those in (101) and (102).

(103) Possibility 5: v does not find the goal with INT, Agree cannot occur and the derivation crashes.

In this case, there is no EPP feature available, and movement is not possible. However, even a nonscrambled structure is not acceptable, in the absence of other INT-marked NPs in a c-command domain of v.

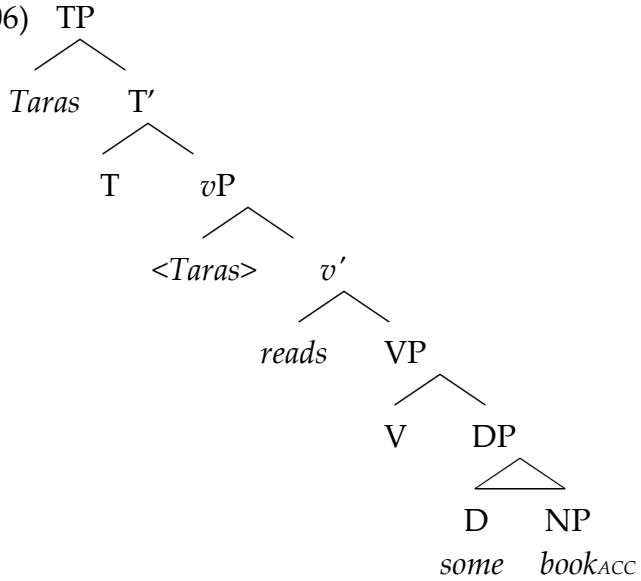
(104)



Possibility 6 is the only viable outcome for structures with indefinite nonspecific direct objects.

(105) Possibility 6: v does not bear INT (or EPP); there is no agreement (for INT) and no movement; the direct object stays *in situ* without any change in interpretation.

(106)



The structure in (106) can be considered as default/unmarked/basic insofar as it can be used "out-of-blue" and does not require any special prosody. This structure is typical in those languages that do not employ object shift/scrambling (e.g., English). The derivation still occurs by phase, but the edge of vP phase is occupied by the external argument – subject (in transitive sentences), while an internal argument stays in its base position or undergoes only short vP-internal movement (see Takano (1998) on 'object shift' in English). The main functions of a v head are limited to the assignment of external θ-role (selection of Agent) and checking of the case (ACC) and agreement features (person, number & gender) with the object.

To summarize, object scrambling depends both on the direct object semantic properties defined by the context and on the functional *v*-head properties which can be marked morphologically in some languages. Under the ICDF hypothesis, the optionality of scrambling is eliminated for indefinite nonspecific objects, as the only fully acceptable outcome in this case is a nonscrambled structure. In the definite/partitive contexts, this phenomenon is not eliminated, but reduced to two options or two ways of expressing INT-Agreement: in vP-edge and *in situ*. The most immediate question is, then, is there any difference between Possibility 2 (definite object *in situ*) and Possibility 6 (indefinite object *in situ*) in languages without morphological or lexical markers of definiteness/partitivity?

2.5.2. Expression of INT-Agreement: scrambling and prosodic recontouring

The consequences of the ICDF Hypothesis belong to the syntax-semantics interface, but, as language facts suggest, some changes also occur at the phonological level. Hence, in order to provide answer to the above question and limit optionality further, we have to integrate data on scrambling, object semantics and prosody.

Many studies have investigated variations in the syntactic position of arguments and identified aspects contributing to these variations, i.e., direct object type (pronoun versus DP), semantic/pragmatic context, and prosody. There is extensive literature on the correlation between prosody and word order (Cinque, 1993; É. Kiss, 1998; Frascarelli, 2000; Horváth, 1986; Jackendoff, 1972; Ouhalla, 1994; Reinhart, 2006; Richards, 2010; Rochemont, 1986; Selkirk, 1984; Szendröi, 2001; Vallduvi, 1992; Zubizarretta, 1998, among many others). In Slavic languages (other than Russian), however, prosodic effects on word order and

scrambling have received relatively less attention in the generative literature.[34] Most recently, Féry, Paslawska and Fanselow (2007) have presented some initial results for Ukrainian, but they concern only one syntactic structure – nominative split construction (See more on this issue in Chapter 4).

The basic line of this investigation is suggested by the behavior of pronouns. Pronouns are elements whose entire semantic contribution is provided by context, and which typically involve a minimal phonetic matrix. Pronouns also show a very strong tendency to scramble or shift: in many object-shift languages (including Ukrainian) pronouns ordinarily must scramble to the vP edge. Thus in (107a) the personal pronoun *jiji* '*3.SG.FEM*' scrambles leftward and cannot remain postverbal (107b) without infelicity:

(107) a. Taras **jiji** čytav.
Taras 3.SG.FEM read
'Taras has read it (the book).'
b. # Taras čytav **jiji.**
Taras read 3.SG.FEM
'Taras has read it (the book).'

Interestingly, the scrambling requirement can be circumvented, and pronouns "kept in place" in special prosodic circumstances. In Ukrainian and elsewhere, a prosodic shift or recontouring from neutral intonation to verb-stressed intonation will allow the pronoun *jiji* to remain *in situ*:

(108) Taras ČYTAV **jiji**.
Taras read 3.SG.FEM
'Taras has READ it (the book).'

This effect appears to be general (Schwarzschild, 1999). As noted above, non-pronominal NPs that undergo scrambling very typically show a definite-partitive interpretation (which are associated with context-sensitivity). However, these

[34] In fact, many studies on Russian syntax discussed the role of intonation in the sentence interpretation and present examples with focused arguments. However, the authors' claims were often based on their own intuition and not supported with a phonetic/acoustic analysis or experimental data. At present, there are many methods to investigate prosody experimentally, and thus there is a possibility to present more comprehensive analysis than those from the previous studies.

same elements, with the same interpretation, will prefer to stay *in situ* under the influence of prosodic recontouring (109):

(109) a. Taras **tu knyžku** uže čytav.
Taras that book already read
'Taras has read that book already'.
b. Taras uže ČYTAV **tu knyžku**.
Taras already read that book
'Taras has READ that book already.'

The change in sentence prosody in (109b) is not as easily detectable as that in (107) with the pronoun, and the effect becomes even more subtle in other examples. Nonetheless these results are suggestive given three points:

(110) (i) *in situ* position is correlated with a prosodic change expressed specifically on the verb (*čytav*/*ČYTAV*);
(ii) the domain of the INT-agreement relation postulated under the ICDF Hypothesis is specifically the verb phrase (vP);
(iii) a number of recent studies have argued convincingly that long distance relations that are expressed by movement in many languages (i.e., *wh*-movement) can also be expressed by an *in situ* structure which is associated with a change in prosody.

For instance, in an influential publication, Kitagawa & Deguchi (2002) have argued that Japanese *in situ* wh-questions can involve "E-features" on C that probe the CP domain, and establish logical scope relations under agreement. The PF interpretation of this agreement relation is precisely particular sentence prosody, so-called Emphatic Prosody (EPD).[35]

Given the observations above, scrambling and prosodic recontouring might be seen to constitute alternative expressions of INT-agreement, exploiting word order rearrangement and phonological adjustment (respectively). Logically speaking, the two options for expressing INT-agreement might be then unified in terms of the basic vP domain over which it extends (111a). Thus scrambling marks the left edge of the INT-agreement domain by movement (111b), while

[35] See also Rackowski & Richards (2005) on further parallels between object scrambling to vP edge and wh-movement. Based on the data from Tagalog they propose "a comparatively unorthodox movement path for *wh*-phrases: they move successive-cyclically through specifiers of vP, rather than of CP".

recontouring marks the whole scope of the agreement domain through prosody (111c):[36]

(111) a. [vP … V … [DP…INT]]

b. [vP **[DP…INT]** [vP … V … [DP…INT]]] (scrambling – left edge)

c. [vP … V … [DP…**INT**]] (prosody – whole domain)

On this picture, the formal grammar of context-sensitivity resembles that of focus-topic dichotomy, which is also expressed through movement to Middlefield as in Romanian (Horvath, 1995) and Hungarian (É. Kiss, 1998), or prosodic adjustment as in English (Rooth, 1992). Similar effects are discussed in a significant body of literature on the syntax-phonology interface with regard to information structure (e.g., Büring, 2007; Gussenhoven, 1984; Jackendoff, 1972; Krifka, 2007; Ladd, 1996; Nespor & Vogel, 1986; Steedman, 2000; Selkirk, 1995; Truckenbrodt, 1999, among many others).

Particularly relevant is the proposal by Neeleman & Reinhart (1998) (see also Reinhart (2006)). In their study of Dutch scrambling, Neeleman & Reinhart claim that an element is interpreted as D-linked (linked to an accessible discourse entity) if it does not bear sentential stress. The stress can be moved away from this element or the element itself can appear in a higher position, where the main stress is not assigned by default.[37] The first strategy can be used in English, when the stress is relocated from its default rightmost position (101) to a constituent that represents new information (102b).

(112) My neighbor is building a DESK.

(113) a. Who is building a desk?
b. My NEIGHBOR is building a desk.

The second strategy is used in Germanic languages exhibiting object shift. For instance, in Dutch, objects usually follow an adverb and receive the main sentential stress (114a). However, when the object precedes the adverb (as in

[36] Other options (namely, right edge marking) seem also to be logically possible. The discussion of such possibility is sketched in Chapter 5.

[37] Their syntactic analysis is, however, based on the assumption that the Dutch object shift is a result of base-generation rather than syntactic movement. In this study, I do not follow this view.

114b), it is destressed. The destressing operation in this case is associated with D-linking, because only definite, specific or generic objects can appear is a shifted position.

(114) a.	…dat	Jan	langzaam	het BOEK	las.
	that	Jan	slowly	the book	read
b.	…dat	Jan	**het boek**	langzaam	LAS.
	that	Jan	the book	slowly	read

Neeleman and Reinhart thus conclude that object shift (in some languages) has the same effect as prosodic shift (in other languages): a dislocated constituent becomes destressed. Furthermore, both 'shifting' operations are tied to object semantics: only D-linked (definite or specific/partitive) constituents can be involved in the described processes. There seems to be a difference between Dutch and Ukrainian here: in Dutch scrambled phrases are destressed, whereas in Ukrainian, *in situ* partivives/definite are destressed. Further research is needed to explore how syntax, prosody, and semantics interact in various languages that allow both operations (syntactic movement and prosodic recontouring).

2.5.3. Further extensions: Focus movement

Discussion of syntax-prosody interaction in object scrambling can be extended further if we consider other types of syntactic/prosodic phenomena, specifically focus movement. Examination of object scrambling and focus movement using the same theoretical premises (based on the ICDF hypothesis) allows us to develop a feature typology and to indicate a possible correlation between syntactic and prosodic properties of some syntactic structures.

The first question concerns the role of syntactic/semantic features in the movement. Focused elements can appear in different positions, but structures with a scrambled object, indirect object and adverbs (as in 115) allow us to define the relative ordering of the elements. The sentence in (115) has both direct and indirect objects in a post-verbal position and unmarked prosody (I leave aside the issue of the base order of NP-ACC and NP-DAT in Ukrainian, though).

(115)	Taras	raptom	dav	**knyžku**	studentci.
	Taras	suddenly	gave	book.ACC	student.DAT
	'Taras suddenly gave a book to a student.'				

The ICDF hypothesis predicts that the definite direct object 'book' is likely to appear in the outer spec vP above the adverb 'suddenly', and this is the case in (116). The NP-DAT, however, stays in its original position and is interpreted as indefinite nonspecific. This asymmetry also complies with the ICDF: Agree has occurred between the probe (v) and the closest goal (NP-ACC) under locality principle (a probe must Agree with the *closest* goal α that *can move* (Rackowski & Richards, 2005)). Thus, it seems that there is no evident possibility for 'student' to scramble as well.

(116) Taras **knyžku** raptom dav studentci.
Taras book.ACC suddenly gave student.DAT
'Taras suddenly gave the book to a student.'

However, a focused indirect object appears before the scrambled element, as shown in (117).

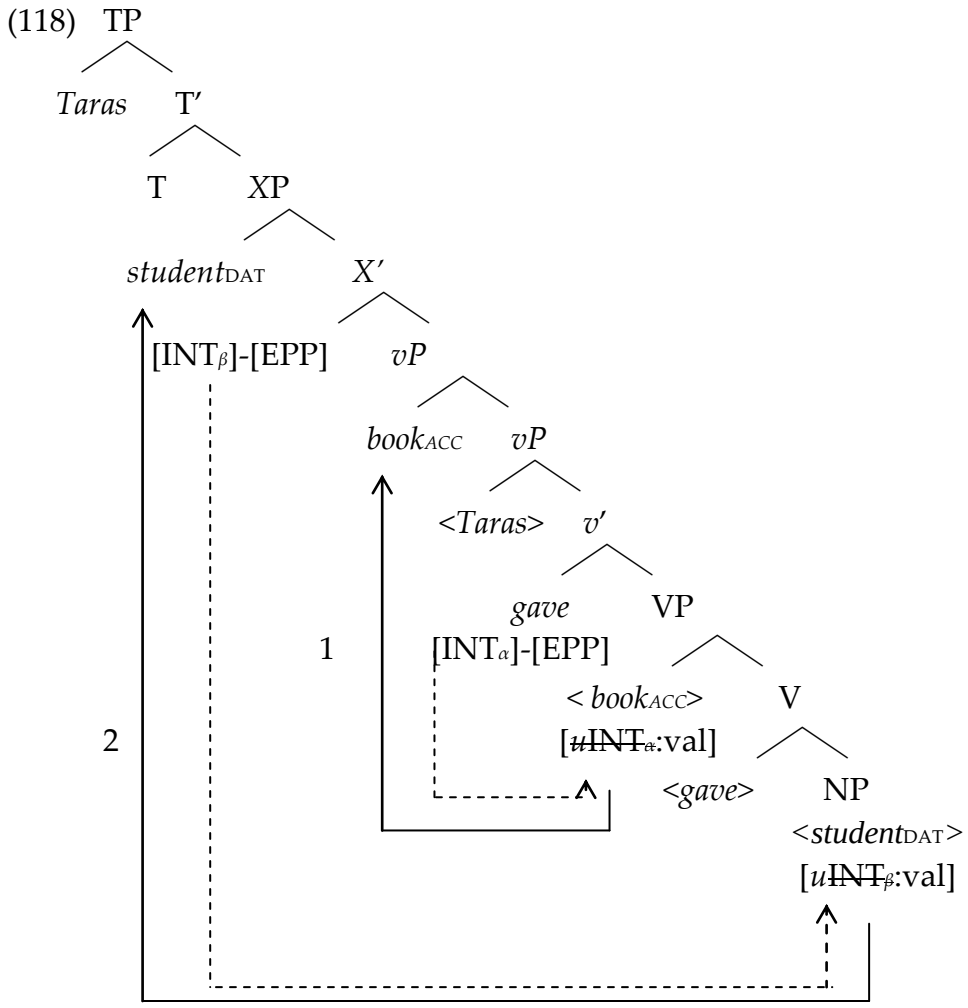
(117) Taras STUDENTCI **knyžku** raptom dav.
Taras student.DAT book.ACC suddenly gave
'Taras suddenly gave the book to a student (not to a professor).'

In this case, the indirect object 'student' is still nonspecific, but it bears another interpretative feature – focus (i.e., contrastive focus), which can be considered a prerequisite for a movement to vP-edge. The ICDF hypothesis, thus, can be extended further to include various semantic context-related features, as there is nothing in the INT definition that reduces its power only to definite-partitive direct objects. Recall that INT is a semantically interpretable feature on v; and the checking of INT on a scrambled phrase corresponds to assignment of values to deictic/contextual parameters within that phrase. Assuming that the contrastive focus is related to context in that it presupposes existence of at least two individuals (student and professor), syntactic movement of a focused argument resembles movement of a partitive DP.

An adjustment, which seems to be necessary, concerns the starting point of the syntactic movement – Agreement. It was proposed earlier that the functional head v must bear INT and agree with D[*u*INT:val]; after this, the feature is checked and deleted. Thus, to allow another Agreement, we either need to assume that Multiple Agree is possible with the same head, or that there are

several heads bearing features to be valued by distinct elements.[38] The derivation in (118) shows the latter option, which seems to allow more flexibility: various functional heads have distinct functions and may be added or omitted under certain circumstances without affecting the whole process.

(118)



The complex derivation in (118) consists of two independent processes: 1) direct object valuing and movement to a vP specifier and 2) indirect object valuing and its movement to a specifier of XP. Both processes follow the same procedure (described above with regard to object scrambling) and involve the same features INT and EPP, however, the main difference concern the INT value. INT_{α} is associated with definiteness/specificity, while INT_{β} is valued for

[38] Multiple Agree is an operation discussed in a number of studies (Anagnostopoulou, 2005; Hiraiwa, 2001; Sigurðsson & Holmberg, 2008), but the discussion has usually concerned uninterpretable phi features.

contrastive focus. This distinction allows us to treat INT as an 'interpretative complex' – universal feature with different values.

The next question concerns the functional head typology. Assuming that there are various INT features, it is logical to suppose that they belong to different heads. Chomsky (2001) distinguishes strong (v*) and weak (v) phases heads. The strong head assigns theta-roles and ACC case might bear EPP feature (in languages allowing object shift). In Chomsky view, passive and unaccusative structures have a weak v-head, which is 'defective' in that it is unable to assign theta-role to the external argument and to value ACC case. Richards (2004), however, proposes a different typology. Following Legate (2003), he argues that the 'weak' phase "can be treated as phase like any others: it has the EPP-property and is PIC-regulated in addition to being a propositional unit". Richards admits the 'defective' nature of the head in unaccusative/passive structures (labeled as v_{def}) and provides evidence that the raised internal argument stops at an intermediate edge-position (i.e., spec-v_{def}) on its way to spec-TP. The optionality of movement is, then, explained by the variability of v properties, particularly its EPP-property. The phase head v_{def} always bears EPP, while EPP-on-v* is only optionally licensed. Furthermore, since EPP on a non-phase head T is known to be obligatory, the same feature could be inherently associated with other functional heads, as well. Given this line of reasoning, rather than adding features from the lexicon to the same functional head (e.g., reach for EPP only when v needs it), I propose that there are various types of v-heads, and they enter derivation with preset features and properties. Such typology is presented in Table 3. Note, that the symbol * is used to mark v as 'strong' in the most direct sense: v* is 'strong' enough to move an element to its specifier, as it bears an obligatory EPP feature.

Table 3. *Typology of v.*

		Associated features	**Properties**
1.	v_{θ}	[AG/ACC]	thematic, case assignment
2.	v^*_{def}	[EPP]	uninterpretable, athematic, strong
3.	v^*_{α}	[INT$_{\alpha}$] [EPP]	interpretable (for definiteness partitivity), strong
4.	v^*_{β}	[INT$_{\beta}$] [EPP]	interpretable (for focus), strong
5.	v_{α}	[INT$_{\alpha}$]	interpretable (for definiteness partitivity)
6.	v_{β}	[INT$_{\beta}$]	interpretable (for focus)

The labels in Table 3 differ from those proposed by Chomsky or Richards, and the typology is tentative (e.g., v^*_{def} receives only superficial treatment in this

study), but the main idea follows previous research: there is a need to allow more variability in functional categories to account for cross-linguistic and intra-linguistic variations. Under this view, languages which do not allow object shift/focus movement (e.g., English) do not make use of v^*_{α} /v^*_{β}, but still might have INT-Agreement expressed by lexical means or prosody.

Discussion of the focus-movement presented above allows us to propose another extension of the ICDF hypothesis: prosodic (re)contouring as a way to express various semantic effects. Assuming that INT-Agreement (for focus) can be expressed *in situ* or in Middlefield position (similarly to INT-Agreement for definiteness/partitivity), we could speculate that a focused element also receives different prosodic realization in these positions. However, the focus prosody will be realized with the stress falling on the focused phrase, not onto the verb, as in the case of object scrambling. This is only a prediction at the moment not supported by the data analysis, but it seems to be a promising topic for further investigation.

2.6. Research Questions and Predictions

If the above discussion is on the right track, a full understanding of scrambling can only emerge in coordination with simultaneous study of scrambled structures and prosodic effects. The research presented below does precisely that. Experiments conducted with native speakers of Ukrainian were set to investigate the major questions in (119), (121) and (123).

The first question is a general one, and in answering it we will receive empirical evidence for the claims stated in the previous discussion.

(119) Is scrambling in fact context-sensitive, i.e., do Ukrainian speakers (and learners) prefer to leave indefinite-nonspecific-nonpartitive NPs *in situ* and scramble definite/partitive direct objects?

Based on the theoretical premises introduced above, it can be predicted that the data received from testing a large number of adult native speakers of Ukrainian would support the general ICDF hypothesis. Particularly, the data will provide evidence for the context-constrained nature of scrambling. Moreover, if there is such an implicit constraint prohibiting scrambling when INT is not valued as definite/partitive, children should acquire it very early by activating UG mechanisms, and as soon as they establish syntax-semantics connection in

word order, they should follow the 'adult' UG rule. This prediction is summarized below:

(120) Ukrainian speakers will produce appropriate syntactic structures when provided with certain experimental contexts, i.e., they will not scramble indefinite-nonpartitive-nonspecific direct objects; while objects which are contextually defined as definite/partitive will appear in a scrambled position.

The next question is a crucial one for investigation of the optional nature of scrambling. The ICDF hypothesis does not predict syntactic movement to be an obligatory outcome of INT valuing, but it does predict that INT valuing in definite/partitive contexts is obligatory. Therefore, it is imperative to find out what happens when no object scrambling occurs in definite/partitive contexts. Specifically, we would like to know the following:

(121) What is the role of prosody in marking object interpretation; specifically, does absence of scrambling in definite/partitive contexts correlate with detectable prosodic recontouring?

Based on the extensive body of literature on syntax-prosody interaction in a number of Germanic and Romance languages, and a clear-cut case of such interaction in Ukrainian pronoun placement, it is predicted, that in the absence of necessary scrambling, another means of INT valuing will be activated.

(122) Non-scrambled sentences with definite/partitive interpretation will have different prosodic realization. Crucially, speakers will utter them with a detectable particular prosodic contour.

If the predictions in (120) and (122) are supported by adult data, we will obtain a valuable picture of the end-state grammar for a language which is largely unknown in generative literature. To some extent this would already constitute a considerable contribution to the language study. Furthermore, if adults and children follow the same rules of scrambling and prosodic recontouring, this would provide evidence for the dual nature of INT-realization – something that has to be shown in order to support the main hypothesis of this study. However, this is just a beginning which leads us to other questions. An immediate follow-up question is about the choice of object movement and prosodic shift when both of them are readily available in the input:

(123) Do scrambling and prosody interact as alternatives in Ukrainian? In particular, do children and adults recognize prosodic recontouring as equivalent to scrambling, changing the sentence intonation where they would scramble?

The ICDF hypothesis predicts that both options are available in the language grammar, and use of one of them might be just an individual choice of a speaker. Under this view, 'optionality' is understood as follows. There are two options in the grammar: movement or recontouring; if the movement did not occur in the syntax (for whatever reason it can be), recontouring should be applied. Adult speakers might be influenced by many language-external factors in making their choice of language means (e.g., education or formality of the speech), but the role of these factors will not be discussed in this dissertation. This view of optionality of scrambling, however, makes strong predictions for language acquisition. Experimental study with children will allow us to test which of the options is acquired first, and thus is 'easier' or 'more economic'. Assuming that the the Merge-operation is more economic than the Move-operation, children should avoid scrambling (see Gavarró (2003); Platzack (2001); Westergaard (2004); Zuckerman (2001) on economy in word order acquisition).[39] It is predicted then that children may prefer an SVO structure with prosodic means of INT-valuing. This prediction comes down to the following:

(124) Children will follow the same word order patterns as adults, but they might rely more on prosody in marking contextually dependent direct objects.

To summarize, scrambling is a complex phenomenon, and its investigation has taken many years and many studies. I limit my investigation to three specific questions and focus mostly on Middle Object Scrambling in Ukrainian in hope that such approach will provide us with new empirical data and fresh ground for thought without minimizing the importance of the issue. To answer the questions stated above and to verify my predictions, I tested a large number of Ukrainian speakers and learners in several experimental tasks and analyzed obtained data using statistical and acoustic-analysis tools. These experiments will be presented in the following chapters.

[39] See, however, other proposals that state that the prosodic shift is more costly than the syntactic movement because it involves 'reference set computation' (Costa & Szendröi, 2006, based on Neeleman & Reinhart, 1998 and Reinhart, 2004).

CHAPTER 3
EXPERIMENT 1: PRODUCTION OF SCRAMBLED STRUCTURES

3.1. Introduction

This chapter presents evidence for the main part of the *INT-as-Contextually-Defined-Feature (ICDF) Hypothesis*, proposed in Chapter 2. Assuming that INT is a semantically interpretable feature on v, I argued that its valuing (via probe-goal Agreement) is required as a precondition to proposition computation at the vP phase node. I further proposed that the operation of agreement is obligatory, but that its consequences for the derived structure might differ. The first possibility is that the valuing of the semantic feature INT is accompanied with the activation of the syntactic feature EPP, and, as a result, the INT-bearing element undergoes scrambling. In other words, syntactic movement occurs only if a candidate for scrambling bears INT, a contextually-defined feature valued as definite/partitive. In this chapter, I present empirical evidence that this possibility is widely exploited in Ukrainian. The results of an elicited production experiment provide an extensive dataset allowing us to test the correlation between semantics of an object and its position in the syntactic structure. If ICDF is indeed a prerequisite for scrambling, Ukrainian speakers should produce scrambled structures only in those contexts that define direct objects as definite/partitive. Furthermore, this hypothesis predicts that if there is such an implicit constraint on scrambling, children should follow it by activating UG mechanisms. This approach allows us to distinguish inherent properties of the grammar from those learned from the input/instruction. While adults might avoid scrambling depending on their level of education and language training, children are truly naïve speakers and are

more likely to produce various syntactic structures. Consideration of the rates of scrambling in adult and child speech can provide insights into the actual level of optionality of this process in adult speech and in acquisition of scrambling.

The organization of the subsequent discussion is as follows. First, I present some relevant experimental studies investigating similar phenomena in other languages. Next, I provide a detailed description of Experiment 1 conducted with children and adults. I conclude this chapter with a discussion of my main findings and their implications for the language theory and for the developmental study of child grammar.

3.1.1. Previous experimental studies

Word order in general and scrambling in particular have been studied extensively in theoretical linguistics (see Chapter 1 for many references). However, most of theories of scrambling have been based on the authors' own examples, and the main method used to support proposed analyses was 'grammaticality judgment'. Surprisingly little is known about the use of various structures in languages that exhibit scrambling (e.g., Slavic), which leads to somewhat one-sided representation of the phenomenon.[40] Furthermore, theoretical claims based only on some types of scrambling (e.g., long-distance scrambling) have limited power if they are not supported with extensive empirical data. Recent advances in experimental linguistics provide us with a remedy to this problem by offering strong methodology of data collection. However, thus far, most of experimental studies of word order have progressed primarily in two directions: processing or comprehension (Frazier & Flores d'Arcais, 1989; Miyamoto & Takahashi, 2002; Stojanovic, 1999; Sekerina, 1997, 2003; Kaiser & Trueswell, 2004) and acquisition (Unsworth 2007, Neeleman & Weerman, 1997; Hopp 2005, among others). Data from adult production of

[40] As was noted in Sekerina (1997), scrambling constructions represent only less than 1% of all sentences in Japanese (according to Yamashita (1996)) while in Russian, they amout to 17% (Bailyn, 1995). Nonetheless, it seems that the 'Japanese- type' of scrambling has been investigated to a greater extent than the 'Slavic-type'.

syntactic structures in languages with a flexible word order are limited (but see Ferreira & Yoshita (2003); Kallestinova (2007); and Slioussar (2007)).[41]

In the overview that follows, I present only some findings concerning adult scrambling in Russian, and then turn to results of acquisition studies in Germanic and Slavic languages. It should be noted that I am more interested in the data itself, particularly on the optionality of scrambling, than in the previous analyses, and I will discuss only those findings that are relevant to the main issue of this study.

3.1.1.1. Word order in Russian

Russian is one of the most studied Slavic languages, both in theoretical and experimental linguistics. Recent research on Russian promotes a unifying approach to the study of word order by supporting theoretical analyses with experimental results (Kallestinova, 2007) or corpus data (Slioussar, 2007).

Kallestinova (2007) investigates various aspects of Russian word order permutations and assumes their discourse-dependent status. In order to identify the most common types of sentences in Russian she conducted elicitation, perception and grammaticality judgment psycholinguistic studies with 237 adult native speakers. The elicitation experiment was conducted with 47 adult speakers. The method was a picture description task with the pictures and the questions designed to control the argument structure, the discourse structure and the scope of the responses, as exemplified in Table 4.[42]

Table 4. *Stimuli for transitive sentences.*

	Type of question	**Question**	**Target**
1.	Questions to the S	*Who is biting cabbage?*	OVS or VOS
2.	Questions to the O	*What is the rabbit biting?*	SVO or VSO
3.	Questions to the V	*What is the rabbit doing with cabbage?*	SOV or OSV

[41] Scarcity of production studies is explicable, though. Since generative linguistics emphasizes 'language competence', and not 'language use', tapping into comprehension of a certain phenomenon seems to be a more appropriate method of uncovering implicit language knowledge. However, controlled elicited production experiments and corpus studies could also provide us with reliable data permitting to formulate important generalizations and to test proposed hypotheses.

[42] Participants were tested on their use of intransitive, transitive and ditransitive sentences, but I will focus only on the stimuli and results for transitive structures and discourse-dependent sentences.

The results for discourse-dependent sentences with default (non-emotive) and marked (emotive) prosody are summarized in Table 5.

Table 5. *Discourse-dependent responses to three types of questions.*

Type of question	Total structures	Non-emotive	Emotive
1.	97.3% of OVS	47.8%	49.5%
2.	100% of SVO	96.8%	3.2%
3.	91% of SOV	40.5%	50.5%

As shown in Table 5, Russian speakers have a strong preference for producing only three word orders: i.e., SVO (100%), OVS (97.3%) and SOV (91%). Other word orders that could also be felicitous in the same contexts (according to Information Structure ordering) are used only occasionally. These data demonstrate a robust discourse-syntax correlation: even though adults avoid some structures, they are mostly target-like in answering certain types of questions. This further implies that the 'freedom' of Russian word order is an overstatement, as the use of word order strongly depends on the discourse. It should be noted, however, that these results were obtained in a picture-description task. This means that the participants could always see all characters and objects during the experiment, and thus all arguments were 'old/known' in a given setting, but not always mentioned in a previous discourse. A possible role of different types of discourse-dependence (verbal vs. non-verbal) was not considered in Kallestinova's study, but such an investigation could be reveling for the issue of various prosodic and syntactic properties of commonly used sentences.

Another recent study that sheds light on the use of various word orders in Russian is Slioussar (2007). The author of this study also considers the role of Information Structure and prosody in the syntactic structure of Russian. She notes, however, that the interpretational difference between 'VO' and 'OV' sentences is very elusive and suggests that this might be a sign that colloquial Russian is shifting towards an OV language. Slioussar presents the data from a corpus study by Sirotinina (1965/2003) to support this idea.[43]

Sirotinina's corpus consists of various texts and dialogs representing written and colloquial speech. The data are split on two types of structures: with a post-verbal object (VO) and with a pre-verbal object (OV). Two aspects of findings are

[43] Since the distinction between Sirotinina's and Slioussar's presentation of the data is not clear, I mostly follow the latter one, as a more recent source.

particularly relevant: use of scrambled structures in informal dialogues and a distinction between given and new objects.

In written Russian, Sirotinina reports only 7-9% of preverbal objects in the scientific texts and 10-12% in belles-lettres texts. In colloquial speech, the rate of 'OV' orders is much higher. As shown in Table 6, in informal speech samples (Dialogue 1), a pre-verbal object is used at 66.4% of the time, while in formal conversations (Dialogue 4), it is used only at 36.8%, and yet this number is much higher than in the written texts.

Table 6. *Sirotinina's data from 1962-1963.*

	Dialogue 1 (most informal)	**Dialogue 4 (most formal)**
VO	33.6%	63.2%
OV	**66.4%**	36.8%

Concerning possible interpretations of direct object, Sirotinina's data reveal weak interaction between word order and Informational Structure. As shown in Table 7, given objects occur in pre-verbal position more often than in post-verbal position (60.8% vs. 39.1%, respectively), and this corresponds to the IS theory. However, it appears that new objects also can occur in the same position at 40.3%, which is a lower number compared to given objects, but still considerably high to comply with the IS theory.

Table 7. *'VO' vs. 'OV' frequency for given and new objects.*

	Given objects	**New objects**
VO	39.1%	59.7%
OV	**60.9%**	40.3%

Based on these corpus data, Slioussar concludes that in Russian, objects can precede and follow the verb both when they are given (highly accessible, D-linked) and when they are new (low in accessibility, high in salience). However, the excerpts from Sirotinina's counts do not allow us to evaluate the true picture of pre-verbal scrambling in Russian. First, the count is given only for two-word orders 'VO' and 'OV', and thus the position of the subject (or other elements) remains unknown, so that it is not clear whether we are dealing with SOV, OSV, or OVS scrambled structures. Second, in Sirotinina's data, full NPs are collapsed with pronouns (obligatorily raised in Russian), and, thus, the percentages do not represent the accurate optionality of the word order change. Finally, nothing is known about other factors that might influence the object distribution, which is a

typical weakness of a corpus-based method of investigation comparing to experimental methods.

In summary, the main findings concerning Russian word order are the following: the most frequent scrambled structures are OVS and SOV; there is a strong bias toward the basic word order (SVO) in written texts and formal speech, and word order change is discourse-dependent. There are still many other issues that must be clarified, e.g., interpretational difference between OV and VO word orders, the role of sentence prosody, the nature of 'discourse-dependence', and the role of pragmatics.

3.1.1.2. Acquisition data

The research presented above not only clarifies the nature of scrambling and its optionality, but also explains a limited number of the studies that are focused on the adult production of scrambling. Adult native speakers appear to be strongly biased toward some syntactic structures, i.e., the basic word order. This could be one of the reasons of the prevalence of research conducted with children and language learners. Word order variations have been examined extensively in L1 and L2 acquisition (Bailyn, 1995; Hopp, 2005; Josefsson, 1996; Krämer, 2000; Otsu, 1994; Schaeffer, 2000; Unsworth, 2005; Westergaard, 2008, inter alia). Some of these studies have directly related scrambling to the semantic properties of the direct object, while others just mentioned interpretational effects of word order change. Nevertheless, most studies focusing on production have shown that both child and adult language learners are able to scramble in appropriate contexts. This ability varies, though, as participants might exhibit differential scrambling rates. This variability has received divergent explanations, ranging from children's cognitive immaturity to a lack of abstract features in their grammar.

Particularly, Schaeffer (2000) shows that 2-year-old children acquiring Dutch scramble optionally (less often) compared to older children and adults. She claims that the optionality of object scrambling at the early stage of acquisition results from the optional marking of specificity, which in turn depends on the acquisition of 'the Concept of Non-Shared Knowledge', which states that speaker and hearer knowledge are always independent. Under this view, young children lack a specific pragmatic principle which leads to the lack of a distinction between discourse-related (mentioned in the discourse, e.g., *the tree*) and non-discourse-related (part of the long-term shared knowledge, e.g., *the sun*) object DPs. The object, then, is not constantly marked with the relevant feature, and the syntactic process of scrambling does not always take place in child Dutch.

However, a number of recent studies suggest that children do not have many difficulties with scrambling**.** It has been shown, for instance, that in Russian and Serbo-Croatian, even the youngest children place most NPs in a target-like way; they are able to establish a mapping between a position for the scrambled object and specificity by the age of 2-3 (Avrutin & Brun, 2001; Dyakonova, 2004; Ilić & Deen, 2004). This mapping can thus be considered a part of an innate (or very early acquired) knowledge of the syntax-discourse interface rules.

Furthermore, it has also been demonstrated that children can distinguish between 'old' and 'new' objects, and they set their information structure in place early (De Cat, 2003 & 2009; Gordishevsky & Avrutin, 2004). Crucially, studies on acquisition of Norwegian show that in child grammar, given information may occur in positions normally reserved for new information, but not the other way around (Anderssen, Bentzen, Rodina & Westergaard, 2010; Westergaard, 2008, cf. Slioussar 2007). The pragmatic approach proposed by Schaeffer (2000), however, is unable to account for these data. The lack of the concept of non-shared knowledge should cause children to treat new elements as given and known to the hearer. However, children did not overestimate hearer's knowledge and did not move 'new' NPs leftward. These findings suggest that if there are problems with child scrambling, the reason might be other than a pragmatic deficit.

Studies conducted with adult L2 learners also report optionality of scrambling. Unsworth (2005) compared child L1, child L2 and adult L2 learners of Dutch in order to identify developmental stages of scrambling acquisition. The goal of Unsworth's experimental production study was to determine whether learners know the interpretive constraints on scrambling. For instance, scrambling over negation is obligatory for definite and specific direct objects, but it is not allowed for nonspecific direct objects.[44] The results of an elicited production task (based on Schaeffer (2000)) show that adult L2 learners' initial stage corresponds to their L1 (English SVO) word order, but the next stages are similar for L1 and child L2 learners of Dutch. It was concluded, then, that since both adults and children pass through the same optional scrambling stage, they make use of the same mechanisms in language acquisition. The existence of an optional scrambling stage in the L2 data was claimed to be inconsistent with Schaeffer's (2000) approach discussed above. The adult L2 subjects tested were old enough to know pragmatic principles, and yet, they scrambled optionally.

[44] Unsworth uses the cover-term 'specific' for the scrambled object, although, she admits that strictly-speaking, the reading which was tested in the relevant experimental conditions is partitive or 'strong', in De Hoop's (1992) terms.

These findings imply that syntactic-semantic factors might play a more important role in scrambling than knowledge of a certain pragmatic concept. However, more research on languages is needed in order to evaluate these approaches. The current study aims to contribute to this by presenting evidence from the acquisition of object scrambling in Ukrainian.

3.2. Method

3.2.1. Participants

Participants for this experimental study were recruited and tested in summer of 2008 in the city of Vinnytsia and Vinnytsia region in Ukraine (see Figure 1).

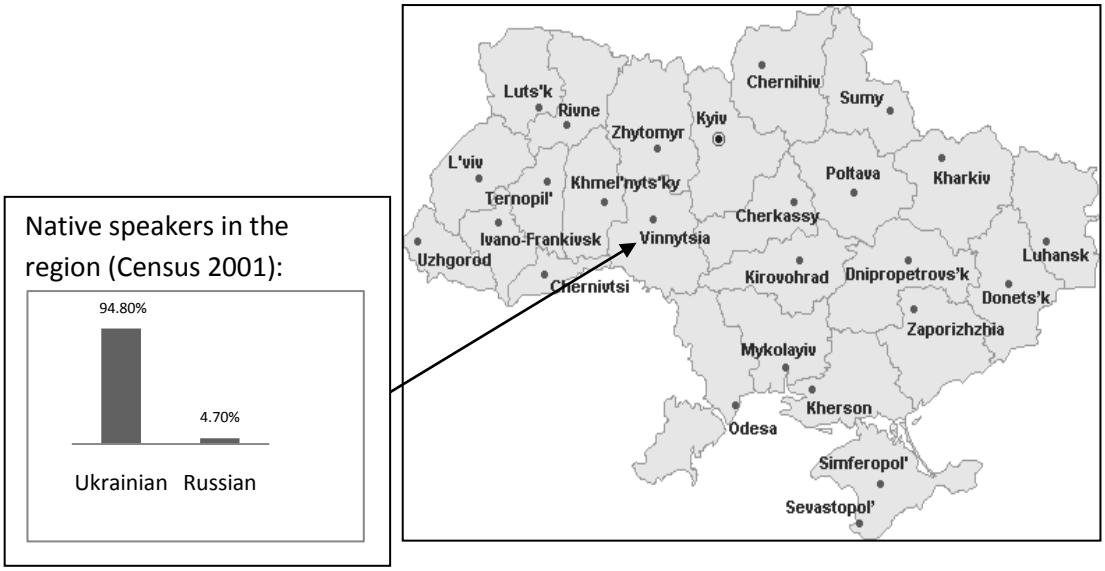


Figure 1. Map and language facts from *http://www.ukrcensus.gov.ua/*

One of the goals of the experimental study was to establish an acquisition path for the production of scrambling and its interaction with definiteness/specificity/partitivity. To achieve this goal, the participants were divided to 5 age groups: 2-, 3-, 4-, and 5-year-old children (N=41) and a control group of adults (N=20).

The children were tested in two regular day care centers in the outskirts of the city. They ranged in age from 2 years and 7 months to 6 years, with a mean of 4 years and 1 month. There were 22 boys and 19 girls. The children belonged to a relatively similar middle-class socioeconomic milieu. With regard to language

use, the group is defined as 'monolingual Ukrainian children' because for most of them Ukrainian is a native and dominant language: it is used very often in their families and exclusively in day care centers which they attend full time. However, since Ukrainian-Russian bilingualism is common in Ukraine, all participants had various amounts of exposure to Russian. Several children used a mixed Ukrainian-Russian sociolect, called *Surzhyk* (N=12).[45] Two children were active speakers of Russian, but since Russian-Ukrainian code-switching did not impede their conversation with the experimenter, they were included in the study. Many other children could be considered passive Ukrainian-Russian bilinguals, but in the present study, their proficiency in Russian was not evaluated. The information about four child groups is presented in Table 8 below.

Table 8. *Child age groups.*

	Age	**Mean age**	**Total N**	**Girls**	**Boys**	**Local dialect of Ukrainian**	**Surzhyk**	**RUS-UKR code-switching**
1.	2;7-2;11	2;10	6	3	3	4	2	-
2.	3;4-3;11	3;8	10	4	6	6	3	1
3.	4;0-4;11	4;5	11	6	5	7	4	-
4.	5;1-6;0	5;8	14	7	7	10	3	1

The fifth group was the adult control group that included 20 participants: 13 females and 7 males. They ranged in age from 18 to 61, with the mean age of 41. All of the adult participants were native speakers of Ukrainian and fluent in Russian. They were recruited and tested in the Vinnytsia region; however, 2 participants were originally from Western Ukraine and 2 participants were from the North-Eastern part of the country. Since everyone made an effort to use Standard Ukrainian, there was no noticeable influence of their original dialects on the received data. Only two participants admitted that they consider themselves Russian-Ukrainian bilinguals, since they use Russian on a regular basis. Other participants defined themselves as Ukrainian native speakers. All the adults had an educational level higher than the level of secondary school.

[45] Participants are identified as speakers of Surzhyk if their responses to the stimuli given in Standard Ukrainian included more than two items with lexical, phonetic or grammatical features influenced by Russian. Russian-Ukrainian code-switching is defined as the use of proper words or phrases from both languages in the same utterance.

3.2.2. Design and materials

The experiment consisted of an elicited production in the picture-description task. Children and adults followed exactly the same procedure. Participants had a short conversation with a silly puppet Tigger and the experimenter. Tigger would name an object in a picture presented in a folder and then would turn on the next page, but while looking at the second picture he would get confused, and the experimenter would solicit help from the participant. The participant had to describe the second picture designed in such a way that it would trigger the use of a transitive construction with a direct object. Examples of such pictures are given in Figure 2 below.

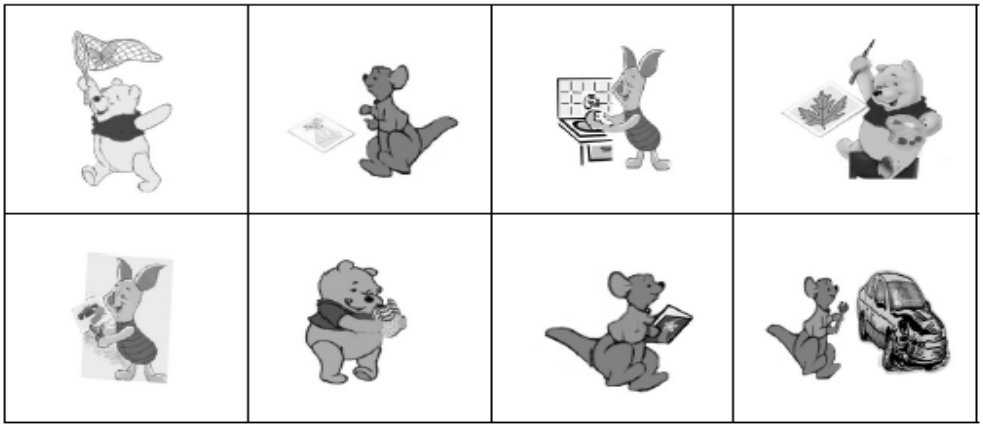


Figure 2. Sample pictures from the experiment (Table 7, 1-8).

The design used in testing each age group manipulated only one factor, which is broadly defined as a Context, or Condition, determining semantics of the direct object. Contexts were spelled-out in the preamble and corresponded to different pictures. They made the direct object semantics unambiguous, and thus were meant to elicit certain responses from the participants. Recall that the main goal of this research was to define/verify semantic/pragmatic properties associated with scrambling in Ukrainian. Three semantic features were considered, i.e., definiteness, specificity as referentiality, and specificity as partitivity. It was impossible to create contexts in which all combinations of these features could be represented without radically changing lexical material in experimental items. Therefore, a theoretically possible factorial design—2 (Definite vs. Indefinite) x 2 (Specific vs. Nonspecific) x 2 (Partitive vs. Referential)—could not be implemented. Instead, in the modified design, context manipulation was used with each age group separately. In addition, since

another goal of the study has been to define a developmental path in acquisition of scrambling, Age Group was incorporated as another independent variable that allowed us to test use of scrambling as a function of age.

The stimuli consisted of 32 experimental items. They were short dialogs constructed with 8 verbs: *pijmaty* 'catch', *vyrizaty* 'cut out', *maljuvaty* 'draw', *jisty* 'eat', *myty* 'wash', *čytaty* 'read', *farbuvaty* 'color', *remontuvaty* 'fix'.[46] These verbs were used with 8 objects *(e.g., metelyk* 'butterfly', *kvitka* 'flower', *kotyk* 'cat', *pečyvo* cookie', *tarilka* 'plate', *knyžka* 'book', *lystok* 'leaf', *mašyna* 'car') corresponding to the 8 pictures (Fig. 2).They appeared in target sentences in four conditions as shown below in Table 9:

Table 9. *Items used in the experiment.*

	C1: Definite Specific visible single object	**C2: Indefinite Partitive** visible one of 3-4 objects	**C3: Indefinite Referential** invisible to the hearer object	**C4: Indefinite Nonspecific** invisible object
1.	catch the butterfly	catch one butterfly	catch a butterfly	catch with a net
2.	cut the flower	cut one flower	cut a flower	cut with scissors
3.	draw the cat	draw one cat	draw a cat	draw with crayons
4.	eat the cookie	eat one cookie	eat a cookie	eat with utensils
5.	wash the plate	wash one plate	wash a plate	wash with water
6.	read the book	read one book	read a book	read in glasses
7.	color the leaf	color one leaf	color a leaf	color with paint
8.	fix the car	fix one car	fix a car	fix with tools

8 indirect objects were used in one of the conditions in order to elicit independent use of a direct object: *sačok* 'net', *nožyci* 'scissors', *olivci* 'crayons', *ložky* 'utensils', *voda* 'water', *okuljary* 'glasses', *farby* 'paint', *instrumenty* 'tools'.

Each participant received 8 items counterbalanced in the 4 conditions (C1-C4) in a randomized order. The relatively small number of items was due to a limited time available for the experimenter to administer the task and a short attention span characteristic of young children; thus, the whole experiment lasted 15-20 minutes on average.

The experimental items were presented in the following four context conditions: Definite Specific (C1), Indefinite Partitive (C2), Indefinite Referential

[46] All verbs were initially used in an imperfective form, which is considered to be the default form with regard to the object interpretation marking. Since this experiment tested primarily scrambling-specificity interaction, other factors, such as telicity of the verb, were not taken into account, but see more on telicity-scrambling-specificity interaction in Mykhaylyk (2009b).

(C3), and Indefinite Nonspecific (C4) (see Table 9 above). Note that three conditions, C1, C2 and C3, have the same lexical items, while one condition, C4, does not. This was necessary because we needed contrastive contexts: in the three specific conditions the direct object was introduced in the discourse, while in the Indefinite Nonspecific Condition, it had to be imagined by the participant because it could not be provided in the stimuli. The example of the stimuli used in four conditions (1-4) clarifies this issue.[47]

(1) Condition 1: Definite –Specific-Partitive

Exp (to the participant):
Tigger wants to see pictures in a book. He does not speak well and he is a little bit silly and shy. He must be helped if he doesn't know what to say.

Exp (to Tigger): Dyvysia, Tyhre, ščo ce?
'Look, Tigger, what is this?'

Tigger: Lystočok
'A leaf'.

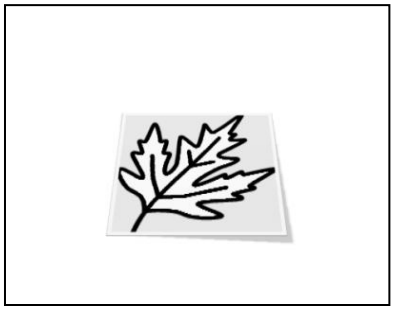


Figure 3. Page 1, C1 & C3.

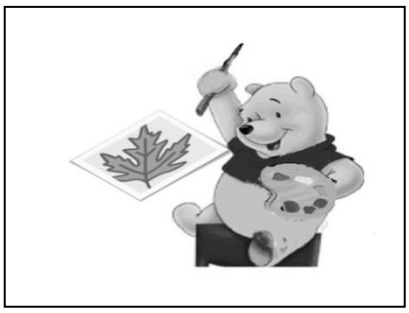


Figure 4. Page 2, C1& C3.

Exp: A koho ty bačyš na cjomu maljunku?
'And who do you see in this picture?'

Tigger: Ce Vini Pux
'It's Winnie the Pooh.'

Exp: 'Ščo vin robut' z cym lystočkom?'
'What does he do with the leaf?'

Tigger: Ja ne znaju…

[47] Importantly, all predicted syntactic structures in the following examples are assumed to have the most neutral prosodic contour: with the falling pitch accent on the final sentence constituent. It is also possible that other syntactic structures would be used provided they have noticeable change in the sentence prosody.

'I don't know.'
Exp (to the participant): Ty možeš dopomohty?
'Can you help?'

After hearing the last question the participant was expected to produce a sentence with a direct object. Two main answers were possible with respect to the form of the direct object: a sentence with the full NP (with or without the demonstrative pronoun) or a sentence with the personal pronoun. In addition, these direct objects could appear in a scrambled or nonscrambled position, as shown in Table 10 (the direct object is in bold).

Table 10. *Possible answers in C1.*

Direct Object	**Full NP**	**Personal Pronoun**
Scrambled	1. Vin **(cej) lystočok** zafarbovuje. he this leaf is coloring	3. Vin **joho** zafarbovuje. he him is coloring
Nonscrambled	2. Vin zafarbovuje **(cej) lystočok.** he is coloring this leaf 'He is coloring the/this leaf.'	4. # Vin zafarbovuje **joho.** he is coloring him 'He is coloring it.'

The prediction which follows from the theoretical assumptions of this study is that since the direct object is clearly defined in the discourse and thus is definite, it should be scrambled to a preverbal position, as shown in answer 10(1). The use of a demonstrative pronoun (*cej* 'this' or *toj* 'that') is not required, but probable. However, since scrambling is considered to be optional in Ukrainian, the nonscrambled answer 10(2) was also plausible (although with a distinct prosody, discussed in Chapter 4). Furthermore, since the question of the experimenter contains the lexical item 'leaf' (*What does he do with <u>the leaf</u>?*), it was natural to use a pronoun to avoid a repetition: e.g., "He colors it". Since pronouns are inherently referential, discourse-related and are usually placed in a preverbal position in Ukrainian, it was predicted that the scrambled answer with a pronoun 10(3) was another option for Condition 1. The nonscrambled answer with a pronoun 10(4) was not predicted, but could be used under special prosodic conditions.

The second context is exemplified below in (2). It contains a dialog similar to C1, but requires a set of three or four identical objects, which makes one of them indefinite-partitive.

(2) <u>Condition 2: Indefinite-Specific-Partitive</u>

Exp: Dyvysia, Tyhre, ščo ce?
'Look, Tigger, what is this?'
Tigger: Lystočky: 1, 2, 3, 4.
Leaves: 1, 2, 3, 4.

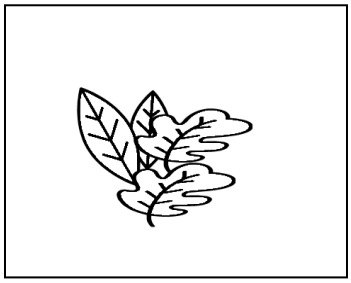


Figure 5. Page 1, C2 .

Figure 6. Page 2, C2.

Exp: A koho ty bačyš na cjomu maljunku?
'And who do you see in this picture?'
Tigger: Ce Vini Pux
'It's Winnie the Pooh.'
Exp: 'Ščo vin robut' z cymy lystočkamy?'
'What does he do with these leaves?'
Tigger: Ja ne znaju…
'I don't know.'
Exp (to the participant): Ty možeš dopomohty?
'Can you help?'

Predicted responses to this question are similar to the responses in C1, and they are exemplified in Table 11.

Table 11. *Possible answers in C2.*

Direct Object	**Full NP**	**With a Personal Pronoun**
Scrambled	1. Vin **odnoho lystočka** zafarbovuje. he one leaf is coloring	3. Vin **odnoho z nyx** zafarbovuje. he one of them is coloring
Nonscrambled	2. Vin zafarbovuje **odnoho lystočka.** he is coloring one leaf 'He is coloring a leaf.'	4. #Vin zafarbovuje **odnoho z nyx.** he is coloring one of them 'He is coloring one of them.'

Even though the object NP is indefinite (the hearer might not notice which of the three leaves has been manipulated in the second picture), it is still present in the discourse and contextually defined, and thus the predicted answer is scrambled

11(1). However, a nonscrambled answer 11(2) is also possible. Furthermore, if a participant prefers to use a constituent with a pronoun 'one of them', such structure is likely to be scrambled, as in 11(3)), while a nonscrambled answer 11(4) again requires distinct prosody.

In Condition 3, the stimuli were the same as in the Definite Specific Condition (C2) with only one crucial pragmatic difference: the puppet Tigger cannot see the pictures.

(3) Condition 3: Indefinite-Specific-Referential

Exp (to the participant):
Tyhr kudys' pišov, otže ty meni rozkažeš pro ci maljunky. Dyvysia, ščo ce?
'Tigger left, so you will tell me about the pictures. Look, what is this?'

Tigger: Lystočok
'A leaf'.

Exp: A koho ty bačyš na cjomu maljunku?
'And who do you see in this picture?'

Tigger: Ce Vini Pux
'It's Winnie the Pooh.'

Exp: 'Ščo vin robut' z cym lystočkom?'
'What does he do with the leaf?'

Possible responses (not to be analyzed): (see Condition 1)

Tigger is coming and asking:
Os' i ja! Ščo ja propustyv?
Here I am! What did I miss?

Since in this condition the hearer (Tigger) did not see any pictures, the participant was expected to take into account that the object is known only to himself, and thus it is specific indefinite. In this case, the choice of a syntactic structure will depend on the role of specificity-referentiality in scrambling, which is to be defined. It is likely, though, that according to principles of pragmatics, the speaker should use a neutral 'all-new-information' construction: SVO 12(2). Answers with a personal pronoun 12(3 & 4) are pragmatically infelicitous in Condition 3.

Table 12. *Possible answers in C3.*

Direct Object	Full NP	Personal Pronoun
Scrambled	1. ?Vini Pux **lystočok** zafarbovuvav. Winnie leaf colored	3. # Vini Pux **joho** zafarbovuvav. Winnie him colored
Nonscrambled	2. Vini Pux zafarbovuvav **lystočok.** Winnie colored leaf 'Winnie the Pooh colored a leaf.'	4. #Vini Pux zafarbovuvav **joho.** Winnie colored him 'Winnie the Pooh colored it.'

The last Condition 4 differs from the previous C1-C3, as the discourse does not include any information about the direct object. The participant sees a picture of an instrument (means of performing some action), and a character depicted in a process of thinking. The experimenter is then questioning the participant about a possible application of this instrument, as exemplified in (4).

(4) Condition 4: Indefinite-Nonspecific-Nonpartitive

Exp: Dyvysia, Tyhre, shcho ce?
'Look, Tigger, what is this?'

Tigger: Ce farby.
'It's a painting set.'

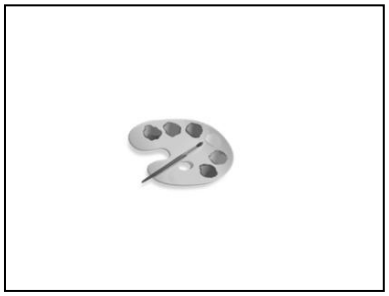


Figure 7. Page 1, C4 .

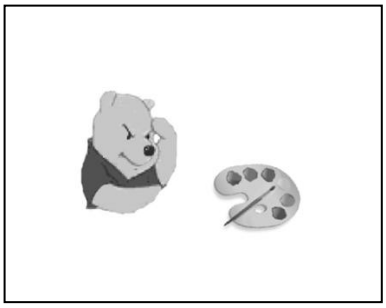


Figure 8. Page 2, C4.

Exp: A ce xto?
'And who is this?'

Tigger: Ce Vini Pux
'It's Winnie the Pooh.'

Exp: I ščo vin robyt'?
And what is he doing?

Tigger: Vin dumaie, ščo zrobyty z cymy farbamy
He's thinking what to do with this paint set.

Exp: To ščo vin bude z nymy robyty?

So, what will he do with it?
Tigger: Ja ne znaju.
I don't know.
Exp (to the participant): Ty možeš dopomohty?
'Can you help?'

Possible responses to the last question might differ: the participant is free to think about anything, but only sentences with a direct object were included in the data analysis. Some examples of possible syntactic structures are given below in (Table 13).

Table 13. *Possible answers in C4.*

Direct Object	**Full NP**	**Personal Pronoun**
Scrambled	1. # Vini Pux **(jakus') kvitku** zafarbuje. Winnie some flower will.color	3. # Vini Pux **jiji** zafarbuje. Winnie her will.color
Nonscrambled	2. Vini Pux zafarbuje **jakus' kvitku.** Winnie will.color some flower 'Winnie the Pooh will color a flower.'	4. # Vini Pux zafarbuje **jiji.** Winnie will.color her 'Winnie the Pooh will color it.'

Crucially, since the direct object used by a participant is likely to be new both to the speaker and to the hearer and is not contextually defined, the prediction about its position is clear: the direct object cannot be scrambled. Thus, the answer 13(1) is not acceptable.

The results elicited in this condition are critical for defining the role of semantic/pragmatic features in scrambling, and hence warrant a further discussion. First, only structures with the clear case of Middle Object Scrambling are considered to be erroneous: the object should precede the tensed verb (be in a vP-edge position or higher). On the other hand, the attested answers with a direct object appearing before an infinitive, as in (5), are likely to have a different nature (discussed in Chapter 2.3.), and thus it is not considered to be erroneous.

(5) Possible response: Vin moze/bude/xoče **kvitočku** zafarbovyvaty.
he can/will/want flower color
"He can/will/want to color a flower."

Furthermore, the use of indefinite determiner *jakyjs'/jakas'* 'some' in this condition is very probable, and some participants inserted it to clearly mark indefiniteness of the object. And finally, all the cases when an indefinite object is

scrambled (contrary to the prediction) should undergo prosodic analysis to determine their felicity (they are possible with a distinct pitch contour, as discussed in Chapter 4).

To summarize: the stimuli described above were designed to investigate main factors that contribute to scrambling in Ukrainian and to test a hypothesis about the contextually-depended nature of scrambled direct objects. To this end, four types of contexts were manipulated. Predictions for possible elicited answers were based on the previous theories and the judgments provided by native speakers of Ukrainian. Therefore, the main predictions for this experimental study concerned two types of contrasts: between C1-C2 and C4 and between full NPs and pronouns. The first contrast was between C1-C3 and C4 in that Middle Object Scrambling should not be possible at all in C4, as indefinite nonpartitive direct objects do not undergo syntactic movement. In addition, the context in C3 was not likely to elicit scrambled responses for pragmatic reasons. Contexts in C1 and C2 were conducive to scrambling, and thus scrambled structures with full NPs or pronouns were predicted for these conditions. The second contrast was between two types of direct object, full NPs and pronouns. The former can appear in any context, while the latter are more plausible in C1 and C2, but would be inappropriate in C3 and C4. Furthermore, since scrambling of full NPs is optional in Ukrainian, participants were not expected to scramble them at a rate of 100% in any of the three possible contexts. On the other hand, if participants prefer to replace full NPs with personal pronouns in C1 (and maybe in C2), they were expected to use a scrambled structure in most of the cases.

3.2.3. Procedure

Children and adults followed the same procedure, but the adults were trained individually, while the children were first introduced to the task in a group of the same age. The experiment started with a short training session to familiarize participants with the task, and to make sure they recognized the main characters from the pictures: Winnie the Pooh, Piglet, and Kangaroo. The training dialogs with Tigger resembled the main items, but the pictures differed from those used in the experimental stimuli. After that, each participant performed individually in a separate room.

There were 8 scenarios in the experiment. Each participant was assigned to one of 4 lists of stimuli and saw 8 pairs of pictures presented in a pseudorandomized order (Table 14).

Table 14. *Lists of counterbalanced randomized experimental items*.

List 1	List 2	List 3	List 4
C1_1. catch the butterfly	C2_3. draw one cat	C3_2. cut out a flower	C2_1. catch one butterfly
C2_2. cut out one flower	C1_4. eat the cookie	C1_3. draw the cat	C4_4. eat with utensils
C4_3. draw with crayons	C3_1. catch a butterfly	C2_4. eat one cookie	C1_2. cut out the flower
C3_4. eat a cookie	C4_2. cut with scissors	C4_1. catch with a net	C3_3. draw a cat
C1_5. wash the plate	C3_7. color a leaf	C2_7. color one leaf	C2_8. fix one car
C2_6. read one book	C4_8. fix with tools	C3_6. read a book	C1_7. color the leaf
C4_7. color with paint	C1_6. read the book	C1_8. fix the car	C3_5. wash a plate
C3_8. fix a car	C2_5. wash one plate	C4_5. wash with water	C4_6. read in glasses

If a participant could not answer a question or answered with one word, one more attempt was made, and all responses were recorded. Children who refused to talk after two repeated trials for several items were not included in the study. There were 5 such children (from the youngest age groups of 2 and 3). All children were rewarded with a small gift for their participation. Most of them enjoyed the task, especially the interaction with the puppet.

The experiment was recorded using a digital recorder, and the participants' responses to the main question were written down by the experimenter on a prepared score sheet. The responses were coded as scrambled (1) or non-scrambled (0) and analyzed using a statistical program SPSS.

3.2.4. Data treatment

The data obtained from the experiment were analyzed statistically to determine how the use of scrambling depends on the context condition and the age of speakers. A few adjustments to the data became necessary in order to achieve this aim. First, since there were only eight stimuli per participant, and the condition C4 was lexically different from the conditions C1-C3, item-based analysis (F2) was not feasible. Therefore, all the data were analyzed using only participant-based (F1) ANOVA. The unbalanced number of participants in each of the age groups (N=6, 10, 11, 14 and 20, respectively) made it impossible to conduct a fully matched factorial 4 x 5 ANOVA (Context x Age) using all the participants. Therefore, in order to define semantic effects in scrambling (the main effect of the Context), each group was analyzed separately using 1x4 ANOVAs (Context conditions: C1, C2, C3, C4).

To assess the effect of age on the production of scrambling, the data were adjusted using the following procedure. The 2-year-old group was not included in the ANOVAs analysis because there were too few participants (N=6) in it and

a high percentage of data (14.6%) was missing. The analysis of the remaining 4 age groups was based only on the data from 10 participants (the number of 3-year-old children) per group. To obtain this number, in each group that had more participants, only the youngest 10 were selected. Hence, in the 4-year-old group the oldest child (the age of 4;11) was excluded, and in the 5-year-old group, 4 children were excluded (2 of the age of 5;11 and 2 from 6-year-olds). The adult group was treated in a similar way: 5 youngest women and 5 youngest men were selected, while the data from 8 oldest women and 2 oldest men were left out. This procedure was used in order to obtain a dataset balanced by age and gender.

3.3. Results

3.3.1. Total group results

The group results are presented as follows: first, they are described in terms of the used direct object type (full NPs or pronouns); next, the rates of total scrambling are defined for each condition and age group, and finally, pronominal scrambling is contrasted with the full NP scrambling.

As shown in Table 15, in most of the answers direct objects were represented with full NPs (their use ranged from 79% for 2- and 5-year-olds to 90% for 3-year-olds).

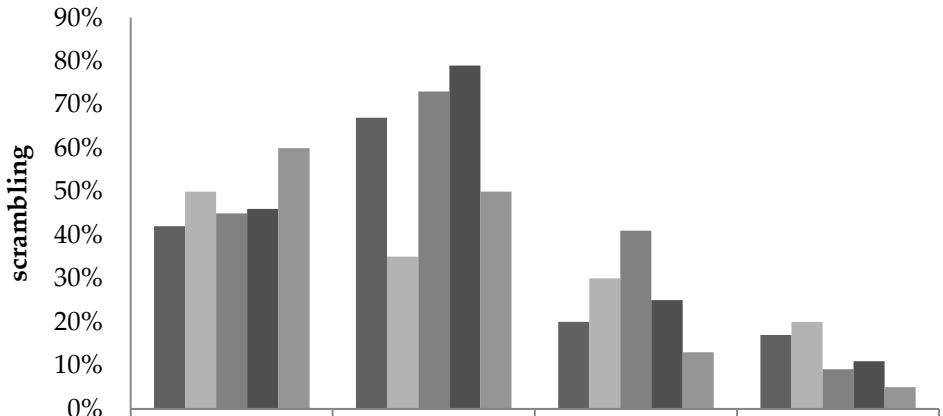
Table 15. *Answer types: % (N of structures / N of total items per age group).*

	NPs	**Pronouns**	**Missing**
2-year-olds	79% (38/48)	6% (3/48)	15% (7/48)
3-year-olds	90% (72/80)	8% (6/80)	3% (2/80)
4-year-olds	81% (71/88)	10%(9/88)	9% (8/88)
5-year-olds	79% (89/112)	19%(21/112)	2% (2/112)
adults	81% (129/160)	19% (30/160)	0.6% (1/160)

Pronouns were produced at a much lower degree, with a gradual increase in their use with age: 2-year-olds used them only 6% of times, while 5-year-olds and adults had 19% of pronouns in their responses. The distribution of pronominal direct objects differed across conditions, and it will be analyzed below (see Table 16). It should be also noted that the youngest group of children had a high rate of

missing data: in 15% of tokens 2-year-olds either did not produce any response or answered with one word, which made their dataset very limited.

In the following presentation of scrambling, the scrambled structures with full NPs and pronouns are collapsed together. This is justified by the fact that the experimental design did not control for the use of pronouns and their numbers appeared to be very low for the three youngest age groups (only 3 to 10 tokens out of all data). Hence, Figure 9 presents the total percentages of scrambled structures produced in four conditions by all participants split into five age groups.



	C1	C2	C3	C4
2-years	42%	67%	20%	17%
3-years	50%	35%	30%	20%
4-years	45%	73%	41%	9%
5-years	46%	79%	25%	11%
Adults	60%	50%	13%	5%

Figure 9. Total Scrambling per Condition (all participants).

Overall, word order choice is not random for all groups of participants: the lowest rate of scrambling is in the Indefinite Nonspecific Condition (C4), as was predicted. Impressionistically, the highest rates of scrambling are exhibited in the Indefinite Partitive Condition (C2) (73% and 79% for 3 and 4-year-olds, respectively). Also, the data show that there is a contrast between the Definite Specific Condition (C1) and Indefinite Nonspecific Condition: the former elicited more scrambled structures than the latter in all age groups. The most puzzling data are obtained from the Indefinite Specific Condition (C3), where percentage

of scrambling ranges from 13% for adults to 41% for 4-year-olds. Also, the results of 3-year-olds do not show much difference between C2-C4 conditions (see more in 3.4.).

The adult results are particularly important, as they demonstrate optionality in Ukrainian scrambling: none of the tested conditions triggered a 100% of scrambled responses, with the Indefinite Nonspecific Condition (5%) and the Indefinite Specific Condition (13%) with very few scrambled responses and the Partitive Condition (50%) and the Definite Condition (60%), with half of responses scrambled. Separate statistical analysis was conducted on the full data (all 20 adults). ANOVA confirmed a highly significant effect of Context, $F1(3,57) = 15.31$, $p < .001$. Importantly, this effect suggests that the high rates of scrambling in C1 and C2 are due to the object semantics defined by the context.

Among child groups, the group of 2-year-olds deserves a separate analysis because these were the youngest children able to participate in the experiment, and, as was mentioned before, their dataset was the smallest one (6 children x 4 conditions x 2 items = 48 tokens) with 15% of missing tokens. Notably, the results from 2-year-olds also show predicted contrast among conditions: for instance, in C2 they produced 67% scrambled responses, while in C4 only one scrambled structure was produced (which amounts to 17%). The statistical analysis confirms a significant effect of Context on Scrambling: $F1(3,15)=3.19$, $p=.0542$. However, these results should be taken with some caution and need to be verified further with more children and probably with modified stimuli to make the task more age-appropriate.

To summarize so far, the total results suggest that even the youngest children relate scrambling to some contexts, but avoid it in others, confirming the role of Context (and object semantics) in scrambling, in line with the main prediction in 3.1.2. However, a more detailed analysis is needed to define the role of object type in the use of scrambled structures.

The distribution of scrambled structures with full NPs and pronouns depends on the condition and the age group. As shown in Table 16, adults preferred pronominal scrambling in C1: i.e., while the total scrambling in this condition was 60%, 55% of these structures contained pronouns. As to children, their use of pronominal scrambling ranged from only 8% (2-year-olds) to 39% (5-year-olds). These results show that 2-4-year-old children do not replace direct objects with pronouns, so most of their scrambling is a full NP scrambling.

Table 16. *Scrambling per Condition: NP vs. Pronouns (all participants), %.*

	C1		C2		C3		C4	
Age	**NP**	**Pronoun**	**NP**	**Pronoun**	**NP**	**Pronoun**	**NP**	**Pronoun**
2-year-olds	33	**8**	58	**0**	17	**0**	17	**0**
3-year-olds	35	**15**	35	**0**	25	**5**	20	**0**
4-year-olds	20	**25**	62	**10**	33	**0**	9	**0**
5-year-olds	7	**39**	61	**18**	12	**12**	11	**0**
adults	5	**55**	40	**10**	8	**5**	5	**0**

Further observation concerns the Indefinite Partitive Condition (C2) in which the rates of pronominal scrambling are lower than the rates of full NP scrambling for all age groups: 2- and 3-year-olds scrambled only NPs, while other age groups had no more than 18% of pronominal scrambling (5-year-olds). This contrast suggests that the nature of scrambling in the Definite Condition (C1) might be different from scrambling in the Indefinite Partitive Condition (C2) (further discussed in 3.3.1). The use of pronouns in C3 was very limited, and in C4, no pronouns were produced, as predicted.

The contrast between pronominal scrambling and full NP scrambling becomes even more obvious if the rates of such structures are derived from the total number of responses per condition. The results presented in Table 17 reveal that for three older age groups, whenever pronouns were used, they appeared in a pre-verbal position (the range is from 83% in C1 (4-year-olds) to 100% in C2 (4- and 5-year-olds and adults). Younger children, on the other hand, scrambled pronouns similarly to the full NPs: 40% and 50%, respectively (2-year-olds) and 50% and 60%, respectively (3-year-olds).

Table 17. *NP Scrambling vs. pronominal Scrambling (all participants), %.*

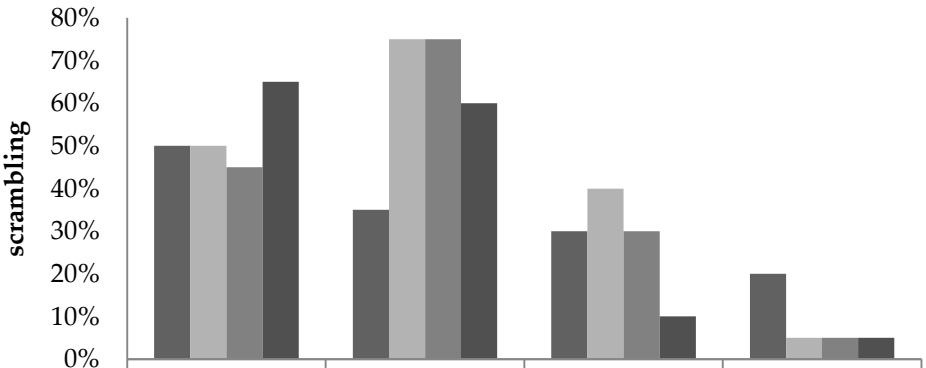
	C1		C2		C3	
Age	**NP**	**Pronoun**	**NP**	**Pronoun**	**NP**	**Pronoun**
2-year-olds	40	**50**	70	**0**	22	**0**
3-year-olds	50	**60**	35	**0**	28	**100**
4-year-olds	31	**83**	68	**100**	35	**0**
5-year-olds	13	**85**	74	**100**	13	**100**
adults	13	**92**	44	**100**	8	**100**

These results confirm the predicted contrast between scrambling of full NPs and scrambling of pronominal direct objects: the former is highly optional for all age groups, while the latter is not for the adults and older children.

3.3.2. Balanced results: Age effects

As was discussed in 3.2, to allow us to assess the Age effect in production of Scrambling in Ukrainian, the data was restricted to a balanced subset, with 10 participants in each of the 4 age groups: 3-, 4-, 5-year-olds and adults (based on the fact that there were only 10 3—year-old children).

Descriptive statistics of the obtained results, i.e., the mean percentage of total scrambled responses per condition and age group, is given in Figure 10.



	C1	C2	C3	C4
3 years	50%	35%	30%	20%
4 years	50%	75%	40%	5%
5 years	45%	75%	30%	5%
Adults	65%	60%	10%	5%

Figure 10. Total Scrambling per Condition (balanced group).

The balanced results look very similar to the total results presented in Figure 3.9 (Section 3.3.1): the highest rates of total scrambling were obtained in C2 (75% for 4- and 5-year-olds) and in C1 (65% for adults), and the lowest rates are shown in C4 (5% for the three older groups). Thus, these data also indicate a noticeable contrast in the rate of scrambling between C1-C2 and C4, suggesting effect of the Context on Scrambling.

Table 18 shows the statistical results for each of the age group separately:

Table 18. *Effects of Context on Scrambling for the balanced data.*

Age group	**Significance**	
3 years	F (3, 27) = 1.06, p = 0.381	No effect of Context
4 years	F (3, 27) = 5.08, p = 0.00645	* significant
5 years	F (3, 27) = 7.72, p < 0.001	** significant
Adults	F (3, 27) = 12.48, p <0.001	** significant

AVOVAs confirmed a highly significant main effect of Context for the balanced data in 4- and 5-year-old and adult groups [$F1$(3, 144) = 18.61, p < 0.001], but no effect of Age [$F1$(3, 144) = 0.51, p = 0.677] and no interaction of Age x Condition [$F1$(9, 144) = 1. 58, p = 0.126]. Three-year-old children did not differ much in their rate of production of scrambled responses in C2-4 showing some deficit in the knowledge of rules that constrain scrambling in Ukrainian (see possible explanation of these results in 3.4.). From the age of 4, however, the children are target-like in production of scrambling and know rules which constrain syntactic movement in certain contexts, and the effect of the Context becomes stronger with each next age group. This fact definitely establishes that 4- and 5-year-old children know when Scrambling is NOT possible (C4).

Further analysis is needed to define which of the conditions triggers the highest rates of scrambling: Definite (C1) or Partitive (C2), and whether the Indefinite Specific Condition (C3) is conducive to scrambling. The dynamics of scrambling in these conditions has somewhat different patterns for each age group. The rates of scrambling in three conditions are distributed as follows:

Table 19. *Distribution of the rates of scrambling.*

	Distribution
4-year-olds	C2>C1=C3
5-year-olds	C2>C1>C3
Adults	C2=C1>C3

This suggests two possible contrasts: 1) between C2 and C1, and 2) between C1-2 and C3. The first one is not likely to be significant, but variations in the scrambling rates suggest that there are might be other factors involved, and one of them is the object type (full NP vs. pronoun).

The role of the object type established for the total results in 3.3.1. (Table 16) also holds for the data from the balanced group of participants. As demonstrated in Table 20, most of scrambled structures produced by participants from the two oldest groups in C1 contain pronouns (35% for 5-year-olds and 50% for adults).

Thus, there is a noticeable pattern in the use of two possible object types in C1, which changes gradually with age: 3-year-olds produce more scrambled nouns than pronouns, while adults have the opposite distribution.

Table 20. *Scrambling per Condition: NP vs. Pronouns (balanced group), %.*

	C1		C2		C3		C4	
	NP	**Pronouns**	**NP**	**Pronouns**	**NP**	**Pronouns**	**NP**	**Pronouns**
3-year-olds	35	**15**	**35**	0	25	5	20	0
4-year-olds	20	**25**	**60**	10	25	0	5	0
5-year-olds	10	**35**	**50**	25	15	10	5	0
adults	10	**55**	**40**	20	5	5	5	0

On the other hand, the data from C2 do not include many pronominal direct objects: most of scrambled structures in this condition contain a full NP (e.g., 60% of NPs and only 10% of pronouns for 4-year-olds). Further observation of these results reveals that many responses in C2 have scrambled constituents 'one NP' or 'one of them'. Apparently the lexical marker 'one' contributed to the high rates of scrambling in this condition. It is not clear whether participants intended to use 'one NP' as a numeral 'one and only one' or as a specificity-partitivity marker, but in both cases they preferred to place it in a preverbal position. This observation requires further analysis (see 3.4. and Chapter 5).

Further analysis of the pronominal scrambling indicates that whenever pronouns were used, they were overwhelmingly placed in a pre-verbal position (see also 3.3.1, Table 17). As shown in Table 21, pronominal scrambling was performed at a very high level (78-100%) in most conditions and age groups (except 3-year-olds), which contrast sharply with the highly optional NP scrambling.

Table 21. *NP Scrambling vs. pronominal Scrambling (balanced group), %.*

	C1		C2		C3	
	NP	**Pronouns**	**NP**	**Pronouns**	**NP**	**Pronouns**
3-year-olds	50	**60**	35	**0**	28	**100**
4-year-olds	31	**100**	71	**100**	33	**0**
5-year-olds	18	**78**	67	**100**	19	**100**
adults	22	**100**	50	**100**	6	**100**

Thus, the most prominent difference between children and adults concerns the use and distribution of two direct object types. 3-year-olds produced the fewest pronouns and scrambled them less than the 4-5-year-olds and adults. This

suggests that children lag behind adults with regard to the knowledge of how pronouns and scrambling interact and become target-like only around the age of 5.

3.3.3. Individual results

Individual patterns are defined as follows: 1) participants who never scrambled; 2) participants who always scrambled; 3) target-like participants (2 scrambled structures in C1 and 2 scrambled structures in C2, but no scrambled structures in C4); 4) mostly target-like participants (at least one scrambled structure in C1 and at least one scrambled structure in C2, but no scrambled structures in C4); 5) others (various number of scrambled structures in C1-C2, but no scrambled structures in C4); errors (at least one scrambled structure in C1 and/or C2 and at least one scrambled structure in C4). C3 was excluded from this analysis because scrambling in this condition depends more on pragmatic factors than on semantic features.

Individual results of the balanced group of participants are summarized in Table 22. Overall they confirm group results, testifying that speakers' grammar is not random, but that scrambling is optional for most of them.

Table 22. *Patterns of Scrambling (balanced group), N.*

		3-year-olds	4-year-olds	5-year-olds	adults
1.	Never Scrambled	1	0	0	0
2.	Always scrambled	1	0	0	1
3.	Target-like	0	1	3	0
4.	Mostly target-like	1	5	2	7
5.	Others	5	3	4	2
6.	**Errors**	**2**	**1**	**1**	**0**

It appears, that 7 adult participants followed a predicted pattern of scrambling, confirming that syntactic movement of a direct object is applied only in definite and partitive contexts, but not in indefinite nonspecific contexts. 2 other participants scrambled at various rates, but they did not violate the constraint noted above. The only error was produced by a participant who scrambled in all conditions, and thus we cannot make any generalization based on this participant's grammar.

The children's individual results were analyzed for each age group separately, considering only the balanced data of 10 participants per group. Table 22 shows that 3-year-olds differ from 4- and 5-year-olds in that their individual responses are the most diverse. Furthermore, there were no children in this age group who behaved target-like, and only one child was mostly target-like. The individual results from older children exhibit well-defined patterns in the distribution of scrambling. Only one child in each group made errors, and among others most children were either target-like or mostly target-like.

This summary shows that participants from all the age groups exhibit certain variability with regard to distribution of scrambling across conditions. It is evident, however, that the number of possible patterns decreases with age: 3-year-olds exhibited 5 patterns of scrambling distribution, 4-5-year-olds can be grouped in 4 patterns, and adults had the most consistent distribution arranged in only 3 patterns.

3.4. Discussion

The experimental study presented above provides us with extensive data relevant both to syntax and to acquisition theory. The results obtained from the adult and child speakers of Ukrainian allow us to come up with important generalizations and to evaluate theoretic hypotheses concerning causative factors of scrambling. The data from different age groups are also revealing on the issue of developmental differences between children and adults. The main findings on these issues are summarized below.

3.4.1. Factors contributing to scrambling

Once again, we see that optionality and variability are the core properties of scrambling in Ukrainian. Movement of a direct object to preverbal position has been claimed to be optional, and it remains so even in carefully constructed contexts. Neither adults nor children produced scrambled responses at the highest rates in any of the tested contexts, suggesting that there is no inherent syntactic motivation to make scrambling of a direct object obligatory. However, scrambling is not random but is constrained by implicit 'rules'. One such rule can be defined as follows: "Do not scramble indefinite nonspecific direct objects". It

appears that even the youngest children exhibit knowledge of this constraint pointing to its Universal Grammar (UG) origin.

The results obtained from the Indefinite Nonspecific Condition (C4) are crucial for establishing possible constraints on scrambling and for verification of children's knowledge of them. Particularly, the data in Figure 10 indicate that the contexts from this condition trigger very low rates of scrambling, and that the rates are exactly the same for 4-year-olds, 5-year-olds and adults (5%). This is what was predicted: since indefinite nonspecific objects are not defined by the previous context, they cannot appear in a pre-verbal position. Starting from the age of 4 children understand this grammar rule and behave like adults. 3-year-olds, however, differ from older age groups and, as was mentioned above, from 2-year-olds as well, so these age differences deserve a separate discussion (see 3.4.2).

The study also allows us to define a number of other factors contributing to scrambling in Ukrainian. Scrambling is a complex phenomenon, and it goes beyond just the semantic features of definiteness or specificity. Other important factors that contribute to the use of scrambled structures are object type (full NP vs. pronoun), contextually-defined direct object semantics, structure of the NP (availability of a quantificational lexical element), and pragmatic principles (Speaker's knowledge and Hearer's knowledge might differ), and I now turn to the discussion of each of these factors.

Personal pronouns are always scrambled by adults, presenting the only instance of a 100% scrambling rate in the experimental results. However, it appeared that children treat pronouns in a different way. First, young children (2-3-year-olds) preferred to use full NPs in sentences where older children and adults produce pronouns, consistent with similar observations by De Villiers, Cahillane & Altreuter (2006) and Spenader, Smits & Hendriks (2009) for English and Dutch. Next, children leave pronouns in a post-verbal position more often than adults. It is puzzling why pronominal scrambling would be more difficult to acquire than the scrambling of full NPs, however, this finding is not totally unexpected. As was shown in studies on Norwegian, even older children do not perform obligatory syntactic movement of pronouns (see results from Anderssen, Bentzen & Rodina (2009) below).

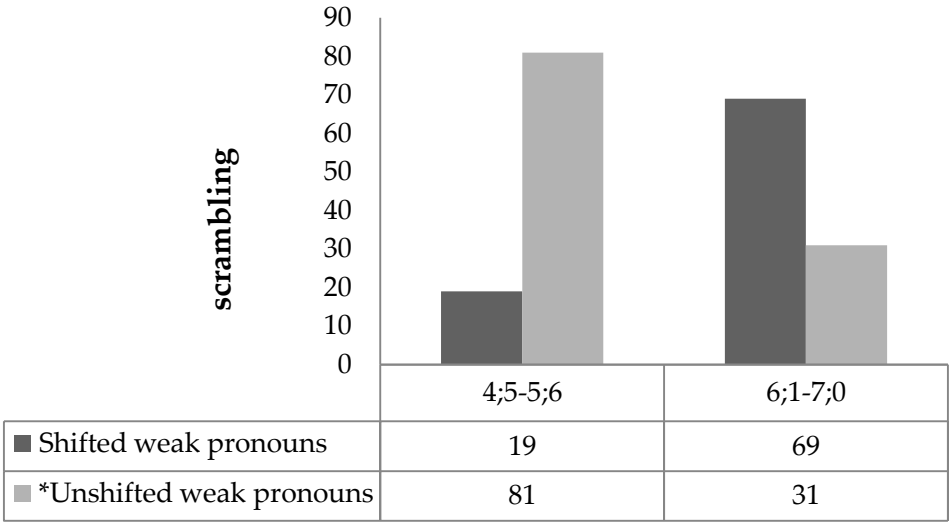


Figure 11. Shifted vs. unshifted pronominal objects in Norwegian, %.

Furthermore, in a number of studies on acquisition of clitics, children exhibit problems with these elements (Babyonyshev & Marin, 2006; Granfeldt & Schlyter, 2004; Hamann & Belletti, 2006, to name a few). Although personal pronouns in Standard Ukrainian are not clitics, they are phonetically reduced elements which are usually placed before the verb. It is possible, then, that they have some clitic properties, and should be categorized as 'weak pronouns' (see Cardinaletti & Starke (1999), but cf. Testelets (2003) on Russian). In Ukrainian, a pronoun *in situ* does not make a sentence ungrammatical, but it requires a distinct prosody in order to make the sentence sound natural: the sentence-final 'weak pronoun' cannot be stressed. It is possible that children use the prosody associated with pronouns *in situ* more readily than adults.

In previous studies, mentioned in Chapter 2, it has been suggested that object scrambling is related to object semantics in a number of languages, that is, the scrambled position is associated with specific interpretation of the direct object. However, the details of this relationship and the mechanism of the syntax-semantic interaction have not been made clear in the literatire. In Chapter 2, this issue has been discussed and the INT-as-Context-Dependent-Feature (ICDF) Hypothesis proposed. According to this hypothesis, object semantics is not a side-effect of scrambling, but a presupposed property of the object which can be moved to pre-verbal position. This means that the object has its semantic features valued as a sub-process or a pre-condition of the process of movement. Since

Ukrainian does not have obligatory lexical elements to mark NP-related semantics (such as articles), context becomes very important for assignment of semantic features. Context defines direct object semantics as definite, partitive, or specific (including combinations of these features), and only then the syntactic movement can be applied. According to this view, the indefinite nonpartitive nonspecific objects cannot undergo scrambling. This was the main prediction of the study described above, and notably, this prediction was confirmed by low rates of scrambling in the Indefinite Nonspecific Nonpartitive Condition. If an object has not been mentioned in the context, it should not be scrambled. This constraint is operative in the grammar of adult speakers and 4-5-year-old learners of Ukrainian. The results also show that the Definite Specific Condition triggers the highest rates of scrambling for all age groups. This is partly due to the high use of personal referential pronouns in this condition triggered by the appropriate previous context.

The results from two other conditions, Indefinite Partitive and Indefinite Specific, are more complicated. Partitive objects are scrambled at a high rate, which confirms the main prediction: all contextually defined direct objects have a prerequisite for movement. However, it is possible that there are additional factors contributing to the use of scrambled structures in partitive contexts. As was mentioned before (in 3.3.2), direct objects in this condition usually include the word 'one' that clearly marks object semantics as specific/partitive, and this lexical marker might facilitate the process of syntactic movement. It is likely that the lexical element 'one' is perceived by speakers as a quantifier that restricts a set of involved individuals to only one individual; so the NP is moved over the verb to mark the scope of quantification. Occasional use of the focus-marking adverb *til'ky* 'only' with the direct object in this condition suggests that the semantics of such NPs is 'one and only one individual from the set introduced in the discourse'. Further evidence for this argumentation could come from the prosodic analysis of the produced sentences. If the scrambled NP is stressed, it is likely to be a constituent with a contrastive focus interpretation; if 'one' in the scrambled position is not stressed, its semantics is close to the marker of specificity.[48]

[48] Some studies on Russian word order, however, assert that the notion of contrastive focus is too broad or not accurate (Kallestinova, 2007; Borovikoff, 2001; Dyakonova, 2009; Slioussar, 2007). According to them, an object in pre-verbal position either contrasts information existing in previous discourse, and thus is specific, or does not presuppose an overt contrast at all. King (1995), on the other hand, claims that Russian has a contrastive focus (emotive) construction in which the focused item is most commonly found directly before the verb.

The results from the Indefinite Specific Condition reveal that referential contexts do not support scrambling. Based on the adult data (showing no significant contrast between C3 and C4), we can conclude that specificity (as referentiality) does not have a strong effect on scrambling (compare to Schaeffer (2000)). Although the contexts were set in such a way that the direct object was contextually-defined, and the speaker was able to make this association, the hearer was not familiar with the object. Therefore, according to the syntax-semantics rules syntactic movement of a specific object might occur, while according to the pragmatics rules (i.e., speaker's and hearer's knowledge might differ) – should not.

The Indefinite Specific condition (C3) also seems to provide the most substantial evidence for a difference between children and adults: children scramble more than adults. A possible explanation of this might be that children lack pragmatic knowledge and scramble objects whose reference is unknown to the hearer, while adults take into account the hearer's beliefs and use the basic structure. However, careful consideration of the available data shows that in most of the scrambled responses children used an 'adult' technique: they introduce the object in the first phrase, and scramble it in the second one. For instance, "*There was a butterfly, and Winnie the Pooh him caught*". If we exclude all cases of this 'pragmatically-correct' scrambling and analyze the remaining data, it is likely that even the youngest children will behave adult-like in the Indefinite Specific Condition. If so, the pragmatic-deficit hypothesis in acquisition of scrambling can be ruled out. This is indeed the case: the means of scrambling in C3 for 3-, 4-, and 5-year-olds and adults (15%, 30%, 0%, 5%, respectively) differ considerably from the means in C1 and C2 (cf. Figure 9 above).

Thus, it appeared that even young 3-year-old children followed the rules of pragmatics for most of the times and did not scramble *indefinite referential* direct objects. It should be mentioned that this result does not necessarily contradict the claims about the role of referentiality or specificity in scrambling (particularly in studies on Dutch acquisition). It is possible that it may be due to the terminological differences clarified by Unsworth (2005): the feature involved in [Dutch] scrambling is specificity defined as partitivity, rather than specificity defined as referentiality (in terms of Fodor & Sag (1982)).

3.4.2. Developmental path in acquisition of scrambling

The results of the experiment with the children from several age groups allow us to make conclusions specific to acquisition theory: the statistical analysis of the

data showed no Age effect in scrambling. This suggests that even the youngest children (around the age of 3) are mostly target-like in that they perceive the difference between the contexts and are able to relate syntactic movement to the direct object semantics. Nonetheless, there are some aspects of scrambling that take time to acquire: pronominal scrambling is adult-like only for 4- and 5-year-olds, and the scrambling patterns become more restricted and regular at the age of 5. Possible suggestions concerning the role of prosody in imperfect pronominal scrambling have been mentioned above, but because this experimental study did not control for the use of pronouns, further investigation is needed, as discussed in Chapter 5.

The scrambling patterns were additionally analyzed with regard to individual data from different age groups. This analysis suggests that young children exhibit considerable variability in the use of scrambled structures across conditions. Apparently, their grammar is still in formation, and their general language skills might be at different levels resulting in large variability among 2-3-year-olds. As they achieve a certain level of proficiency in the knowledge of Ukrainian grammar, they become more alike and show less individual variability. It can also be suggested that the variability in word order patterns correlates with the variability of the prosodic contours found in the speech of young children (Balog & Snow, 2007; Chen & Fikkert, 2007; Nederstigt, 2001; Prieto & Vanrell, 2007; Snow & Balog, 2002, *inter alia*). If scrambling and prosodic means are two available options, children might explore the latter at length before they settle down with an option which is more efficient and confirmed by the input.

At first glance, the developmental path in acquisition of scrambling might seem to have a U-shape: 2-year-olds know constraints on scrambling; 3-year-olds overuse scrambling in the Indefinite Nonspecific Condition; and 4-5-year-olds behave mostly adult-like. However, the data from 2-year-olds are very limited, and the data from 3-year-olds still show a clear contrast between scrambling of definite and indefinite-nonspecific objects, suggesting that they also follow the main scrambling rule. 3-year-olds did use some scrambled structures with indefinite nonspecific direct objects, i.e., 4 sentences (20%). This result might indicate that they do not know features involved in the syntactic movement and, thus, overuse scrambling. However, it appears that in 3 of 4 'erroneous' sentences, children added the indefinite pronoun *jakyjs*' 'some', which indicates that they have knowledge of the object semantics, but still perform an unnecessary syntactic movement. It should be mentioned, however, that since the number of items per participant was quite low, the final conclusion

concerning this age group cannot be made at this point as it requires more substantial data.

The results of this experiment, thus, suggest that even the youngest children have semantic and pragmatic knowledge necessary to constrain scrambling. Why did they apply syntactic movement to the indefinite nonspecific objects, then? The answer may be that children make performance errors, but then 'repair' these errors by applying a distinct prosodic contour, to be discussed in the next chapter.

3.5. Summary

The results of the experiment presented in this chapter reveal the main factors contributing to scrambling in Ukrainian. Even though scrambling is a multifaceted phenomenon, and hence might be influenced by different aspects of the grammar, the strategy employed in this study has allowed us to identify some of these aspects. The same experiment conducted with children and adults investigated only one type of scrambling – Middle Object Scrambling. Examination of MOS structures shows that the direct object is consistently placed in a preverbal position only in some contexts. Both children and adults scramble more in definite and partitive contexts than in indefinite and specific-referential contexts. These data, thus, confirm the ICDF hypothesis: syntactic movement of a direct object occurs when the INT-feature is valued as definite or partitive. This suggests that the context defining the object semantics is one of the key factors contributing to scrambling. Another aspect of scrambled structures revealed in the above-described experiment is the object type. Pronominal direct objects are scrambled more often than full NPs, especially in definite contexts, where use of pronouns appears to be the most natural. However, this conclusion concerns only adult grammar, in which pronominal scrambling is mandatory, while full NP scrambling is optional. In child grammar, on the other hand, both types of scrambling are optional. Since children are mostly adult-like in other aspects of scrambling, i.e., they rarely overuse syntactic movement in indefinite/nonpartitive contexts, consideration of cognitive factors seems to be unmotivated. Instead, the linguistic factors, namely sentence prosody, will be further investigated in the next chapter.

CHAPTER 4
PROSODIC REALIZATION OF SENTENCES WITH DIRECT OBJECT: EXPERIMENTS 2 AND 3

4.1. Introduction

This chapter presents Experiments 2 & 3 that test the second part of the ICDF hypothesis (stated in Chapter 2 and repeated here):

(1) Prosodic recontouring can be a language-internal alternative to the syntactic movement activated by INT-as-a-Contextually-Defined-Feature.

The major question pursued in these experiments is: *How does prosody correlate with the word order and semantic contexts in adult and child Ukrainian?* In Chapter 2, I made the following general prediction: Ukrainian speakers will assign a distinctive prosodic contour to the basic SVO sentences if they contain an INT-bearing element, i.e., definite/partitive or pronominal direct object. In this chapter, I substantiate this claim and demonstrate that such structures usually have a falling pitch accent on the verb and a deaccented direct object (following Neeleman & Reinhart (1998); see also Ladd (1996); Pierrehumbert (1980) *i.a.*, on possible autosegmental notations of the relevant prosodic contours).[49] I begin

[49] Prosodic contours or sentence intonation belong to the suprasegmental (post-lexical) prosodic level. The terms 'stress' and 'accent' are used interchangeably, and they both refer to the post-lexical level, and not to the lexical one (see Gussenhoven (2004) for the distinction between them). A declarative sentence is assumed to consist of short prosodic phrases (p-phrases) and larger intonation phrases (i-phrases) (Nespor & Vogel, 1986; Selkirk, 1986, among others), but these notations are not used in the data presentation that follows.

with an overview of previous findings and methodological principles used in prosodic analysis. Next, I describe Experiment 2 conducted with adults and discuss the main findings. The third part of the chapter treats the issue of child prosody as it is presented in previous research and in the current study. Discussion of the child data from Experiment 3 contributes to this issue. The chapter concludes with directions for further research.

4.1.1. Background: Prosody and its transcription

Prosody plays an important role in marking semantic/pragmatic properties of sentence constituents in intonational languages. Intonational languages (e.g., Germanic, Romance, or Slavic) are those in which pitch accents associated with stressed words vary depending on their position in the sentence and their semantic/pragmatic properties (cf. tonal languages, e.g., Mandarin). Sentence elements with different prosody are often described in terms of information structure and defined as topic (old, given) or focus (new). It has been shown that a 'new' element is typically realized with a falling pitch accent, while an 'old' element appears to allow more variability: it can be realized with no accent or with a falling or rising accent (see Lambrecht, 1994; Steedman, 2000; Vallduví & Engdahl, 1996, and many others). For instance, it was found for Dutch (Chen, 2010), that focus is marked with a falling accent, independent of position. In contrast, the realization of topic is more sensitive to its position in the sentence: it receives falling pitch in the sentence-initial position, but it is mostly unaccented in the sentence-final position. Furthermore, Chen mentions that when topic and focus are realized with the same accent type, they are distinguished by gradient phonetic parameters, such as word duration or pitch range.[50] Specifically, focused elements have longer duration than topic-elements. These findings concern only the basic word order, and prosody of scrambled structures still needs to be examined with means developed for acoustic analysis of sentence intonation.

Different aspects of sentence intonation have been widely studied in Germanic languages (i.e., English, Dutch, or German) and to some extent in other languages, such as Russian. Therefore, the methodological tools used in the prosodic analysis have been based on specifics of these languages. Particularly, there have been developed such transcription system as ToBI (Tones and Break

[50] All these features belong to the suprasegmental prosodic level (Ladd, 1996), but only post-lexical stress patterns are discussed here.

Indices), based on Pierrehumbert (1980); ToDI (Transcription of Dutch Intonation) (Gussenhoven, 2005); and ToRI (Transcription of Russian Intonation), as used in Odé (2003). Since the two latter systems were based on the former one, in the current study I follow notations accepted for ToBI.

ToBI is a system for transcribing intonational patterns that was developed by a team of researchers primarily for English (Silverman, Beckman, Pitrelli, Ostendorf, Wightman, Price, Pierrehumbert, & Hirschberg, 1992). However, it has been used for other languages as well, e.g., Igarashi (2002 & 2004) has successfully applied this system to the sentence intonation of Russian. Other systems use the same principles with some modifications. All of them are based on the autosegmental metrical view of prosody, and thus treat level tones as intonational primitives. The pitch contour of a sentence is described as sequences of high (H) and low (L) tones, and a stressed syllable is marked by a * symbol. In ToBI, each accented (stressed) sentence element is transcribed as two main types of pitch accents: rising (e.g., L+H* or L+*H) and falling (e.g., H+L* or H*+L). Some other notations used in the transcription are: H* (sustained high pitch), L* (sustained low pitch), !H*+L (downstepped pitch which has a pitch peak noticeably lower than the preceding high tone) and % (a phrase boundary). It should be mentioned, however, that only some of these notations are relevant for the current experimental study on Ukrainian. In order to formulate predictions concerning intonation of scrambled structures in Ukrainian, it is imperative to identify neutral (unmarked) intonation of the basic SVO structure. To my knowledge, the only study discussing Ukrainian intonation by means of autosegmental-metrical notations is Féry, Paslawska & Fanselow (2007).

4.1.2. Prosody of Ukrainian (Féry et al., 2007)

In Ukrainian, a declarative sentence can have default/unmarked/neutral intonation (also defined as 'wide focus') or marked intonation (associated with 'narrow focus'). The unmarked prosodic contour of the basic word order SVO has all arguments accented with the strongest pitch accent falling on the last sentence element. An example is given in (2). The subject has a rising pitch accent and is labeled as a sequence of LH*. This accent is followed by a relatively flat high intonation until the next accent is reached. The last falling accent, called the Nuclear Pitch Accent, is transcribed as HL*.

(2) LH* HL*
[[DIVčyna]$_P$ [čytaje roMAN]$_P$]$_i$

girl is-reading novel
'A girl is reading a novel.'

Pitch accents of sentences that are marked in regard to interpretation of certain constituents are highly variable. Féry et al. (2007) present two basic structures with narrow foci on subject and object. As shown in (3), in sentences with a narrow focus on the object, the subject still bears a rising prenuclear accent LH*, but the object receives another type of the falling accent H*L. On the other hand, when narrow focus is realized on subject (as in (4)), the subject receives the falling pitch H*L, and the remainder of the sentence is deaccented.

(3) LH* H*L
[[DIVčyna]$_P$ [čytaje roMAN$_{FOC}$]$_P$]$_i$
girl is-reading novel

(4) H*L
[[DIVčyna$_{FOC}$ čytaje roman]$_P$]$_i$
girl is-reading novel

Féry et al. conclude that the general prosodic structure of Ukrainian is that of a typical intonational language with accents and phrases similar to the ones of well-described languages, e.g., English, Dutch or German.

4.1.3. Predictions for structures with Middle Object Scrambling

The sentence in (2) was an example of an unmarked structure both syntactically and prosodically. The structure becomes marked if it undergoes syntactic (e.g., scrambling) or prosodic (e.g., stress relocation) changes. As a result of these changes, the interpretation of the affected elements is usually altered. It has been proposed, for example, that in intonational languages with flexible word order, scrambling might have the same effect as prosodic destressing (see Neeleman & Reinhart (1998) on Dutch). It seems that Ukrainian is similar to Dutch in this regard. In Ukrainian, as in Dutch, definite object NPs typically appear in scrambled position (as in (5a)). However, the same elements may stay *in situ*, and receive a different prosodic realization, as shown in (5b),

where the verb stress becomes more prominent compared to (5a), while the object stress is too subtle to perceive.[51]

(5) a. Divčyna **(toj)** **roman** pročytala.
girl (that) novel read
b. Divčyna PROČYTALA **(toj)** **roman**.
girl read (that) novel
'The girl has read the novel.'

As was discussed in Chapter 2, these effects are parallel to the prosodic recontouring in sentences with pronouns (6).

(6) a. Divčyna **joho** pročytala.
girl it read
b. Divčyna PROČYTALA **joho**.
girl read it
'The girl has read it.'

However, the change in sentence prosody involving the full NP in (5b) is not as easily detectable as that in (6b) involving the pronoun. Therefore, a detailed acoustic analysis of these structures is needed in order to provide valid evidence for the correlation of prosody and word order. Experiments 2 & 3 were designed to address this issue with adult and child data.

The following principles were used in the analysis of the data. First, since the prosodic contour of a syntactic structure depends on the position and semantics of the moved element (i.e., direct object), special attention was paid to the prosodic realization of the object and verb, leaving the subject aside. Second, since I am interested in the cases where NO STRESS is assigned on an object, the pitch type of those objects that are stressed is discussed only briefly. Next, the verb is more likely to be stressed in syntactic structures used in stimuli, and thus the pitch type, particularly, the falling pitch accent, is defined and analysed. The details of the pitch assignment (i.e., type of the falling pitch H*+L, H+L*, or !H*+L), however, are not discussed.

Based on the assumptions introduced above, the core predictions for different types of syntactic structures and semantic contexts are summarized in Table 23. The typical 'default' prosody for the SVO sentence (with an indefinite object)

[51] Recall that the direct object is marked in **bold**, the constituent that it appears over is <u>underlined</u>, and an element pronounced with a distinct intonation is given in SMALL CAPITALS.

should have a prenuclear rising accent on the verb (e.g., L+H*) and the final nuclear accent on the object (e.g., H+L*) (see the dark shaded row C4 below).[52]

Table 23. *Predicted prosodic realizations of objects and verbs.*

	Object & Syntactic Structure	**Verb Prosody**	**Object Prosody**
C1	Definite NP & SOV	Falling pitch	?
C2	Definite NP & SVO	Falling pitch	Destressed
C3	Indefinite NP & SOV	Destressed	?
C4	Indefinite NP & SVO	Rising pitch	Falling pitch
C5	Partitive NP & SOV	Falling pitch	?
C6	Partitive NP & SVO	Falling pitch	Destressed
C7	Pronoun & SOV	Falling pitch	?
C8	Pronoun & SVO	Falling pitch	Destressed

Given that definite, partitive and pronominal direct objects are contextually defined, they should be marked either syntactically or prosodically. If these types of objects do not undergo syntactic movement, they are expected to undergo prosodic change in the basic SVO structure. Specifically, such structures will have an unaccented object and any type of the falling pitch accent on the verb (H*+L, H+L*, or !H*+L) (see shaded rows C2, C6 & C8 in Table 21). On the other hand, since the most natural position for an indefinite object is *in situ* (see Chapter 2 for the discussion), the sentence should be prosodically marked when such an object appears in a scrambled position. Hence, a scrambled structure with indefinite object is likely to have a destressed sentence-final verb, while the prosody of a preverbal object might vary. Other possible syntax-semantic combinations listed in Table 23 are given for completeness, but their prosody needs further investigation. It is expected, thus, that prosodic analysis of the data from Experiments 2 & 3 will supplement missing or unclear predictions about interaction of prosody, direct object semantics and word order in Ukrainian.

[52] Note that prosody of an intonational language might be highly variable and thus largely unpredictable. Table 23 shows only the most general characteristics associated with certain structures and contexts in simple transitive declaratives. Cells with a question mark represent lack of a strong prediction. Shaded rows represent predicted prosody based on my own intuition of a native speaker and on previously mentioned studies on Dutch and Ukrainian.

4.2. Experiment 2: Adult prosody

4.2.1. Method

4.2.1.1 Participants

Experiment 2 was conducted with eight adult native speakers of Ukrainian in the summer of 2009. All participants were females, in the age range of 20-52 (*M*=41). They were tested in Ukraine or in the USA shortly after their arrival, so that their language environment was primarily Ukrainian. Six participants were originally from Western Ukraine and two were from Central Ukraine. They all defined themselves as active speakers of Standard Ukrainian, fluent speakers of Russian and second language learners of English.

4.2.1.2 Design and Materials

The experimental task involved reading sentences which represented eight conditions with different types of contexts, direct objects and syntactic structures. (The exact procedure of administering the task will be described in 4.2.1.3). There were 64 experimental items in total. Each item consisted of two parts: the first part was setting an appropriate context, while the second part was the testing sentence itself. There were eight pairs of verbs and objects that appeared in each condition, as shown in Table 24. Note that all the direct objects have the same morphological form (Singular, Feminine, Accusative), and the same inflection. I also controlled, to the extent possible, for various 'phonetics-specific' factors, such as number of syllables in a scrambled element, stress in the direct object NP, preference for sonorants in testing material, etc.

Table 24. *Experimental material.*

	Verb.INF	**Object.ACC**
1.	*zvaryty* 'cook'	*rybynu* 'fish'
2.	*zrubaty* 'chop'	*jalynu* 'pine'
3.	*zlamaty* 'break'	*berezu* 'birch'
4.	*zvil'nyty* 'fire'	*ljudynu* 'person'
5.	*zahubyty* 'lose'	*voronu* 'crow'
6.	*zabraty* 'take'	*zajavu* 'notice'
7.	*zvil'nyty* 'free'	*rabynju* 'slave'
8.	*vyhadaty* 'make up'	*baladu* 'ballad'

The same Verb-Object pair appeared in six experimental Conditions (C1-C6) and two control Conditions (C7 & 8), in which two factors were manipulated: Context (defining object semantics as Definite, Partitive, or Indefinite-Nonpartitive) and Word Order Structure (scrambled SOV or nonscrambled SVO). In addition, to avoid any possible ambiguities and to make the testing materials as natural as possible, all direct object NPs were preceded by a lexical marker: *ta* 'that' for definite, *jakas'* 'some' for indefinites, and *odna* 'one' for partitives. Pronominal Conditions were used for control and consisted of the same verb as the other conditions and the direct object *jiji* 'it.FEM.SG.ACC' appearing before or after the verb. Distribution of the items is shown in Table 25.

Table 25. *Items used in Conditions C1-C8.*

	C1. Definite Noun SVO	**C2. Definite Noun SOV**	**C3. Indefinite Noun SVO**	**C4. Indefinite Noun SOV**
1.	cook this fish	this fish cook	cook some fish	some fish cook
2.	chop this pine	this pine chop	chop some pine	some pine chop
3.	break this birch	this birch break	break some birch	some birch break
4.	fire this person	this person fire	fire some person	some person fire
5.	lose this crow	this crow lose	lose some crow	some crow lose
6.	take this notice	this notice take	take some notice	some notice take
7.	free that slave	that slave free	free some slave	some slave free
8.	create that ballad	that ballad create	create some ballad	some ballad create

	C5. Partitive Noun SVO	**C6. Partitive Noun SOV**	**C7. Pronoun SVO**	**C8. Pronoun SOV**
1.	cook one fish	one fish cook	cook it	it cook
2.	chop one pine	one pine chop	chop it	it chop
3.	break one birch	one birch break	break it	it break
4.	fire one person	one person fire	fire him	him fire
5.	lose one crow	one crow lose	lose it	it lose
6.	take one notice	one notice take	take it	it take
7.	free one slave	one slave free	free her	her free
8.	create one ballad	one ballad create	create it	it create

Stimuli used in the experiment are exemplified below in (7-15). There were four Condition pairs: C1 & C2, C3 & C4, C5 & C6, and C7 & C8. The stimuli of each pair consisted of the same context preceding a testing sentence with either scrambled or nonscrambled direct object. Hence, C1 and C 2 differed only in the

last sentence in which the definite direct object *tu rybynu* 'that fish' preceded the verb (as in (7)) or followed it (as in (8)).

C1: Definite DPs & SOV

(7) Včora xlopci spijmaly velyku rybynu. Roman pišov dodomu, a Ivan vyrišyv, ščo..
Yesterday, the boys caught a big fish. Roman went home, and Ivan decided that…

(SO$_{[def]}$V)	vin	**tu rybynu**	zvaryt'.
	he	that fish	will.cook.

C2: Definite DPs & SVO

(8) Včora xlopci spijmaly velyku rybynu. Roman pišov dodomu, a Ivan vyrišyv, ščo..
Yesterday, the boys caught a big fish. Roman went home, and Ivan decided that…

(SVO$_{[def]}$)	vin	zvaryt'	**tu rybynu**.
	he	will.cook	that fish.

It was predicted that these two sentences would be pronounced with distinct prosody (see Table 23). Specifically, the SVO structure with the definite direct object (8) will have a falling pitch accent on the verb and a destressed object. The prosodic structure of the SOV structure (7) might vary, but it is likely that the nuclear pitch accent will fall on the sentence-final verb.

The next testing pair is shown in (9) and (10). The same context in C3 and C4 does not introduce any object to be discussed in the subsequent sentence. The direct object *jakus' rybynu* 'some fish' appeared only in the last testing sentence and, thus, it was indefinite.

C3: Indefinite DPs & SOV

(9) Mama dumaje, ščo zvaryty sjohodni na večerju. Jakščo dity zaxočut', to…
Mom is thinking what to cook for dinner today. If children want, …

(SO$_{[indef]}$V)	vona	**jakus' rybynu**	zvaryt'.
	she	some fish	will.cook.

C4: Indefinite DPs & SVO

(10) Mama dumaje, ščo zvaryty sjohodni na večerju. Jakščo dity zaxočuť, to ..
Mom is thinking what to cook today for dinner. If children want, …

(SVO[indef]) vona zvaryť **jakus' rybynu**.
she will.cook some fish.

Recall that the most natural position for an indefinite object is a post-verbal position (as in (10)). Hence, the sentence in (9) is predicted to have more marked prosody than the sentence in (10) with the same direct object in post-verbal position (see Table 23). The details will become detectable in the data analysis.

The Conditions C5 & C6 were designed according to the same principle: first, the context was introduced to clearly mark semantics of the object, and then that object was used in two testing sentences: scrambled or nonscrambled. The direct object *odnu rybynu* 'one fish.ACC' in (11) and (12) was partitive – a part of a set of five fish introduced in the context.

C5 & C6: Partitive context and two syntactic structures

Uranci Ivan spijmav bahato ryby. Pjať rybyn vin dav svojij susidci, i vvečeri…
In the morning Ivan caught a lot of fish. Five fish he gave to his neighbor, and in the evening…

(11) (SO[part]V) vona **odnu rybynu** zvaryla.
she one fish cooked

(12) (SVO[part]) vona zvaryla **odnu rybynu.**
she cooked one fish

It was predicted (based on the theoretical assumptions in Chapter 2) that the partitive object should pattern with the definite object (7-8) because in both cases direct objects are contextually defined. Hence, C5 and C6 should have distinct prosodic contours, i.e., the direct object in C6 is predicted to be destressed.

Pronominal control Conditions C7 and C8 contain a pronoun referring to a previously mentioned object. The context was similar to the Definite Condition, but the direct object is phonologically reduced, and its most natural position is before the verb.

C7 & C8: Pronouns used in two syntactic structures

Včora Ivan zlovyv velyku rybynu i dav jiji susidci, a sjohodni vin pobačyv, ščo…
Yesterday, Ivan caught a big fish and gave it to his neighbor, and today he saw, that…

(13) (SOV) vona **jiji** varyt'.
she it.FEM.SG.ACC cooks

(14) (SVO) vona varyt' **jiji**.
she cooks it.FEM.SG.ACC

Conditions exemplified in (13) and (14) were used for control, as the prosody of sentences with a pronoun is very salient. The post-verbal pronoun is usually destressed, and the preceding verb receives a falling pitch accent.

4.2.1.3 Procedure and data treatment

Each participant received 16 items in a form of a list of sentences typed on a sheet of paper. There were eight counterbalanced testing items and eight fillers (constructed similarly, but testing quantifiers) in a pseudo-randomized order. The participants were given some time to familiarize themselves with the list of sentences, and then they had to read each sentence in its context aloud once. Each session was recorded with an external high-quality microphone connected to a personal computer.

In order to examine the stress placement and the type of pitch accent in different conditions, target sentences were excised from the disambiguating contexts and analyzed acoustically in PRAAT, a program for speech processing (Boersma, 2001). The intonation of each sentence was labelled using ToBI and all labeling was performed manually in a simultaneous display of the waveform, wide-band spectrogram and F0 track. The data were analyzed, and assigned a tonal transcription, by a consultant who had prior experience doing ToBI labelling and who was familiar with Ukrainian.

Labeled sound files were examined in order to identify patterns associated with certain contexts (defining direct object semantics as definite, partitive or indefinite/nonpartitive) and the position of the object in the structure (scrambled or nonscrambled). The results were grouped by contrastive pairs (i.e., Definite SVO and Indefinite SVO Conditions; Definite SOV and Definite SVO Conditions; Partitive SVO and Indefinite/Nonpartitive SVO Conditions), and then each pair was analyzed statistically using factorial 2x2 ANOVAs (Context x Word Order).

4.2.2. Results

The results are presented as follows: first, pitch contours of particular types of sentences are described, and then, group results are discussed. This allows us to compare sentence prosody in various types of structures and contexts and to identify specific prosodic patterns used by the participants.

4.2.2.1. Types of pitch contours

Data obtained from the Definite and Indefinite Conditions C1-C4 are crucial for this research, and, thus, it is important to identify the pitch contours produced in these conditions. First, an SVO structure with an indefinite object (Figure 12) is compared to an SVO structure with a definite object (Figure 13).[53] It is evident that the prosody of these sentences differs considerably.

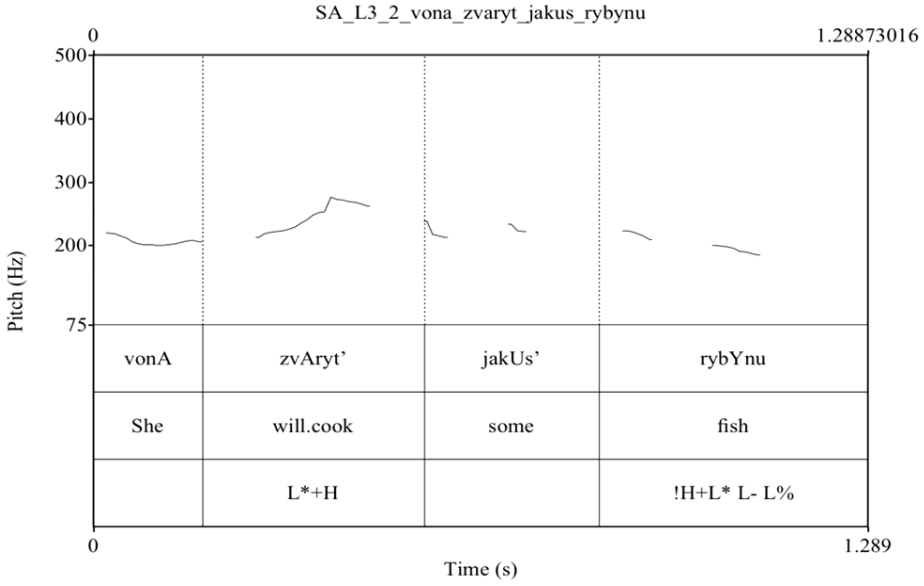


Figure 12. Indefinite object & SVO.

As shown in Figure 12 above, the verb *zvaryt'* 'will cook' is realized with a rising pitch accent (L*+H), while the post-verbal indefinite object *jakus' rybynu* 'some fish' is realized with the falling nuclear pitch accent (H+L*), which is a default prosody for Ukrainian declarative sentences (see 4.1. 2. above).

[53] Examples that follow are produced by different speakers and chosen randomly for illustration only. It would be useful to present averaged pitch contours, but this was not feasible in this study due to various technical limitations.

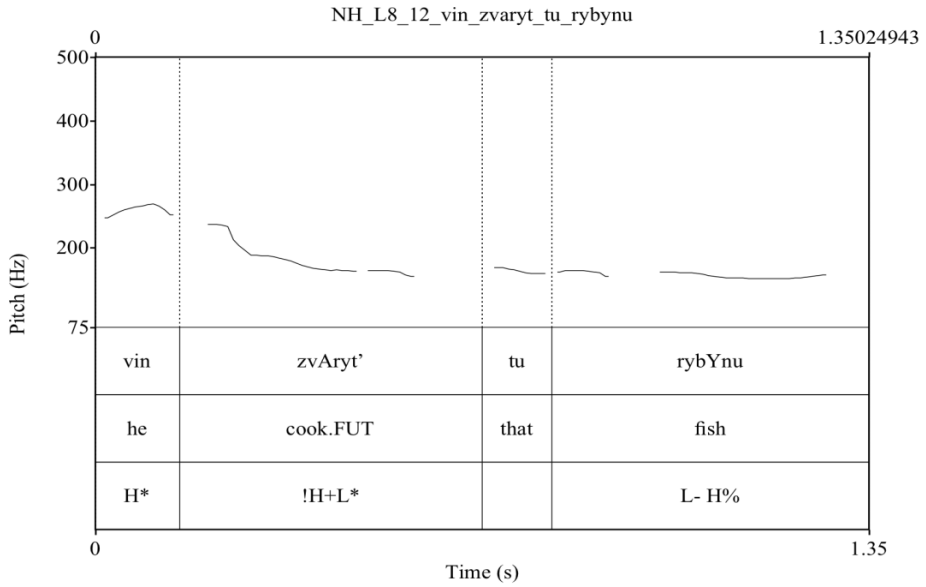


Figure 13. Definite object & SVO.

In Figure 13, on the other hand, the verb receives a falling pitch accent (!H+L*), while the post-verbal definite object is not defined in terms of the pitch type because it is prosodically destressed.[54]

Crucially, the definite object was produced with different prosody when it occurred in a scrambled position. As shown in Figure 14 (cf. Figure 13), such a definite object is realized with a rising pitch accent, while the sentence-final verb received the falling pitch accent.

[54] In fact, the falling pitch accent on the verb is downstepped and thus marked with the symbol !, but this characteristic is not discussed here.

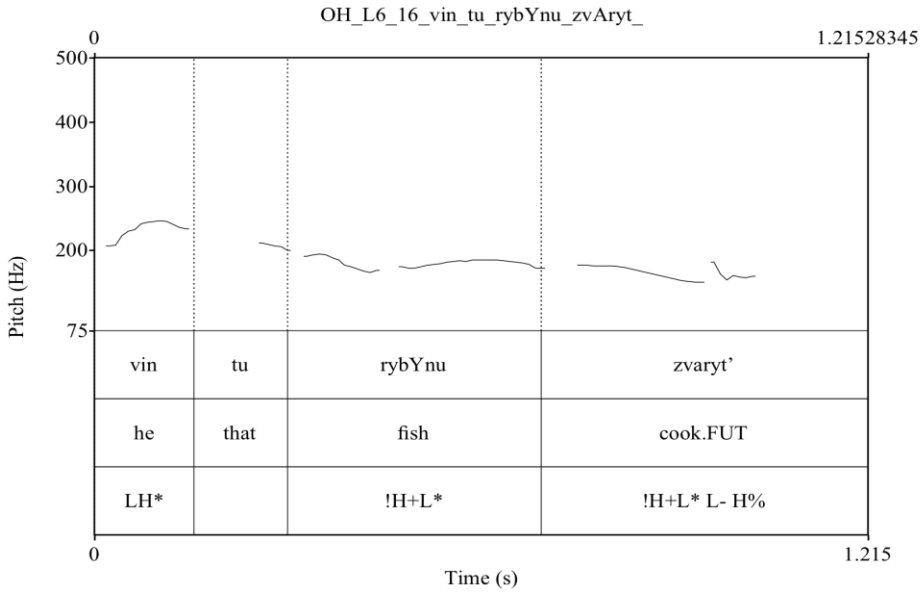


Figure 14. Definite object & SOV

Two pitch contours in the Pronominal Conditions are shown below in Figure 15 & 16. As was mentioned before, the pronouns are usually placed before the verb in Ukrainian, but when they are left *in situ*, prosodic recontouring occurs. This is what is shown in Figure 15: the verb bears the falling pitch accent, while the final pronoun is destressed.

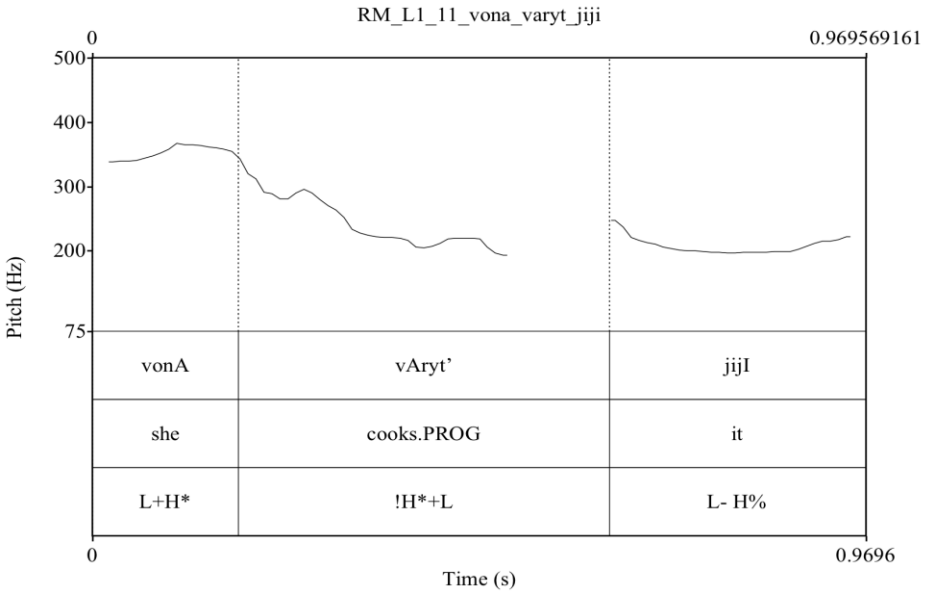


Figure 15. Pronoun and SVO.

The prosodic contour of the sentence in Figure 16 also has a destressed object, and the main stress falls on the final element, which is a verb. Thus, the verb is pronounced with the falling pitch accent.

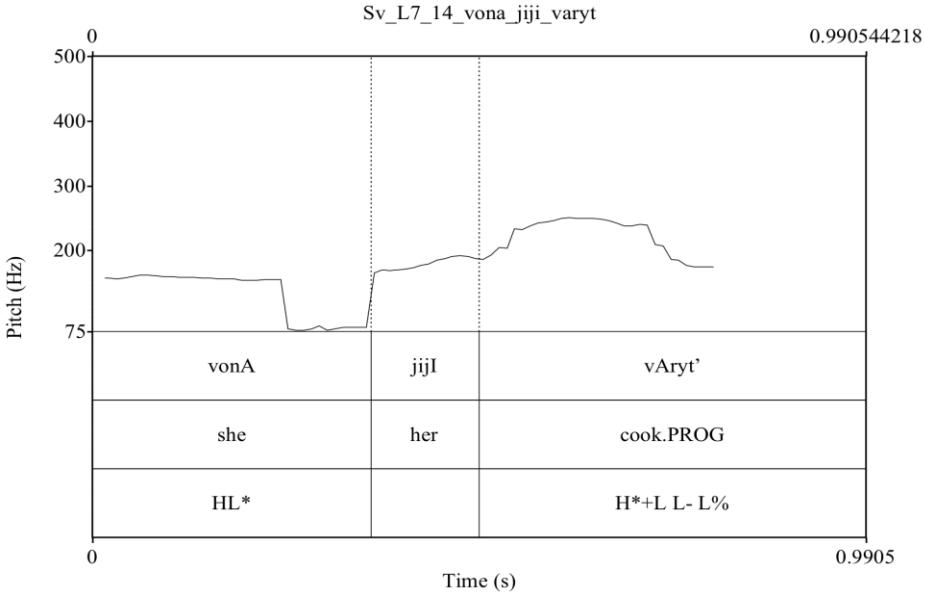


Figure 16. Pronoun and SOV

Interestingly, Figure 13 and Figure 15 have important similarities in the prosodic realization of the direct object, even though in Figure 13 it is a full 3-syllable noun and in Figure 15, it is a phonologically reduced pronoun. In both cases, the sentence-final direct object is destressed. However, the sentence-final position is not the main factor in the stress assignment because the same noun in the same position in Figure 11 is stressed and receives a falling pitch accent. This suggests that the object semantics defined by the previous context influences the choice of prosody.

4.2.2.2. Group results

The contour types described above have been identified for all speech samples, and then analyzed statistically for the group of 8 participants. The group data were examined with regard to the object and verb prosody.

In the object prosody the stress assignment is the key property, as it was predicted that in the sentence-final position, some objects might not be accented at all. The graph in Figure 17 shows group results for all 8 conditions (64 items in total), but special attention in the following result presentation will be paid only to the first four conditions (C1-C4).

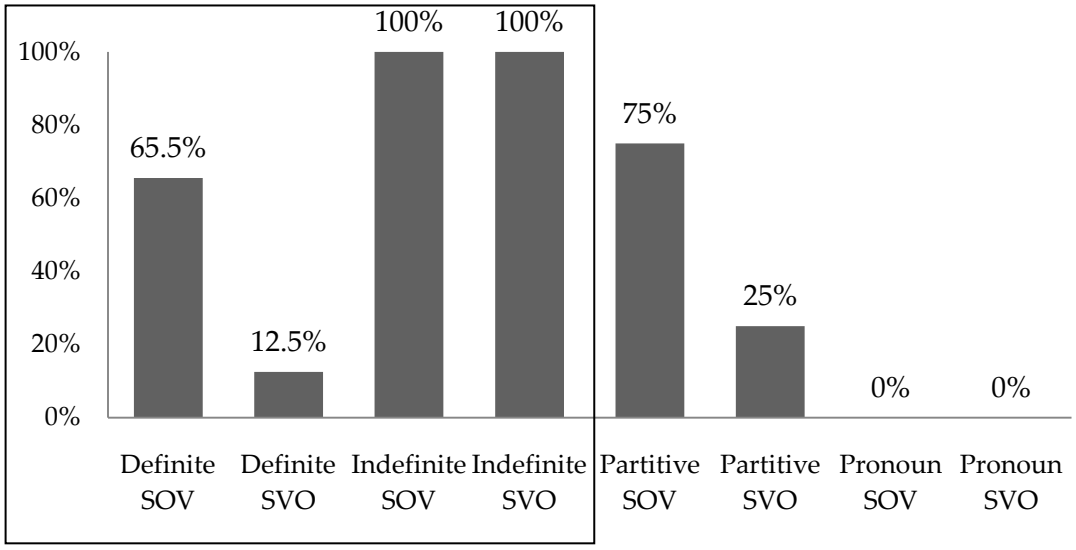


Figure 17. Group results: Stressed object per condition

Figure 17 demonstrates that the participants always stressed indefinite (new) direct objects regardless of their position in the sentence (100%). However, they rarely stressed definite objects in the basic SVO structure (12.5%); thus, there is a clear contrast between the Definite SVO Condition (C2) and Indefinite SVO Condition (C4). This contrast is confirmed by two-way ANOVA conducted for C1-C4 with two independent factors (Context: Definite & Indefinite and Word Order: scrambled SOV & nonscrambled SVO) and the percentage of sentences with accented objects as a dependent variable. There is a significant main effect of Word Order ($F(1;31)=5.09$; $p=0.032$), highly significant effect of Context ($F(1;31)=31.82$; $p<0.0001$), and interaction of Word Order and Context ($F(1;31)=5.09$; $p=0.032$). These results suggest that the stress assignment on the object depends both on the context defining semantics of the object (i.e., definiteness) and word order (i.e., scrambling).

The stress realization on the verb appears to be more consistent than the stress on the object.[55] As shown in Figure 18, the general picture looks quite striking: the verb was invariantly stressed at 100% across all the conditions, except the Indefinite SOV Condition (25%). This is exactly as predicted: the indefinite object should not be scrambled, but if it is, such a sentence should clearly stand out with regard to its prosody.

[55] Note, however, that for this study, the type of pitch accent on the verb, i.e., fall vs. rise, is of greater interest than its destressed status, and thus the following discussion will concentrate on the lack of the [prosodic] stress on the object and the falling pitch accent on the verb.

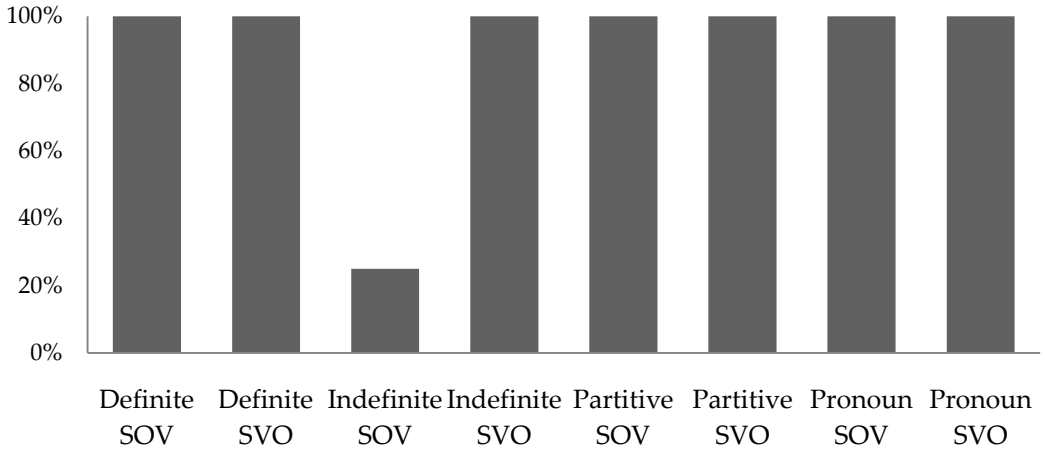
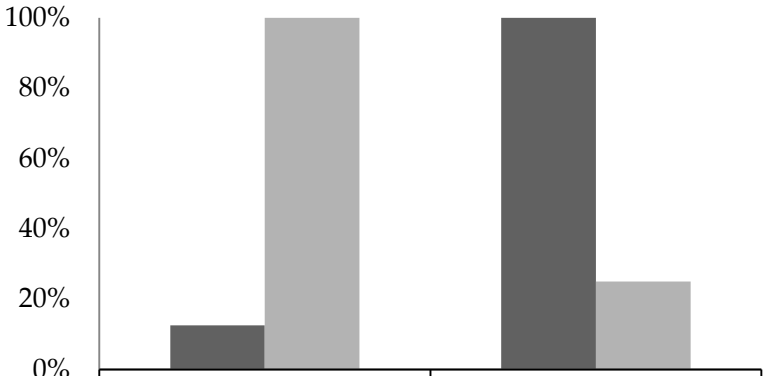


Figure 18. Group Results: Stressed verb per condition.

Next, I turn to the group results in the most contrastive conditions in terms of their prosodic realization. A clear contrast between the Definite SVO and Indefinite SVO Conditions is detected both for the object stress and the pitch accent realization on the verb. Their prosodic contours appear to be mirror images of each other. As shown in Figure 8, the verb always received a falling pitch accent in the Definite Context, but not in the Indefinite Context (100% vs. 25%, respectively), as was predicted.

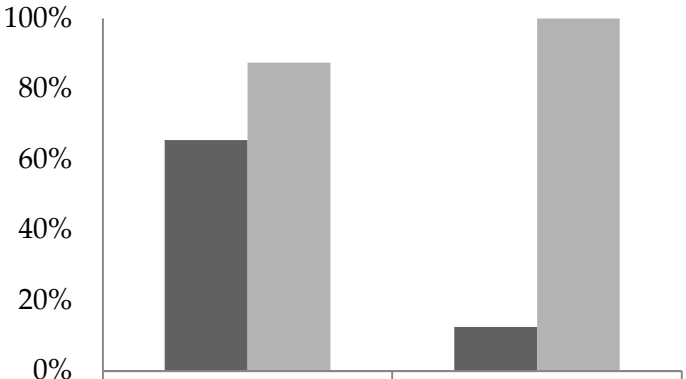


	Stressed Object	Falling Pitch on Verb
Definite SVO	12.5%	100%
Indefinite SVO	100%	25%

Figure 19. Group results: Definite SVO and Indefinite SVO Conditions.

Although the results indicate noticeable differences between the two types of the basic SVO structures, it is important to verify whether the same contrast

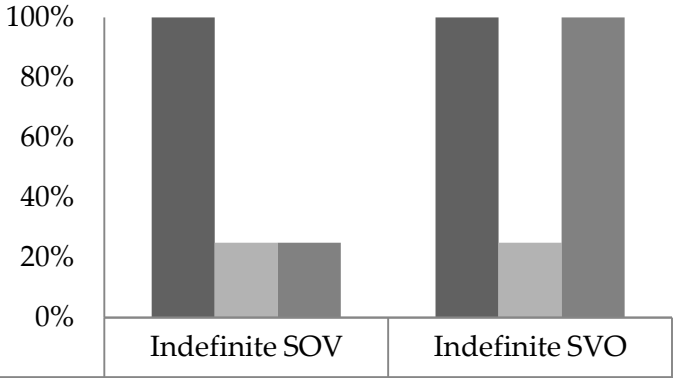
holds for other conditions. As shown in Figure 20 below, the definite object also received a different realization depending on its position in the sentence: after the verb it was usually destressed (12.5%), while in a scrambled position before the verb it was mostly stressed (65.5%).



	Definite SOV	Definite SVO
Stressed Object	65.5%	12.5%
Falling Pitch on Verb	87.5%	100%

Figure 20. Group results: Two Definite Conditions.

The group results for the two Indefinite Conditions are of particular interest. As was mentioned earlier, indefinite direct objects usually appear in the basic SVO structure, and the scrambled SOV structure is not normally associated with an indefinite interpretation of the object. Thus, in naturally occurring speech, sentences from the Indefinite SOV Condition should be avoided. However, if they are used, their prosody should be highly marked.

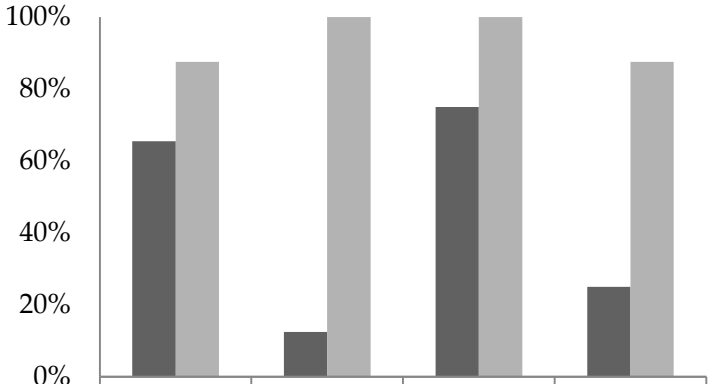


	Indefinite SOV	Indefinite SVO
Stressed Object	100%	100%
Falling Pitch on Verb	25%	25%
Stressed Verb	25%	100%

Figure 21. Group results: Two Indefinite Conditions.

Figure 21 shows that while indefinite objects were always destressed regardless of their position in the sentence, the verb prosody in two conditions was different: the 'infelicitous' SOV structure rarely had a stressed verb (25%), and when the verb was stressed, it always received a falling pitch accent.

Finally, analysis of the group results for other conditions is also revealing, as it extends investigation of prosody-scrambling correlation to partitive contexts. It occurs that predictably the partitive objects behaved similarly to the definite objects.



	Definite SOV	Definite SVO	Partitive SOV	Partitive SVO
Stressed Object	65.5%	12.5%	75%	25%
Falling Pitch on Verb	87.5%	100%	100%	87.5%

Figure 22. Group results: Definite and Partitive Conditions.

Figure 22 demonstrates that partitive objects were mostly stressed in scrambled position (75%), but mostly destressed in the base position (25%). Furthermore, paired *t*-test confirms that there is no statistically significant difference between the Definite and Partitive contexts for the object prosody ($t(62)=-0.7$, $p=0.49$). These findings suggest important similarities between prosodic and syntactic properties of definite and partitive objects in Ukrainian.

The summary of the group results is presented in Table 26, which shows that all predictions were confirmed. Furthermore, all empty cells in Table 23 were filled out with the prevailing result for the tested group of participants (see words in uppercase).

Table 26. *Summary of prosodic realizations of objects and verbs.*

	Object & Syntactic Structure	Verb Prosody	Object Prosody
C1	Definite NP & SOV	Falling pitch	STRESSED
C2	Definite NP & SVO	Falling pitch	Destressed
C3	Indefinite NP & SOV	Destressed	STRESSED
C4	Indefinite NP & SVO	Rising pitch	Falling pitch
C5	Partitive NP & SOV	Falling pitch	STRESSED
C6	Partitive NP & SVO	Falling pitch	Destressed
C7	Pronoun & SOV	Falling pitch	DESTRESSED
C8	Pronoun & SVO	Falling pitch	Destressed

4.2.3. Discussion

The results show clear contrasts between different types of structures: 1) indefinite/nonpartitive objects in an SVO structure vs. definite & partitive objects in an SVO structure; and 2) indefinite object in an SOV structure vs. indefinite object in an SVO structure. Specifically, target SVO sentences with indefinite object NPs are produced with unmarked prosody on which the verb is realized with a rising pitch accent (e.g., L*+H), and the strongest falling pitch accent (e.g., H+L*) is realized on the object (consistent with the Nuclear Stress Rule (Cinque, 1993)). In contrast, the same SVO structures with definite or partitive object NPs have the strongest falling pitch accent realized on the verb (H+L*), while the object is prosodically destressed.

Based on these findings and the theoretical proposal regarding optional scrambling (spelled out in Chapter 2), it can be suggested that when all preconditions for syntactic movement are met, the outcome can be either a scrambled structure or a prosodically recontoured structure. The Scrambling Rule (*syntactic movement occurs when INT feature is valued as definite/partitive*) can then be complemented by the following Recontouring Rule:

(15) If the INT feature has been valued as definite/partitive, but movement did not occur, *don't stress the object and apply a falling pitch accent to the verb.*

The data also confirm that in the grammar of native Ukrainian speakers, the scrambled structure is normally associated with definiteness, and indefinite direct objects do not usually scramble. Therefore, when the participants of the experiment encountered scrambled structures in the indefinite contexts, they were forced to "repair" them by means of prosody. As a result, sentences in the Indefinite Scrambled Condition were realized with the most marked prosody: with a weakly pronounced verb, which was mostly destressed or had a falling pitch accent.

Importantly, the findings concerning partitive objects complement previous research on semantic/pragmatic effects of word order (see Chapter 2) and on the prosodic effects associated with givenness (see Schwarzchild (1999) and others). In this experiment, definite objects were also given, known, or old (depending on the assumed theoretic approach) in that they were introduced in the discourse and then repeated in a target sentence or replaced by a personal pronoun. In this regard, their prosodic properties can be perceived as evidence for the giveness effects in scrambling and for the object destressing associated with them. This seems to be correct, since the definition of givenness corresponds to definiteness by previous mentioning, i.e., for an element to be given, it must be entailed by previous discourse and must have a salient antecedent (based on Schwarzschild (1999)).

There are, however, some limitations to this theory. First, it predicts that any given object should be destressed (presumably in any position in the sentence if free-word order languages are considered), but this prediction could not be confirmed by the data presented above: definite-given objects were destressed in their base position, but mostly *stressed* in the scrambled position. Second, the definition of givenness provided above does not specify what 'a salient antecedent' of a given element is. Is it 'one and only one' or unique antecedent, as we have in the case of personal pronouns or definite NPs? Is it salient to the speaker only or both to the speaker and to the hearer? As the results of the experiment show, not only definite objects, but also partitive objects were destressed in the post-verbal position. Can we consider a partitive object to be an element with a 'salient' antecedent in previous discourse? Even if it is so, it is salient to the speaker only, as the hearer might not know which one of the several objects the speaker refers to. Since I am not in a position to provide answers to the questions related to the alternative theories, I adapt the chosen terminology as adequate to provide an analysis of the phenomena: both definite and partitive objects exhibit similar prosodic properties. I remain open to further discussion on this matter.

4.3. Experiment 3: Child Prosody[56]

Another issue to clarify concerns the role of prosody in child 'nonscrambling'. The goal of Experiment 3 was to collect and analyze prosodic structures used by children. The reasoning behind this experiment is grounded in the previous findings (see Chapter 3). Children in Experiment 1 exhibited greater optionality of some types of scrambling (i.e., pronominal) than adults. As demonstrated earlier, in Ukrainian, pronouns *in situ* are usually associated with particular sentence prosody. It is also assumed, that children in general are very susceptible to prosodic variations (see Hirsch-Pasek et al., 1987; Loeb & Allen, 1993; Nederstigt, 2001; Snow & Balog, 2002, *i. a.*), so it is likely that they might prefer a change in prosody over syntactic movement. Experiment 3 will allow us to analyze child production with regard to the intonation preferred for various structures and contexts, with a special emphasis on definite/partitive/pronominal and indefinite/nonpartitive objects in SVO structures.

4.3.1. Acquisition of prosody

A review of available literature shows that there is a puzzling asymmetry in acquisition of certain prosodic properties. First, even though children in general learn patterned prosodic variations easily, their language skills in production and comprehension of particular prosodic features often differ.

It has been shown that young children acquiring Germanic and Romance languages exhibit great variability in types of pitch contours used at the babbling stage and are mostly adult-like at the late two-word stage (Balog & Snow, 2007; Flax, Lahey, Harris, & Boothroyd, 1991; Marcos, 1987; Prieto & Vanrell, 2007). However, the variation in the prosodic contours is often due to different emotional and interactional contexts, and not to the semantic properties of the words. Some recent studies investigated intonation of two-word utterances pronounced by children acquiring Dutch. They found that children frequently accent both words in cases where adults would deaccent those representing old/known information (Behrens and Gut, 2005; Chen and Fikkert, 2007). It can be concluded then that intonation of young children at a two-word production stage does not represent semantics or information status of the sentence

[56] The title "Experiment 3" is used for convenience only, but, in fact, this is a prosodic analysis of the data received in Experiment 1. Thus, the study presented in 4.3 could also be defined as a "Corpus study".

constituents. On the other hand, some earlier studies suggest that children have knowledge of the pragmatic properties of topic and focus around the age of three (Bates & MacWhinney, 1979).

Research that investigates child intonation with regard to both semantic contexts and word order is still scarce. It has been suggested, though, that children have more difficulties with prosodic marking than with syntactic marking. According to this hypothesis, syntactic movement is not costly, and prosodic marking is. This proposal is supported by the data from Portuguese children who interpreted syntactic movement correctly, but failed to relate prosodic and semantic properties of an object (Costa & Szendröi, 2006). It was argued that since the moved element escapes from the position that receives stress, the syntactic operation itself comes free of charge (see also Neeleman & Reinhart (1998)). This line of argumentation, however, explains difficulties in processing, and not in production. Given that previous studies do not provide consistent account for the word order–prosody correlation in child production, investigation of Ukrainian data in this regard is very timely.

4.3.2. Method

4.3.2.1 Participants

Participants of Experiment 3 were the same as in Experiment 1: monolingual Ukrainian children (see more in Chapter 3). However, not all of them were included in the data analysis. Only the data from 3-4-year-olds (*M*=4;2) were examined, and only the children who produced clearly pronounced utterances could be considered as participants in this experiment. There were 12 such children, 5 boys and 7 girls.

4.3.2.2 Design and Predictions

The data used in this study were collected in elicited production Experiment 1, and thus the stimuli are the same as in Experiment 1 (see Chapter 3 for detail). Recall that the results of the production experiment confirmed the prediction that children know constraints on scrambling, but apply syntactic movement optionally and with a higher range of variability than adults. The exact nature of this optionality and variability in object movement deserves further research. Specifically, it is necessary to clarify how prosody influences word order choice and sentence interpretation. To this end, sound files with the children's responses to the stimuli in Experiment 1 were submitted to further analysis. The

goal of this analysis was to identify prosodic contours associated with certain types of context and word order. To match the adult data from Experiment 2, only the same types of utterances in eight conditions (C1-C8) were considered: C1 - Definite object in SOV structure; C2 - Definite object in SVO structure; C3 - Indefinite object in SOV structure; C4 - Indefinite object in SVO structure; C5 - Partitive object in SOV structure; C6 - Partitive object in SVO structure; C7 - Pronoun in SOV structure; C8 – Pronoun in SVO structure. They are summarized in Table 27.

Table 27. *Design used in the study (4 x 2).*

	Scrambled SOV	**Nonscrambled SVO**
Definite	C1	C2
Indefinite	C3	C4
Partitive	C5	C6
Pronoun	C7	C8

The utterances representing these conditions were excised from the long sound files if they matched two conditions: 1) the sentence consisted of 3 elements (subject, verb and object) or in some cases of 2 elements (verb and object); and 2) the recording was of sufficient quality with regard to the voice volume and background noise. In addition, the age range of participants was reduced compared to the age range of participants in Experiment 1. Since 5-year-olds were adult-like in their use of scrambling and 2-year-olds supplied a very limited set of data, their data were not included in this study. This way only a relatively consistent group of 3-4-year-old children was considered. Their data were classified in such a way that seven conditions (C1 and C3-8) had 4 items each and C2 had 16 items (representing the most numerous basic structure), which amounts to 44 items in total.

The key principles of the child data analysis were identical to the analysis of adult results (see 4.2): first, the common types of prosodic contours were identified, and then the group results for the object stress and the verb pitch type were analyzed. The factorial statistical analysis, however, was not conducted because of the small number of items per condition and because the experimental design was not specific to the prosodic study and thus - unbalanced.

The general prediction was that if children are able to establish a scrambling-context correlation, they would be largely adult-like in the relevant prosodic properties (see Table 23 above). Specifically, they would apply a distinct prosodic contour to the sentences with the definite/partitive/pronominal objects *in situ* as

compared to the neutral contour associated with the indefinite object *in situ*. In addition, an infelicitous structure with the indefinite object in a scrambled position should receive a highly marked prosodic realization.

4.3.3 Results

4.3.3.1. Types of pitch contours

The overall results show that the children distinguished several types of prosodic contours and used them in appropriate contexts. These types are described below.

The Pronominal Conditions C7 & C8 had a clearly distinct prosody, particularly, when a pronoun was not moved in a pre-verbal position, it was destressed, as shown in Figure 23. The verb in this structure received a falling pitch accent, exactly as in the adult results (see Figure 15).

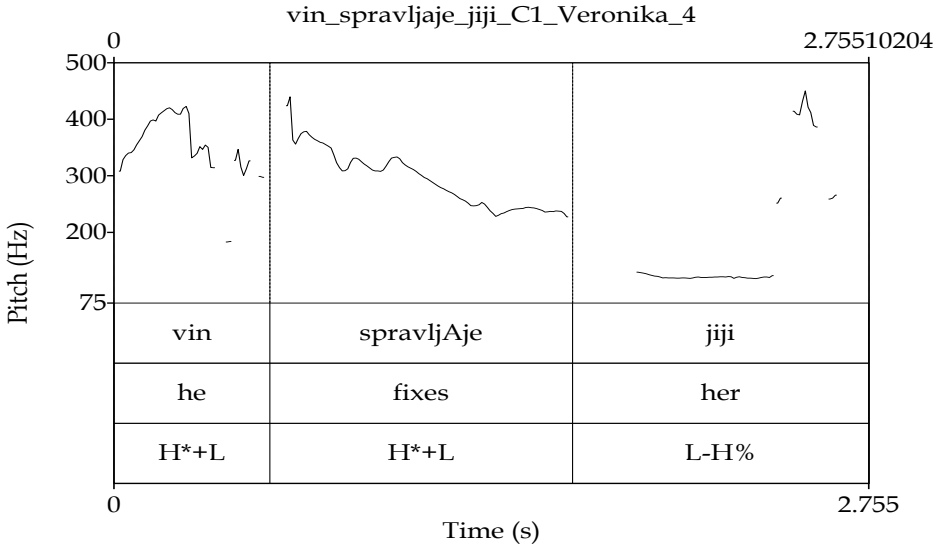


Figure 23. Pronoun and SVO.

On the other hand, when the pronoun was scrambled (which is the most typical structure in adult Ukrainian), the prosodic contour was different, as shown in Figure 24. In this condition, the pronoun is not totally destressed and receives a rising accent, while the verb is realized with a falling accent (see also Figure 16).

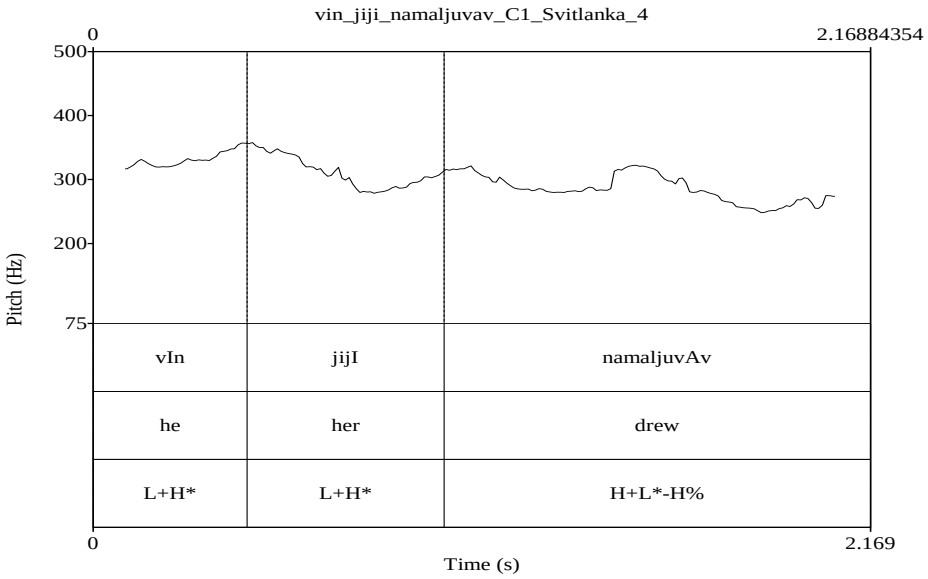


Figure 24. Pronoun and SOV.

A similar contrast can be found for C1 and C2 conditions, where the full NP direct object is defined by the previous context and hence is definite. For instance, as shown in Figure 25, the direct object could be destressed in the post-verbal position.

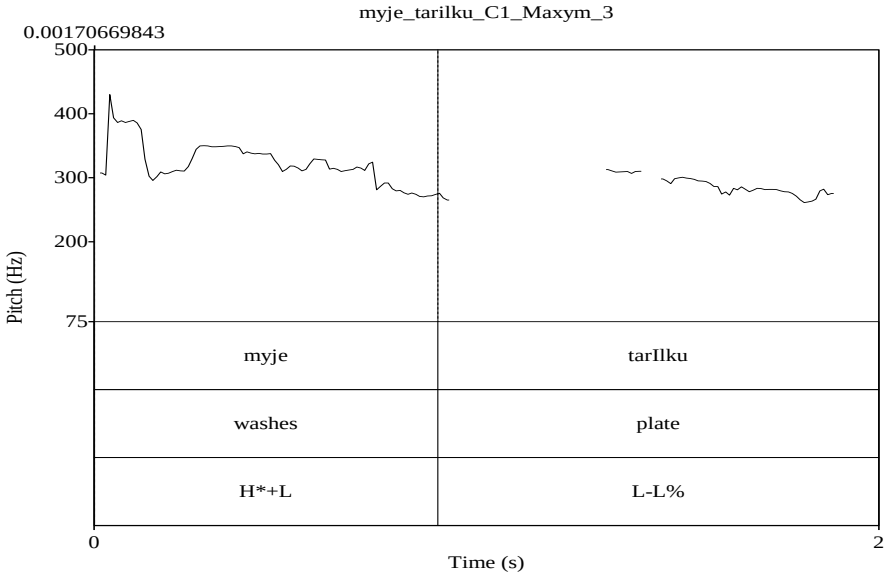


Figure 25. Definite object & SVO: Type 1.

The prosodic contour in Figure 25 was typical for the condition C2 (see adult results in Figure 13), but note that it consists only of two words: the verb and the object, while the subject was dropped. Full sentences, on the other hand, were

often pronounced with a different prosody, exemplified in Figure 26: the object was stressed and received a falling pitch accent.

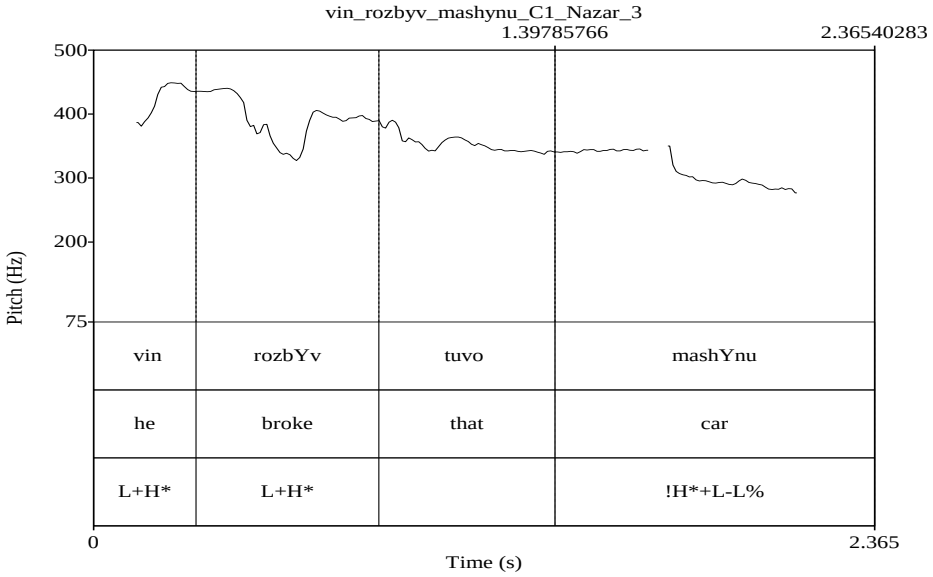


Figure 26. Definite object & SVO: Type 2.

The type of prosodic structure presented in Figure 26 was more similar to the default prosody: rising pitch on the verb and falling pitch on the sentence-final object (see adult prosody in Figure 12). However, it is evident that the interpretation of the sentence in Figure 26 corresponds to the context: pronoun 'that' indicates that the direct object is definite. Moreover, the pitch on the object is a downstepped fall (!H*L), which has also been identified as a 'topic-marking' accent (see review of Chen (2010) in 4.3.4.1).[57]

It is possible, then, that children have a wider repertoire of prosodic means than adults. For instance, children can mark different interpretations not only with the pitch type, but also with gradient phonetic parameters, such as word duration or pitch range. Particularly, one of the participants constantly 'stretched-out' words in a non-adult manner. It is likely that some children understood their task as describing the pictures, and thus, they produced descriptive declarative sentences with unnatural prosody. Such sentences (N=4) were excluded from the analysis of the group results, but they are worth mentioning as one of the prosodic structures used by children.

[57] As was noted by Chen, transcribing child data is not an easy task, and frequently, transcribers have difficulty in separating 'H*L' from '!H*L' and 'no accent' in the production of some children.

Prosodic realizations of sentences in other conditions were highly variable, but the most neutral contour was detected for the indefinite object in SVO structure (C4), shown in Figure 27 (which resembles the adult data in Figure 12).

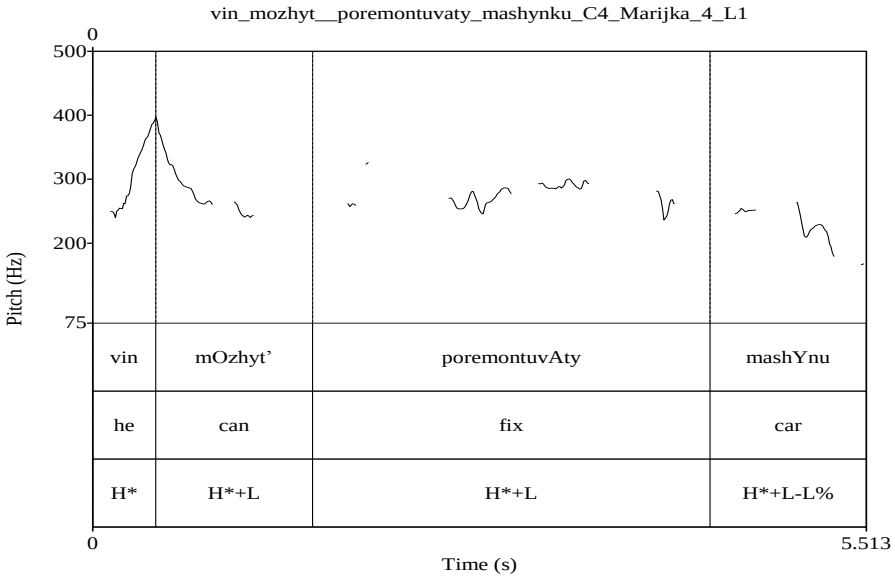


Figure 27. Indefinite object & SVO.

On the other hand, sentences in C3 (Indefinite object in SOV structure) received the most marked prosody: stressed object (with rising or falling pitch accent) and a destressed verb (Figure 28).

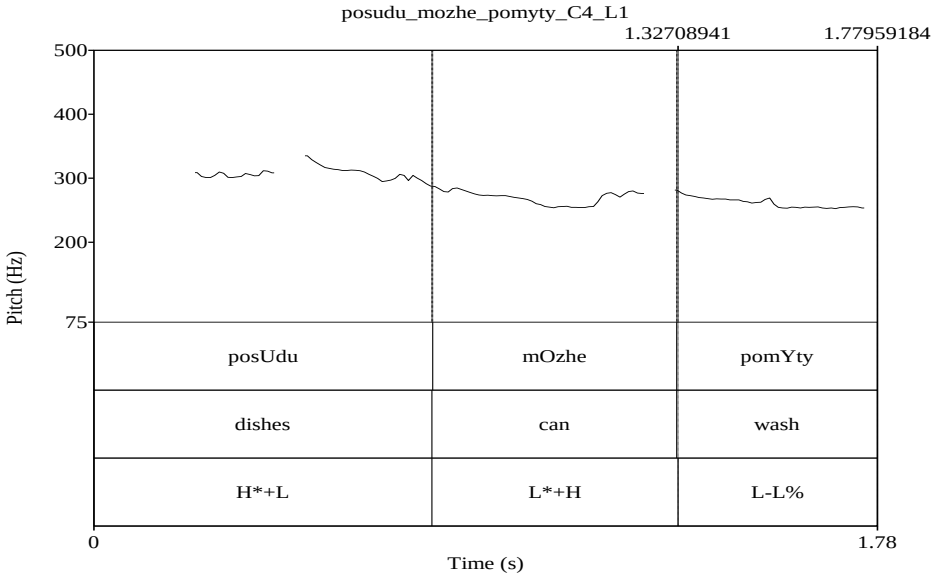


Figure 28. Indefinite object & SOV.

Sentences with partitive objects in C5 and C6 conditions were also produced with varying prosody. In some cases, this prosody resembled the types detected for definite objects in C1 and C2, while in others the scrambled partitive object would receive a distinct pitch accent. Particularly, scrambled objects marked with words 'one' or 'only one' were pronounced with the falling pitch accent, which added a special emphasis to the object.

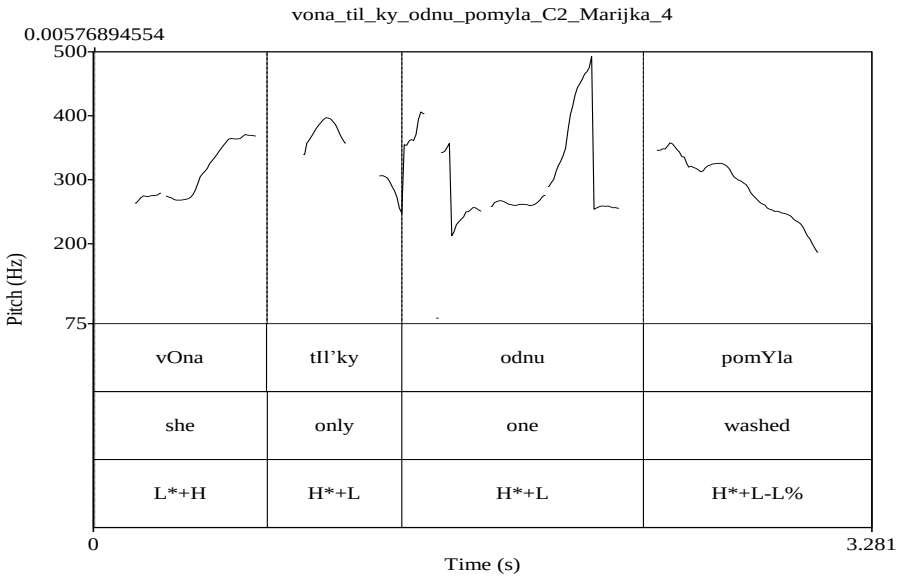


Figure 29. Partitive object in SOV structure.

To summarize, the types of prosodic contours used by the children are similar to those used by the adults, particularly in the sentences with pronouns and indefinite objects. It seems that the most prominent difference between child and adult prosody concerns the range of possible contours: on one hand, children are biased to the default prosody in SVO structures, and on the other hand, their contours are more variable and "bouncy", especially in partitive contexts.

4.3.3.2. Group results

The group results are presented in terms of realization of the main relevant properties: stress assignment and the type of pitch accent. It should be mentioned, however, that only descriptive statistics could be performed with the available limited set of 44 utterances: 16 sentences in C2 and 4 sentences in each of the other seven conditions. Therefore, only mean percentages are presented below.

First, the stress on the object is described for all participants. Definite objects (C2) and partitive objects (C6) were more likely to be destressed than indefinite/nonpartitive objects (C4) in the same base position (50%, 25% and 100%, respectively). The contrast between C1 and C2, however, seems to be less strong in the child data (100% and 50% in Figure 30) than in the adult data (65.5% and 12.5% in Figure 17).

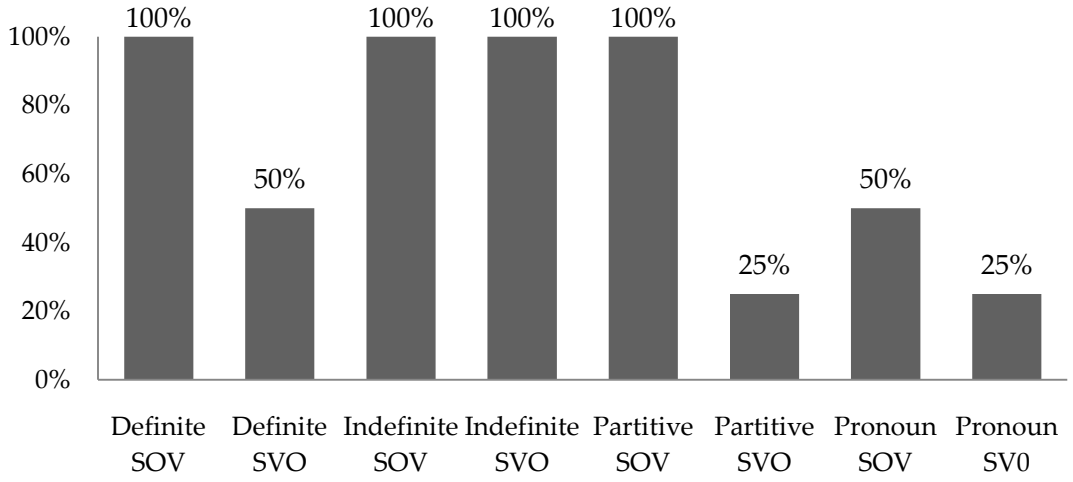


Figure 30. Stressed object per condition, children.

Second, the verb prosody is presented with regard to the general stress assignment (Figure 31). Notably, similarly to adults, children produced 'erroneous' structures in C3 with a distinct prosodic contour. When they scrambled an indefinite object, they stressed the verb only at 25%, while in other SOV structures (with definite (C1), partitive (C5) or pronominal (C7) objects) the verb was stressed more often.

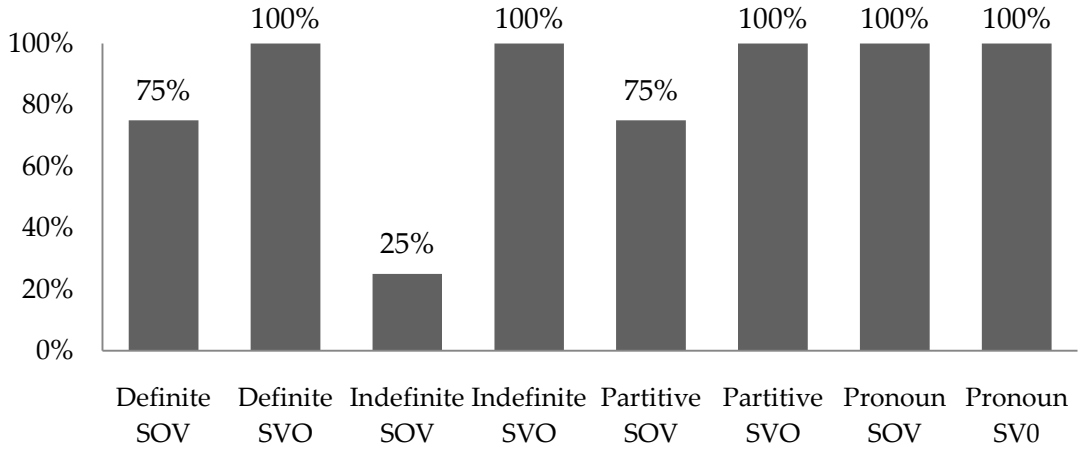
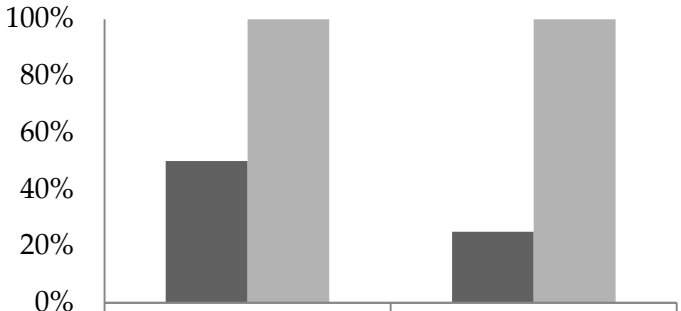


Figure 31. Stressed verb per condition, children.

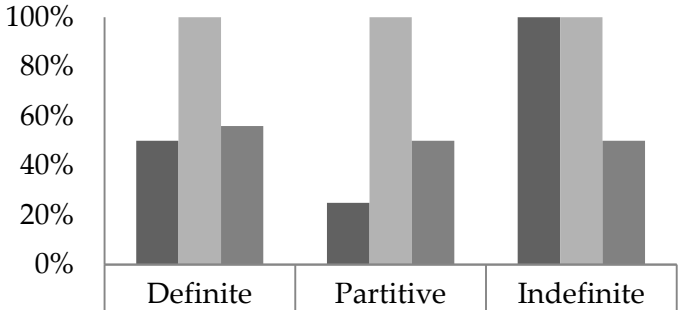
Next, object prosody (i.e., lack of stress) and verb prosody (i.e., falling pitch accent) are presented in combination in the Conditions relevant to the current study. The Pronominal Conditions C7 & C8 exhibited the most consistent behavior: if pronouns appeared in the base position, they were rarely stressed (only at 25%), as predicted.



	Pronoun SOV	Pronoun SVO
Stressed object	50%	25%
Falling pitch on verb	100%	100%

Figure 32. Prosody in Pronominal Conditions C7 and C8.

However, unlike in the adult data, in the child group results, the verb received the falling pitch accent at about the same rate in all of the SVO structures. As shown in Figure 33, definite and partitive contexts do not trigger use of the falling pitch on the verb more often than indefinite contexts (56%, 50% and 50%, respectively). It seems that in child prosody only object realization is influenced by the context-relatedness: both definite and partivive objects are stressed less often than indefinite objects in the same sentence-final position.



	Definite SVO	Partitive SVO	Indefinite SVO
Stressed object	50%	25%	100%
Stressed verb	100%	100%	100%
Falling pitch on verb	56%	50%	50%

Figure 33. Prosody in three types of SVO structures: C2, C4 and C6.

The bottom line is: the children's prosody was as variable as their syntax. The results presented above just touch the surface of the issue of the prosody - scrambling correlation in child speech. It appeared, though, that children follow predicted prosodic patterns for pronouns, but they are less adult-like in the prosodic realization of structures in other contexts.

4.3.4. Discussion of child data

Prosodic analysis of the child data from the elicited production experiment allows us to examine a complex language phenomenon from different perspectives, and constitutes a piece of evidence of child grammar knowledge.

The main idea behind this research is that there is an interaction between two processes: syntactic movement and prosodic (re)contouring. Since both of these processes are related to contextually-defined properties of the direct object, it was predicted that different types of contexts would trigger different types of syntactic structures or prosodic realizations. The most evident contrast was detected for the structures with pronouns: recall that in Experiment 1, children often failed to scramble pronouns, but it appeared from Experiment 3 that in those cases they still mark them prosodically by destressing. Thus, 3-4-year-old children are able to establish context relatedness for pronouns, and in order to mark their special status they can use one of two 'options' available in the grammar: syntactic movement or prosodic shift. In this regard children are very much adult-like. It was also predicted that a similar pattern should be found for other contextually-defined elements – full NP direct object with definite or partitive semantics appearing in an SVO structure. Apparently, children had some difficulty with these elements or with the experimental task itself. Definite objects were destressed only about half of the time in the available data, while in other cases they received a falling pitch accent similarly to the indefinite direct objects in the same syntactic position. This might suggest that children do not relate context with the word order or prosody, but it is also possible that they interpreted the experimental task directly as a picture description while the goal was to elicit a dialog based on the pictures. Some of the structures had adult-like prosody, while others had a highly marked 'descriptive' prosody more appropriate for a 'teacher-student' conversation (see e.g. Yokoyama (2002) on the marked child prosody in Russian). It is important to mention that none of the analyzed prosodic contours was 'incorrect' or 'infelicitous' in any way, but some of them just differed from those normally used by adults. On the other hand, when children dropped a subject and used a two-word structure with a definite

object in a postverbal position, their prosody was mostly adult-like: with a falling pitch accent on the verb and a destressed object.

Furthermore, the prosodic analysis of 'erroneous' structures produced by children in C7 (indefinite object in a scrambled position) shows that such structures are highly marked. They usually have a rising pitch accent on the object and a destressed verb both in child and adult data.

All these results taken together suggest that children are able to use prosody effectively, and that the child-adult differences might be due to different experimental tasks. Adult prosody was evaluated in a carefully constructed experiment which was controlled for context, object semantics, and phonetic properties. The same experiment was not feasible with children, as they were pre-literate, and could not perform the same reading task. Child prosody was, thus, evaluated with the material collected from the elicited production task which was only partly controlled for the aforementioned factors. In addition, the sound files with child speech were not of sufficient quality with many utterances of different length which made the set of data very limited. Therefore, the results presented in section 4.3.3 are only suggestive and a separate experimental study should be conducted. Possibly such a study could be designed along the lines of Chen (2010), briefly presented below.

4.3.4.1. Child prosody in Dutch (Chen, 2010)

Chen investigated how Dutch-speaking 4-5-year-olds and 7-8-year--olds use intonation to encode topic and focus in different positions in naturally produced declaratives.[58] The author based her investigation on previous findings concerning the realization of focus and topic in adult Dutch. It had been found for adults that the sentence-initial noun (subject) receives a falling pitch accent regardless of whether it is topic or focus, whereas the sentence-final noun (object) could be realized differently depending on its 'context-relatedness". Specifically, the sentence-final topic is usually destressed, but it can be realised with a downstepped fall. The main research question of Chen's study was whether children are adult-like in marking topic and focus in sentence-initial and in sentence-final positions.

[58] In Chen's study, the terms 'topic' and 'focus' were used as context-related notions, and as such they largely coincide with the definitions 'definite' and 'indefinite' used in the current study. The most relevant results concern the realization of the *sentence-final topic* (old, given, definite, partitive) in the speech of 3-4-year-olds, so the following description of the experiment with focus only on this phenomenon, leaving aside discussion of sentence-initial constituents and focus.

The experiment was an elicited production task conducted with 28 children aged between 4;5 and 5;6 and 23 children aged between 7;5 and 8;10. A picture-matching game with a robot was used to elicit naturally produced sentences with topic and focus in different positions. The stimuli consisted of 36 question-answer pairs exemplified below:

(16) Experimenter: Kijk! Een biet. Wie eet de biet?
'Look! A beet. Who eats the beet?'
Participant: [De poetsvrouw]$_{\text{focus}}$ eet [de biet]$_{\text{topic}}$.
'The cleaning-lady eats the beet.'

(17) Experimenter: Kijk! Een poetsvrouw. Wat pakt de poetsvrouw?
'Look! A cleaning-lady. What does the cleaning-lady pick (up)?'
Participant: [De poetsvrouw]$_{\text{topic}}$ pakt [de vaas]$_{\text{focus}}$.
'The cleaning-lady picks (up) the vase.'

First, the participant received an answer from the robot via a headphone set. This answer sentence was generated by splicing words recorded in a wordlist reading. The participant then had to repeat the sentence, but in his/her own intonation. Only the good-quality sound files from 24 children in total were selected for acoustic analysis. The placement of stress and the type of pitch accent on the nouns were analyzed. The intonation of each sentence was transcribed following ToDI.

Results indicated that the children were adult-like in applying a falling pitch accent on the subject and in realising the object prosody differently depending on its context-relatedness. 4-5-year-olds already knew that if the object is a topic, it should not be stressed. Table 28 illustrates the realization of different types of pitch accents in disyllabic words.[59]

Table 28. *Distributions of pitch accents on the object: 4-5-year-olds (N =12).*

	H*L	!H*L	L*H	H*	Other(L*)	no stress
Focus (new)	**18.6%**	**33%**	49%	5%	0	9.3%
Topic (old)	**9.9%**	**28.5%**	31.3%	4.7%	**9.5%**	**36.7%**

If an object was 'focus' (new), it was accented in 90.7% of the cases, most frequently with L*H, followed by !H*L and H*L. On the other hand, when an

[59] Tables 28 and 29 are modified slightly to match previous experiments on Ukrainian.

object was 'topic' (old, known, definite), it was most frequently realised with no accent (36.7%), followed by L*H, !H*L and H*L. These observations suggest that the context is relevant to the choice of prosodic patterns, and that the intonation associated with the sentence-final topic is already mastered at the age of 4-5.

The older children in the experiment followed the same patterns, but showed less variability, i.e., there was no data in the 'OTHER' category and fewer occurrences of the rising pitch (L*H and H*).

Table 29. *Distributions of pitch accent on the object: 7-8-year-olds (N = 12).*

	H*L	!H*L	L*H	H*	OTHER	no stress
Focus (new)	**59.8%**	**15.1%**	14%	4.2%	0	6.9%
Topic (old)	**29.9%**	**22.5 %**	4.2%	3.6%	0	**39.8%**

Therefore, the predicted early mastery of adult-like intonational realisation of topic in sentence-final position was confirmed for Dutch children.

Assuming that the 'sentence-final topic' in Chen's study could be also defined as a direct object in an SVO structure in the Definite/Partitive Context, the results presented above seem to be comparable with the results of Experiment 3. Both studies show that children at the age of 4 are already sensitive to the context-prosody correlation. It would be useful to conduct a more rigorously designed experiment with Ukrainian children. That would become an additional piece of evidence for the use of prosodic means as an available option to mark object semantics in languages exhibiting 'optional' scrambling.

4.4. Summary

This chapter presented results of two experiments which addressed the issue of correlation of prosody-scrambling-semantics in Ukrainian. The integration of prosodic factors in the investigation of optional scrambling allows us to consider an alternative to syntactic movement. In Chapter 2, I argued that scrambling occurs as a combination of two processes: INT-agreement and the movement itself. More specifically, the functional head v, bearing an EPP feature and INT (semantically interpretable feature), probes its c-command domain for its goal (another instance of INT); upon finding one, v agrees with it; and the INT-marked item moves to the vP edge. I further hypothesized that the INT-agreement corresponds to the assignment of values to deictic/contextual parameters within a phase, and to some extent it is an independent and crucial

step in the derivation. INT-agreement might be realized in a scrambled structure at the syntax-semantic interface if the EPP feature responsible for movement is present and scrambling occurs.

If movement does not occur, but INT is valued as [definite/partitive], the structure must undergo some changes at the syntax-phonology Interface. Under this view, prosodic recontouring is seen as an alternative expression of INT-agreement, which marks the whole scope of the agreement domain through prosody:

(18) [$_{vP}$ …v $_{INT}$… V … [$_{DP}$…**INT**]]

To test this theoretical hypothesis, it was imperative to explore what happens at a phonological level when there is no object scrambling in definite/partitive contexts (and as was shown in Experiment 2, there are many such cases both in adult and child Ukrainian). I predicted, then, that in the absence of syntactic movement in such contexts, prosodic means of INT-agreement would be activated. Specifically, nonscrambled sentences with definite/partitive interpretation must have a detectable prosodic contour.

The main findings of the Experiments 2 & 3 not only confirmed this prediction, but also substantiated it by defining several types of prosodic contours used by adults and children. Most important, the structures with the definite/partitive objects *in situ* were shown to be different from the structures with indefinite objects *in situ:* the former had a falling pitch on the verb and a destressed object, while the latter had mostly rising pitch on the verb and a falling pitch on the object. These findings further imply that there is no true optionality in scrambling in the sense that object movement and prosodic recontouring are the two licit ways of expressing definite/partitive object semantics.

CHAPTER 5
CONCLUSIONS

5.1. Theoretical Implications of Experimental Findings

This study investigated the syntactic and semantic properties of scrambling, addressing the issue of its optionality in Ukrainian. Special emphasis was placed on the word order change SVO->SOV, in which the direct object moves from its base position to a pre-verbal position and is usually interpreted as definite/partitive. This movement is not obligatory, as the same interpretation can be obtained *in situ* as well. The issue of optionality of scrambling has been one of the most puzzling in previous literature, and thus this study is only an attempt to identify some of the factors restricting possible choices of structures, leaving others for future research. I will now summarize the main findings concerning the role of context in syntactic derivation, constraints on scrambling, optional and obligatory components of the process, and the role of interfaces in a grammar model.

5.1.1. Proposed Hypothesis

The key proposal of this dissertation, spelled out in Chapter 2, was based on the logic of Phase Theory and the interpretational function of the Edge (Chomsky, 2001). In brief, it was assumed that the syntactic derivation and proposition computation occur by phases, and the phase relevant for the object scrambling coincides with the vP domain. In order to permit proposition

computation, context-related values should be determined by/at the time the phase node vP is reached; that is, all context-sensitive elements, such as pronouns, quantifiers or singleton indefinites, have to be specified or interpreted. Based on Chomsky (2001:35), the vP edge has been assumed to involve a feature INT associated with some aspect of interpretation.

(1) a. v* is assigned an EPP-feature only if that has an effect on outcome.
b. The EPP position of v* is assigned Int.
c. At the phonological border of v*P, XP is assigned Int'.

I extended this assumption further, proposing that the context-sensitive element occurring in the vP-edge must have its INT feature checked, satisfying semantic requirement of the syntactic derivation. In this view, scrambling occurs only if the semantics of the scrambled element involves contextually defined parameters (observationally, if it is partitive/definite/specific). On the other hand, elements that are not contextually-dependent (nonpartitive indefinite nonspecific) do not satisfy a semantic prerequisite of scrambling, and thus remain in their base position.

This reasoning was summarized in the **INT-as-Contextually-Defined-Feature (ICDF) Hypothesis**:

(2) A. INT is a semantically interpretable feature on v, checking of which on a vP phrase corresponds to assignment of values to contextual parameters within that phrase.
B. If INT is available, two main options are possible (see others in 2.5):
Possibility 1: v has established an agreement relation with INT, v's EPP feature has been activated, and scrambling occurred
Possibility 2: v has established a pure agreement relation with INT; no EPP feature has been activated, and a nonscrambled structure proceeded to Spell-Out.

According to this hypothesis, the whole process consists of two sub-processes: agreement and its execution/realization. While agreement is an underlyingly obligatory operation necessary for INT-valuing, on the syntactic level it can be realized as a scrambled or nonscrambled structure. It was further hypothesized, then, that i) scrambling is not fully optional, but constrained; ii) syntactic movement is just one means of INT-expressing (Possibility 1); iii)

prosodic recontouring is another means of achieving the same interpretative effect (Possibility 2). Other Possibilities (3-6) described in 2.5. do not lead to scrambling in Ukrainian.

These arguments were tested with data from Ukrainian, collected in two main experiments: elicited production of scrambled structures and elicited production of prosodic contours. The experiments were conducted with adult native speakers (N=28) and 2-5-year-old children (N=41). The results mostly supported the proposed hypothesis and substantiated the theoretical claims with new empirical findings.

5.1.2. Factors contributing to scrambling

Many studies have investigated variations in the syntactic position of arguments and aimed to identify aspects that contribute to these variations. In Slavic languages, interpretational correlates of scrambling have been traditionally associated with Information Structure: basic word order is SVO, but old/known/given objects may also appear in pre-verbal position, yielding such structures as SOV, OSV, or OVS. New/unknown objects, on the other hand, usually remain in post-verbal position (Firbas, 1964; Sgall et al, 1986; Yokoyama, 1986, see more in Chapter 1). However, scrambling is a very widespread phenomenon cross-linguistically, and in other languages its semantic/pragmatic properties have been defined in other terms. For instance, in the Germanic tradition, direct object scrambling (or shift) is associated with the semantic features of specificity or definiteness or with the loss of nonspecific reading (see e.g. Diesing (1997); Diesing & Jelenek (1993), De Hoop, 1992 & 2003, *inter alia*).

It appears that there are some overlapping syntax-semantic characteristics of a scrambled object cross-linguistically, defined by Thráinsson (2001:193) as follows: a weak/existential reading is incompatible with Object Shift (or scrambling), *but* objects with a strong/quantificational/specific reading do not necessarily have to shift or scramble. With regard to Slavic languages this tendency has also been shown, which suggests that: *i*) there is a correlation between definiteness/specificity and scrambling (Dyakonova, 2004; Brun, 2005; Biskup, 2006); and *ii*) an SOV structure has a special status in Russian as one of the most commonly used (Kallestinova, 2007; Slioussar, 2007; Dyakonova, 2009). Based on these suggestions, in this dissertation, I also focused on the SOV structure and on various aspects of this type of scrambling.

The results of Experiment 1 presented in Chapter 3 revealed several factors contributing to scrambling in Ukrainian: object semantics (defined by context),

object type (pronoun vs. noun), and lexical markers. Participants (adult Ukrainian speakers and monolingual children acquiring Ukrainian) produced various syntactic structures, but the majority of them had an SVO or (S)OV word order. Examination of the word order distribution showed that the direct object was consistently placed in a preverbal position only in some contexts. Both children and adults scrambled more in definite and partitive contexts than in indefinite and specific-referential contexts. This suggests that the context defining object semantics is one of the key factors contributing to scrambling.

Object type is another aspect of scrambled structures revealed in Experiment 1. Pronominal direct objects were scrambled more often than full NPs, especially in definite contexts, where use of pronouns appears to be the most natural. These results also fall under the ICDF hypothesis, as pronouns are contextually-related elements, and their reference must be determined for proposition computation. Thus, pronominal scrambling is mandatory in Ukrainian (while full NP scrambling is optional). However, this conclusion concerns only adult grammar, while in child grammar both types of scrambling are optional. Since children are mostly adult-like in other aspects of scrambling, i.e., they rarely overuse syntactic movement in indefinite/nonpartitive contexts, factors contributing to asymmetry of child-adult speech deserve a separate discussion (see 5.2.).

The use of lexical markers of object semantics also constitutes an additional factor contributing to scrambling. Although Ukrainian does not have articles marking nouns as definite or indefinite, there are many lexical elements that are used as determiners of the NP semantics. It appeared that when speakers complement direct object with a definite pronoun (e.g., *toj* 'that'), they are more likely to scramble such a DP. This is also the case with the word *odyn* 'one', which was often used in partitive contexts with the meaning 'one of them'. Recall that scrambling and prosodic shift are considered to be alternative expressions of INT-agreement. Reflecting on matters further, it could be plausible to think that insertion of special morphological material (lexical items or agreement morphemes) might constitute a third option for expression of INT-agreement. It is widely accepted that the primary semantics of articles involves notions like definiteness, specificity and partitivity. Hence articles could also be integrated in this general picture as the overt lexical expression of INT (see Polinsky (1996) and Mykhaylyk (2009a)) for the overuse of determiners along with the basic word-order structure by English speakers with Slavic heritage). However, since in Experiment 1, both determiners and scrambling were used in the same structure, it seems, that language-internally they are not two options (occurring in complementary distribution), but rather two interacting factors. Since the lexical marker makes semantics more transparent, the choice of a syntactic

structure becomes also more evident. This argument finds evidence in Experiment 2. In order to obtain various prosodic contours, all sentences in the stimuli contained a direct object with a lexical marker ('that', 'some', or 'one'). It seems that this strategy helped adult participants to disambiguate object interpretation and apply appropriate prosodic contours, which resulted in a quite straightforward outcome supporting the main predictions. It would be interesting to explore the role of determiners in other languages exhibiting both scrambling and articles (e.g., Bulgarian).

The findings summarized above support previous conclusions in this domain. Word order permutations have been frequently associated with contextually-dependent features, termed 'givenness' or 'specificity' (see Karimi, 2003; Kučerova, 2007; Von Heusinger & Kaiser, 2003, and others). The role of context or discourse has been investigated as well (see e.g. Yokoyama (1986), Pesetsky (1987) among many others). Recent dissertations on Slavic languages (although mostly on Russian and Czech data) also contributed greatly to the issue of variable word order and attempted to integrate functional approaches to Information Structure with the formal generative insights (Kallestinova, 2007; Slioussar, 2007; Kučerova, 2007; Dyakonova 2009). This research follows the same trend in modern linguistics by integrating different frameworks and supplementing 'gramaticality judgment' methods accepted in theoretical linguistics with experimental methods influenced by psycholinguistics. However, it departed from the above mentioned recent studies in the choice of a research strategy and in focusing investigation on a micro-level. Concentrating on only one type of scrambling - MOS (which is wide-spread both language-internally and cross-linguistically), allows us to describe it more thoroughly and account for it considering syntactic, semantic and phonological properties as a complex phenomenon.

Similarly to the mentioned dissertations, the analysis in this study is based on the logic of Minimalism, i.e., Phase Theory, but it is extended beyond a strict division between components involved in the syntactic derivation. The ICDF Hypothesis has a power to unify semantics, syntax and phonology in a process of proposition computation (which is an ultimate goal of linguistic operations). Use of semantic features (e.g., definite or partitive) instead of notions of Information Structure (e.g., old or known), as well as the INT-as-Contextually-Defined-Feature instead of D(iscourse)-linking, is mostly a personal choice of a clearly defined and universally-acceptable terminological apparatus (see also Zubizarreta (1998:159) on the issue). This choice of terminology also unveils my attempt to further 'minimize Minimalism' by limiting a number of operations, using interfaces of the main grammar components, and avoiding addition of

other levels (i.e., IS) which would make derivations of 'free'-word-order languages more cumbersome than those of 'fixed'-word-order languages.

5.1.3. On optionality, interfaces and a grammar model

Optionality has been a long-standing puzzle in the scrambling literature for many languages (e.g., on Scandinavian Object Shift and scrambling in German and Dutch). Reinhart (2006) suggested two options to account for this puzzle. One option is that optional movements are encoded in the computational system as optional features whose selection is governed by the interface requirement on the numeration, as suggested in Chomsky (1995). Another option is that they may be governed by different context-adjustment strategies that apply at the interface.

The first option was pursued in Mykhaylyk & Ko (2008), who argued that optional movement can be best understood by optional insertion of the EPP feature in the Minimalist Program, and that this also applies to Ukrainian scrambling (see more on the optionality of the feature in Grewendorf & Sabel (1999) and Ko (2005)).

In this dissertation, another option is explored: I implement a kind of context-adjustment as an important part of the derivation and invoke a combination of syntactic and prosodic operations to account for optionality of scrambling. Syntax-prosody interaction has been investigated in many studies, including those dealing with IS (see Chapters 2 and 4), but there has been no consensus on representation of this interaction in the grammar model. Some studies suggest primarily phonological model, while others emphasize syntactic operations.

For instance, Reinhart (2006) and Neeleman & Reinhart (1998) discuss prosodic phenomena of destressing and stress straightening and use it to account for syntactic structures in Dutch (which are all base-generated, according to them). Szendröi (2001) develops this theory further and proposes that the syntactic and prosodic levels are connected by mapping principles. These principles are described in Optimality Theory (OT) framework which is also used in many studies focusing on similar issues (Büring, 2007; Samek-Lodovici, 2005; Truckenbrodt, 1999, inter alia). Studies like Cinque (1993), Zubizarreta (1998) or Wagner (2005) bind prosody and syntax by means of NSR (nuclear stress rule) and/or prosodic features operating in the syntactic derivation.

According to the hypothesis proposed in this study, syntactic movement and prosodic (re)countering are relatively independent operations. They are simply two options exploited cross-linguistically or language-internally. As the

Experiment 2 presented in Chapter 4 shows, prosodic shift (application of a marked prosodic contour) might be considered as an alternative to the syntactic movement in certain (i.e., definite and partitive) contexts. This further suggests that alternative mechanisms for the same obligatory process of context-determination may exist within a single language, giving the appearance of optionality in individual cases. In line with this, the role of interfaces becomes crucial for explaining the syntax-semantic mechanism of scrambling and for tying it up with the prosodic operation. To schematize the process of derivation, I propose the following grammar model:

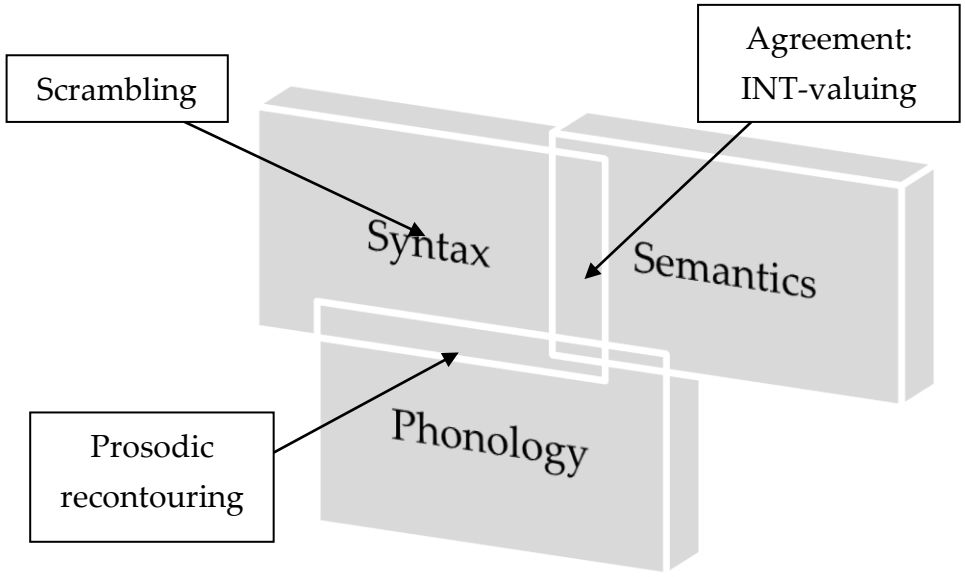


Figure 34. Grammar Model

According to this model, the first step of computation occurs at the Syntax-Semantics Interface where INT is valued as definite/partitive via probe-goal Agreement operation. The next step depends on the chosen option (how exactly does this happen is an open question at the moment, but it seems that an individual speaker's preference could be also considered). If the EPP feature responsible for the movement is present, scrambling occurs, and the structure goes directly to Spell-out. If movement does not occur, but INT is valued as [definite/partitive], the structure must undergo some changes at the Syntax-Phonology Interface; particularly, it will be prosodically recontoured to realize the object semantics. In this view, the role of interfaces becomes more prominent, and addition of other grammar components/levels seems to be unnecessary complication, but the details of this rather sketchy model need to be investigated further.

5.2. Implications for Language Acquisition

Theoretical proposals and empirical findings of this dissertation have important implications for the study of language acquisition. The generative framework, accepted in this research, emphasizes universality of grammar principles and assumes that they are acquired by children despite of 'poverty of the stimulus' (Chomsky, 1986). Since scrambling belongs to the realm of implicit linguistic knowledge and is typically disfavored in the language instruction (at least in Ukrainian education) pre-schoolers' speech might reveal hidden aspects of this phenomenon.[60] This reasoning lies behind the choice of the data for testing ICDF Hypothesis in this study. Particularly, the data represent different levels of grammar development: i.e., developing grammars of 2-, 3-, 4-, 5-year-old children and the end-state grammar of adult native speakers of Ukrainian. Crucially, the results of elicited production experiments with children and adults do not show fundamental differences between child and adult scrambling and prosody. This constitutes strong evidence supporting the proposed hypotheses. The child data imply that the principles involved in the tested processes are mostly straightforward, and that the features contributing to scrambling are known even at the earliest stages of grammar development.

In addition of being a testing ground for theoretical claims about scrambling, child grammar is an interesting subject matter by itself. Experimental findings of this research shed light on such issues as developmental stages in word order acquisition, optionality in child grammar, role of cognitive/pragmatic principles and acquisition of prosody.

5.2.1. Early scrambling: Is syntactic movement difficult for young children?

The acquisition of flexible word order in general and scrambling in particular is a complex process involving interaction of principles of syntax, semantics, and pragmatics. Different studies have presented various findings regarding child knowledge of these principles (see Chapter 1 & 3). For instance, Schaeffer (2000)

[60] To compare Standard Ukrainian and Colloquial Ukrainian, two text samples (from a child-directed textbook and from an informal conversation with adults) have been analyzed. The textbook traditionally used in 1st Grade contained 94 sentences, and only one pronoun among 27 direct objects appeared in a scrambled position (Bukvar "Sxodynky". (1997). Doneck, MP Otjechestvo). On the other hand, an informal interview with 27 adult speakers posted in internet (135 sentences in total) had 21 structures with direct objects and 9 of them were scrambled (Ukrajins'ka Pravda. 15.06.2010 www.pravda.com.ua).

shows that 2-year-old children acquiring Dutch scramble optionally (less often) compared to older children and adults. Avrutin & Brun (2001) present different findings showing that Russian children (age 1;7-2;3) place most arguments in the correct position according to their semantics.

The results of Experiment 1 demonstrate that even the youngest participants (2;7) use various word orders, and that children are able to move a direct object before the verb, suggesting that they have an EPP feature responsible for the movement in their grammar. Furthermore, children in all age groups produce mostly correct syntactic structures when provided with appropriate experimental contexts, i.e., they scramble direct objects which are contextually defined as definite or partitive; while indefinite nonspecific direct objects rarely appear in scrambled position. This signifies that children have knowledge of these semantic features. There were some instances of erroneous scrambling, i.e., 20% for 3-year-olds, but in fact, it represents only a few scrambled structures used by 2 children, and the high percentage is due to a low number of valid items obtained from this group. Therefore, the experimental results from child Ukrainian provide a further argument for the view that children do have knowledge of semantic and syntactic features in their grammar from a very early stage (consistent with Avrutin & Brun (2001), Ilić & Deen (2004), and Mykhaylyk & Ko (2008)).

Now, if we compare the Ukrainian data with the Dutch data presented in Schaeffer (2000), we see that there is variability in the scrambling production by the youngest children. 2-year-old children acquiring Dutch type of scrambling over adverbs or negation have difficulty in scrambling, and they differ considerably from adults and even from 3-year-olds (30% vs. 96% and 72%, respectively). Ukrainian 2-year-olds, on the other hand, do not differ as much from the older children and adults, and in fact, they scramble partitive objects even more often than 3-year-olds and adults (67% vs. 35% and 50%, respectively). Although in general, the findings showing variations with respect to word order in Ukrainian are parallel to Schaeffer's findings (i.e., children scramble optionally), Ukrainian children do not use scrambled structures at similar rates across all of the testing conditions and do not exhibit any strong age effects in scrambling development. Considering that both languages, Ukrainian and Dutch, are constrained by the same rule prohibiting movement of nonspecific objects, we can suggest that other factors should be explored in order to explain difference in children's performance.

On the other hand, the results obtained with Ukrainian participants are more comparable to Avrutin & Brun's (2001) results. The Russian data collected by Avrutin & Brun suggest that in Russian, even the youngest children are able to

move the direct object over the verb and thus to use word orders in a target-like way. Similarly to Russian children, Ukrainian children start using various (appropriate to context) word orders from an early age, showing their knowledge of semantic and syntactic features involved in the process. This seems to be natural given that these two languages are closely related and might have similar syntactic properties with regard to the object scrambling. Recall, that the investigated word order change comes down to the only one type of a syntactic movement, i.e., a relatively 'short' move of the object NP to the vP edge position (VO ->OV), and that no other lexical elements (articles, adverbs or negation) are involved in the process. Apparently, children are able to perform such a movement and to associate it with the right semantic interpretation. It would be important to see whether the same picture can be obtained with children acquiring other Slavic languages.

In summary, the study presented here shows that monolingual Ukrainian children employ direct object scrambling similarly to adults. Furthermore, like adults, children rarely violate an implicit grammar rule prohibiting scrambling of nonspecific-nonpartitive objects, and even the youngest of them seem to follow this constrain on scrambling in most of the cases. This suggests that children acquiring Ukrainian know the semantic and syntactic features underlying object movement, although this suggestion has to be verified with a greater number of subjects and items. Assuming that cross-linguistically the similar type of scrambling is governed by the same universals, the child-adult divergences reported for other languages may be due to other factors (e.g., adverb/negation placement or definite D acquisition).

To conclude, the answer to the question in the title of this section is: syntactic movement is not difficult for young children. Children are adult-like when they scramble direct objects to a pre-verbal position; provided they do so in appropriate contexts, in a scrambling-supportive environment and when their task is "child-like" and age-appropriate.

5.2.2. Pragmatic effects in optionality of scrambling

Most studies focusing on production of scrambling have shown that both children and adults scramble more in some contexts than in others. This ability varies, though, as different groups of speakers exhibit differential scrambling rates. This variability has received divergent explanations, ranging from children's cognitive immaturity to a lack of abstract features in their grammar.

The pragmatic approach to problematic areas of language acquisition is among the most frequently discussed. This approach was originally proposed by Maratsos (1976) to explain errors in article usage by children, and later widely adapted to explain errors in scrambling (e.g., Avrutin & Brun, 2001; Schaeffer, 2000). According to this approach, children struggle with discourse/pragmatics (i.e., they exhibit egocentricity, lack of Theory of Mind, or have problems with D-linking), and thus specificity, definiteness, backgroundness, or wide scope are difficult for them (see more on this issue in Schaeffer (2000) and Batman-Ratyosyan & Stromswold (2002) among others).

Some studies have become standard references for the role of pragmatics in syntax development. Particularly, Schaeffer (2000) argues that scrambling in Dutch is triggered by a discourse-related feature – specificity. She further proposes that young children lack the pragmatic concept of non-shared knowledge, so they are not able to correctly mark specificity on the direct object DP, and thus the specificity feature is underspecified in their grammar. Therefore, scrambling does not occur consistently in child speech due to lack of pragmatic knowledge.

Avrutin & Brun (2001) proposed a discourse-syntactic approach to the acquisition of scrambling. They based their research on the assumption that word order interacts with specificity and definiteness, especially in Russian. It was shown that Russian children (age 1;7-2;3) place most arguments in the correct positions, which suggests that they have the knowledge of specificity/definiteness from a very early age. Errors, if they exist, are due to children's egocentric assumption that the elements they refer to are known to the speaker and the hearer.

Batman-Ratyosyan & Stromswold (2002) investigated how Turkish children use word order, case marking and discourse-context to determine the thematic roles of sentential constituents. They found that while older children showed better results when context was provided, 2-year-old children performed worse in the same conditions. The authors suggested that younger children rely more on morphosyntactic cues than on discourse/pragmatic principles. Since acquiring pragmatics requires awareness of the intentions and knowledge states of others, young children might have difficulty understanding other people's minds. The authors thus conclude that discourse/pragmatics takes more time to develop.

The pragmatic approach further predicts that if discourse-related features are encoded by syntactic means, children will make errors by producing infelicitous utterances, i.e., they may scramble in inappropriate contexts or prefer the basic structure everywhere. However, a number of recent studies suggest that children do not make many such errors in scrambling**.** Studies on acquisition of

Norwegian show that in child grammar, given information may occur in positions normally reserved for new information, but not the other way around (Anderssen et al, 2010; Westergaard, 2008). The pragmatic approach is unable to account for these data. The lack of the concept of non-shared knowledge should cause children to treat new elements as given and known to the hearer. However, children did not overestimate hearer's knowledge and did not move 'new' NPs leftward. These findings suggest that if there are problems with child scrambling, the reason might be other than a pragmatic deficit.

The results from Experiment 1 in this study reveal that specificity (as referentiality) does not have a strong effect on scrambling (compare to Schaeffer (2000)). Although the contexts in one of the conditions were set in such a way that the direct object was contextually-defined, and the speaker was able to make this association, the hearer was not familiar with the object. Therefore, according to the syntax-semantics rules syntactic movement should occur, while according to the pragmatics rules – should not. In fact, children scrambled specific objects more often than adults in these contexts, which might suggest that they don't take into account the hearer's believes and overuse scrambling. However, careful consideration of the available data shows that in most of the scrambled responses children used an 'adult' technique: they introduced the object in the first phrase, and scrambled it in the second one. Hence, the pragmatic-deficit hypothesis in acquisition of scrambling is not supported.

The research presented here also suggests that a pragmatic approach is unlikely to account for the optionality in scrambling. Under Avrutin & Brun's view, for instance, the egocentricity of children could lead to obligatory scrambling everywhere. For Schaeffer, on the other hand, specificity can be underspecified, so random scrambling is expected across all contexts. The obtained experimental data, however, show that this was not the case: optional child scrambling in Ukrainian did not exhibit a significant overuse of object movement in the non-specific (or specific-referential) condition at any age group, and, thus, again the pragmatic approach is not supported by the data.

5.1.3. Child prosody

As was discussed in Chapter 4, the issue of acquisition of prosody could be addressed from different perspectives. It has been shown that in general children are susceptible to the 'music of language' from a very early age (Fikkert, 1994; Holdgrafer & Campbell, 1986; Kehoe, Stoel-Gammon, 1997; Snow, 1994; Snow & Balog, 2002). However, their language skills in production and comprehension of

particular prosodic features might differ. Research on children's use of sentence intonation is notoriously difficult to design and analyze. Although there exist studies that address the issue of focus (i.e., new information or contrastive focus) in child language, studies on other aspects of meaning-intonation correlation are scarce.

In this dissertation, I focused on the prosodic realization of known/given/old information. The empirical data presented in Chapter 4 was collected from 3-4-year-old children acquiring Ukrainian. Children's speech samples were analysed in order to find contrast between the prosody of sentences with various syntactic and semantic properties. The results show that child intonation is variable, but mostly predictable. The most evident contrast was detected for the structures with pronouns: when children failed to scramble pronouns, they still marked them prosodically by destressing. It can be concluded, then, that 3-4-year-old children are able to establish context relatedness for pronouns, and in order to mark their special status they can use one of two 'options' available in the grammar: syntactic shift or prosodic shift. It also seems that young children prefer the prosodic shift for pronouns, unlike adults who prefer a scrambling option. However, it appeared that the same group of children was biased toward the default prosody in the sentences with full NP direct objects. Although it was predicted that all contextually-defined elements (including definite/partitive objects) should be destressed when not scrambled, this intonation was used in only about half of the time in the available data. In other cases the definite/partitive objects received a falling pitch accent similarly to the indefinite direct objects in the same syntactic position. These results show that children have knowledge of prosody-meaning correlation, but further research is needed to investigate the possible causes of their bias to the default prosody. As was suggested earlier (based on Dutch data from Chen (2010)), a more rigorously set experiment might clarify this issue.

5.3. Further Directions

5.3.1. Other syntactic structures

This dissertation began by noting the two most puzzling syntactic properties of scrambling: *optionality* and *variability*. The present study focused on the optionality of MOS, leaving the issue of variability aside. Such an approach raises legitimate questions regarding application of the proposed analysis to

other scrambled structures. Follow-up research should, then, address the issue of variability of scrambling and, if needed, revise the ICDF hypothesis to account for various types of movement. The most common transitive structures (OVS and OSV) and ditransitive structures (S V O IO and S V IO O) constitute only a subset of all possible word order variants allowed in Slavic languages. Thus far, it seems to be extremely difficult to present a unifying account even for this small subset. Hence, I can only sketch some immediate questions to be answered in the future.

Observationally, the change SVO->SOV differs from the change SVO -> OSV (or OVS). While MOS was shown to be related to the INT-valuing, the longer movement (LDS or Topicalization) is characterized by a strong shift in the sentence prosody, and can be defined in different terms. It is unclear, however, what syntactic and semantic properties the latter process has. Furthermore, if the word order is changed according to the information structure, why can an 'old/given' direct object be moved to two positions: intermediate (SOV) and high (OSV)? What is the difference between these positions? Can the same interpretational effect be contributed to various types of movement? In other words, what happens to the INT-feature if an object does not remain in a vP-edge position and moves further? These are only some of the questions which require further research.

5.3.2. Bilingual English-Ukrainian acquisition

Another promising topic for further investigation is acquisition of Ukrainian word order by English-Ukrainian bilinguals. Bilingual data can potentially further inform us on the role of prosody and lexical items in the choice of syntactic structure; ii) English-Ukrainian acquisition can become a testing case for the cross-linguistic influence hypothesis; and iii) comparison of L1 and L2 learners will add to our understanding of the role of input in syntax-semantics acquisition.

Specific questions that might be asked are as follows. Do scrambling, prosody and articles interact as alternatives in bilingual acquisition situations involving Ukrainian and English? In particular, do young bilinguals recognize articles marking definiteness as equivalent to scrambling (marking definiteness/partitivity), inserting articles where they would scramble? When bilingual children make mistakes with article omission, do they also show a tendency to adjust English word order?

Including English-Ukrainian bilingual subjects in the study will allow these questions to be addressed in a straightforward way since all possible means of encoding semantic features (scrambling, prosody and articles) are strongly reinforced by bilingual input. It could be predicted, then, that bilingual children will follow the same patterns in scrambling as adults (even if their dominant language lacks scrambling), but at a certain stage of their development they might rely more on prosody and determiners in marking contextually dependent direct objects.

Bilingual children living in a predominantly English speaking environment might be strongly biased to the basic word order. If they do use more SVO structures in Ukrainian and avoid scrambling even in definite/partitive contexts, then they should employ another option available in Ukrainian – sentence intonation. Bilinguals, then, might see prosodic shift as one of the best means of marking change in the sentence interpretation (see e.g. Silva-Corvalán, 1994, and Zapata, Sanchez & Toribio, 2005). The same experiments conducted with L1 and L2 children will allow us to analyze child production with regard to the preferred word order and intonation pattern, and further verify ICDF hypothesis proposed in this study.

Another issue to clarify concerns the role of determiners in 'non-scrambling'. Object scrambling seems to be related to article acquisition insofar the same discourse pragmatic factors are in play in both domain (familiarity, definiteness, etc.). If so, availability of obligatory determiners in the input might present an alternative to syntactic movement. Ukrainian does not contain obligatory determiners, hence this hypothesis cannot be tested on Ukrainian monolinguals. However including bilingual subjects in the study would allow this issue to be addressed since both means of encoding semantic features can be taken into account keeping individual differences constant. In the case of English-Ukrainian bilinguals, there should be a parallel between their level of scrambling in Ukrainian and their ability to use determiners appropriately in English. Moreover, if bilingual children prefer the operation Agree over the operation Move in the process of INT interpretation (based on ICDF Hypothesis), they might use this computational option in both languages: in English because this is the only option and in Ukrainian due to the cross-linguistic influence.

However, the acquisition of English-like articles by young speakers of an article-less language is a largely uninvestigated topic. It has been observed, though, that L1 children use the definite article instead of the indefinite one in specific/partitive contexts (Maratsos, 1976; Karmiloff-Smith, 1979; Schafer & de Villiers, 2000; Schaeffer & Matthewson, 2005, *inter alia*). Based on these results, it might be predicted that bilingual English-Ukrainian children would also exhibit

'the' overuse in partitive contexts in English (which are also the contexts triggering the highest rates of scrambling in Ukrainian). Nonetheless, a small pilot experiment (10 subjects) consisting of an elicited production task replicating Maratsos's (1976) design has not provided us with such a parallel. Results showed a high rate of article omission across all ages and conditions. Mostly the indefinite article was used, even if the definite one was required. The reason could be methodological. If it is so, the stimuli developed for monolingual children by Maratsos should be modified when used for testing bilinguals. Unfortunately, most of the experiments conducted with L2 English learners have had a written format, inappropriate for young children. It would be useful to explore other methods of testing young bilinguals and to try to obtain more consistent data on the English acquisition. This approach would allow us to test semantically related language features cross-linguistically using the same group of subjects.

In the area of language acquisition, research conducted with English-Ukrainian bilinguals will provide new experimental evidence probing the role of cross-linguistic influence in bilingual syntax acquisition. Acquisition of flexible word order involves interaction of different types of knowledge: syntactic and semantic/pragmatic, and, thus, is a good candidate for a possible cross-linguistic influence. Furthermore, English and Ukrainian syntactic structures present an overlap, since both languages have the same basic word order. Bilingual English-Ukrainian acquisition, then, presents a particularly interesting area for this investigation. Since two specific conditions for the cross-linguistic influence are met, it can be predicted that bilinguals will differ from monolinguals with regard to word order patterns. In line with previous studies, it is likely that this difference will be only quantitative, but not qualitative (Hulk & Müller, 2000; Sorace, 2005). The same experimental study with monolingual Ukrainian and bilingual English/Ukrainian children can answer specific questions concerning acquisition of object scrambling: Do monolingual and bilingual children acquiring Ukrainian show the same patterns of the syntactic structure-meaning interaction? Are there any differences in the rate of scrambling in their speech? And how can we explain variability in children's use of syntactic structures? Assuming that both (simultaneous and/or successive) bilingual acquisition and monolingual acquisition are constrained by the principles of UG, the following can be hypothesized. Children acquiring two languages with different syntactic systems should be able to distinguish them from the beginning (Meisel, 1998), and yet one language could greatly influence the other if their syntactic systems overlap, and if two modules of grammar (syntax and semantics/pragmatics) are involved (Hulk & Müller, 2000). It is predicted, then, that L1 and 2L scrambling

will be qualitatively alike: children should not produce scrambled SOV structures in indefinite non-specific contexts. However, there might be quantitative differences between two language groups: e.g., older 2L children might show lower rates of scrambling due to English influence.

The results of this study, thus, can shed light on two general factors contributing to this variation: language-internal – the properties of the available syntactic structures, and language-external – language environment supporting acquisition of one language and inhibiting development of the other.

5.3.3. Non-optional pronominal scrambling

One of crucial findings of this research concerns the role of object type in optional scrambling in Ukrainian. Specifically, scrambling is essentially obligatory when the direct object is a pronoun. As experimental results show, in adult grammar (and in the grammar of 4-5-year-olds), pronouns are usually associated with a pre-verbal scrambled position or, alternatively with a marked prosodic contour. However, since the experimental design did not include a particular 'pronominal' condition, the number of pronouns used was quite low, and thus the results could not be considered reliable. Further study that would address the issue of pronouns in a straightforward way is needed. Two particular questions that have not been addressed directly so far concern the syntax-semantic-prosodic nature of personal/referential pronouns and the acquisition of pronominal dislocation. First, in the available literature, there is no consensus on a categorial status of pronouns in languages lacking clitics, but allowing flexible word order (i.e., East Slavic languages).[61] Based on Cardinaletti & Starke (1999), they can be considered either 'weak' or 'strong' elements, but some studies (e.g., Testelets (2003) on Russian) put this typology in doubt. Another important issue is acquisition of pronouns by young children. To date, it is unclear how children acquire referential pronouns cross-linguistically, and the few existing studies provide inconclusive results. For instance, the two studies on acquisition of pronominal shift in Scandinavian languages by Josefsson (1996) and Anderssen et al. (2009) showed that children shift pronouns at a lower rate than adults. Corpus and experimental studies reveal that the delay lasts as long as until the age of six (Anderssen et al., 2009). Results from this dissertation suggest that 4-5-year-old children acquiring Ukrainian use pronouns

[61] Ukrainian is the only East Slavic language employing clitics in some dialects, but this fact is set aside for now.

appropriately in referential contexts and tend to place them in a preverbal position. However, the experimental results presented in Mykhaylyk (2009a) show that bilingual English-Ukrainian children scramble pronouns at a lower rate that their monolingual peers. Although there was no special pronominal condition in any of the mentioned experiments on Ukrainian, a post-hoc data analysis shows the following: i) pronominal scrambling is more consistent than scrambling of full NPs; ii) adults almost always place pronouns in a preverbal condition; iii) monolingual children might scramble less than adults, but they achieve an adult level by 4-5; and iv) bilingual English-Ukrainian children scramble pronouns almost at chance.

Interestingly, it appeared that monolingual Ukrainian children are more adult-like than Norwegian children even though pronominal shift is obligatory in both languages. What are the reasons of this assymetry? Furthermore, why do English-Ukrainian bilinguals differ significantly from their monolingual peers?

According to one influential proposal children follow economy principles in applying syntactic movement. Based on Platzack (1996), Clahsen (1996) and others (see discussion in Anderssen et al. (2010)), it can be hypothesized that the first rule children acquire is "Don't use syntactic movement because it is costly". In this case, children might prefer other available means, e.g., prosodic marking, to achieve the same effect. However, it is not clear whether the Ukrainian data would support this hypothesis because there are no controlled results for all age groups, and 4-5-old monolinguals are already target-like. According to another hypothesis, syntactic movement is not costly, but prosodic marking is. This proposal is supported by the data from Portuguese children who interpreted syntactic movement correctly, but failed to relate prosodic and semantic properties of an object (Costa & Szendröi, 2006). It was argued that since the moved element escapes from the position that receives stress, the syntactic operation itself comes free of charge (see also Reinhart (2004)). This line of argumentation, however, is not directly applicable to the data above as it explains difficulties in processing, and not in production (as in Ukrainian and Norwegian data). Nonetheless, both hypotheses imply that a correlation between the prosodic nature of the pronoun and object scrambling/shift is worth further investigation.

The third hypothesis emerges from a suggestion by Anderssen et al. (2009) that "the complexity of the pattern and the consistency of the relevant input information should be taken into account". Previous studies on bilingual acquisition show that children are susceptible to variations in the input especially at the interfaces (Hulk & Müller, 2000; Sorace, 2005; Sorace & Serratrice, 2009, and others). Monolingual Ukrainian children performed target-

like in pronominal scrambling because this phenomenon is quite consistent in the adult speech as well. Bilingual English-Ukrainian children, however, had many more problems with scrambling. It might be suggested that these results reflect mixed/overlapping input for the syntactic distribution of pronouns in English and Ukrainian. Whether this line of reasoning is supported by the data from languages exhibiting pronominal shift is unclear, but it is possible that while English-Ukrainian children are sensitive to the variable bilingual input, Norwegian children show the same sensitivity to the variable input language-internally. At the moment, this hypothesis is essentially a speculation resting on a limited empirical basis; nonetheless investigation of bilingual speech clearly holds promise for establishing developmental path in acquisition of pronouns.

Based on the previous discussion, the next step could be further examination of the correlation between syntactic movement and prosodic marking in adult and child speech. It is important to establish how this correlation with regard to pronouns is represented in different languages and how children make their way through the available options language-internally and cross-linguistically.

REFERENCES

Adamec, P. (1966). Porjadok slov v sovremennom russkom jazyke. (Word order in Modern Russian). Prague: Academia.

Adger, D. (2003). Core syntax: A minimalist approach. Oxford: Oxford University Press.

Alexiadou, A. & Anagnostopoulou, E. (1998). Parametrizing Agr: word order, verb- movement and EPP-checking. *Natural Language and Linguistic Theory* 16.3: 491-539.

Alexiadou, A. (2002). The syntax of adverbs: puzzles and results. *Glot International 6 (2/3),* 33–54.

Alter, K., Mleinek, I., & Richter, N. 2001. Prosodic phrasing and accentuation in Russian. In G. Zybatow et al. (eds.), Current issues in formal Slavic linguistics. Frankfurt, Main: Lang, 317-327.

Anagnostopoulou, E. (2005). Strong and weak person restrictions: a feature checking analysis. In L. Heggie & F. Ordonez (eds.), Clitics and affixation, Amsterdam: John Benjamins.

Anderssen, M., Bentzen, K. & Rodina, Y. (2009). The acquisition of focus: The case of object shift. Paper presented at GALA 9, September 9-11, Lisbon, Portugal.

Anderssen, M., Bentzen, K., Rodina, Y. & Westergaard, W. (2010). The acquisition of apparent optionality: Word order in subject and object shift constructions in Norwegian. In M. Anderssen et al. (eds.), Optionality in the input. Springer.

Arnaudova, O. (2001). Prosodic Movement and Information Focus in Bulgarian. In S.Franks, T.Holloway King & M.Yadroff (eds.), Formal Approaches to Slavic Linguistics. The Bloomington Meeting 2000, 19-36. Ann Arbor: Michigan Slavic Publications.

Avrutin, S. & Brun, D. (2001). The expression of specificity in a language without determiners: Evidence from child Russian. In A. Do, L. Dominguez & A. Johansen (eds.), Proceedings of the 25th annual Boston University Conference on Language Development. Somerville, MA: Cascadilla Press.

Avrutin, S. & Wexler, K. (1992). Development of Principle B in Russian: Coindexation at LF and coreference. *Language Acquisition 2,* 259-306.

Babyonyshev, M. & Marin, M. (2006). Acquisition of pronominal clitics in Romanian. *Catalan Journal of Linguistics 5,* 17–44.

Bailyn, J. F. (1992). LF movement of anaphors and the acquisition of embedded clauses in Russian. *Language Acquisition 2 (4),* 307-337.

Bailyn, J. F. (1995). A configurational approach to Russian "free" word order. Doctoral dissertation, Cornell University.

Bailyn, J. F. (1997). Genitive of negation is obligatory. In W. E. Browne et al. (eds.), Formal Approaches to Slavic Linguistics. The Cornell Meeting 1995, 84-114. Ann Arbor: Michigan Slavic Publications.

Bailyn, J. F. (2001). On scrambling: A reply to Bošković and Takahashi. *Linguistic Inquiry 32*, 635–658.

Bailyn, J. F. (2003). Does Russian scrambling exist? In S. Karimi (ed.), Word order and scrambling, 156-176. Oxford: Blackwell.

Bailyn, J. F. (2004). Generalized inversion. *Natural Language and Linguistic Theory 22*, 1-49.

Balog, H. L. & Snow, D. (2007). The adaptation and application of relational and independent analyses for intonation production in young children. *Journal of Phonetics 35*, 118-133.

Barbier, I. (2000). An experimental study of scrambling and object shift in the acquisition of Dutch. In S. M. Powers & C. Hamann (eds.), The acquisition of scrambling and cliticization. Dordrecht, Boston, London: Kluwer.

Bar-Shalom, E. (2005). Clause structure in child Russian. In S. Franks, F.Y. Gladney & M. Tasseva-Kurktchieva (eds.), Formal Approaches to Slavic Linguistics 13: The South Carolina Meeting, 42-51. Ann Arbor: Michigan Slavic Publications.

Bates, E. & MacWhinney, B. (1979). A functionalist approach to the acquisition of grammar. In E. Ochs & B. Schieffelin (eds.), Developmental pragmatics. New York: Academic Press.

Batman-Ratyosyan, N. & Stromswold, K. (2002). Morphosyntax is easy, discourse/pragmatics is hard. In B. Skarabela, S. Fish & A. H.-J. Do (eds.), Proceedings of the 26th Annual Boston University Conference on Language Development 2, 793-804. Somerville, MA: Cascadilla Press.

Behrens, H. & Gut, U. (2005). The relationship between prosodic and syntactic organization in early multiword speech. *Journal of Child Language 32*, 1-34.

Bhatt, R. 1999. Verb movement and the syntax of Kashmiri. Springer.

Bhatt, R., & Anagnostopoulou, E. 1996. Object shift and specificity: Evidence from *ko*-phrases in Hindi. In Papers from the 32nd Regional Meeting of the Chicago Linguistics Society, 11-22.

Billings, L. & Maling, J. (1995). Accusative-assigning participial -no/to constructions in Ukrainian, Polish and neighboring languages: an annotated bibliography. *Journal of Slavic Linguistics 3(1-2).*

Biskup, P. (2006). Scrambling in Czech: Syntax, semantics, and Information Structure. In Proceedings of NWLC 21. UBC Working Papers in Linguistics, 1-15.

Blevins, J. (2003). Passives and impersonals. *Journal of Linguistics 39.3*, 473–520.

Bloom, L. (1973). One word at a time. The Hague: Mouton.

Bobaljik, J. D. (1999). Adverbs: The hierarchy paradox. *Glot International*, *4*, 27-28.

Bobaljik, J.D. & Thrainsson, H. (1998). Two heads aren't always better than one. *Syntax 1:1*, 37–71.

Boersma, P. (2001). Praat, a system for doing phonetics by computer. *Glot International 5:9/10*, 341-345.

Borovikoff, N. (2001). Unaccusativity and movement in Russian: integrating formal syntax and discourse functions. Doctoral dissertation, Indiana University.

Bošković, Ž. & Takahashi, D. (1998). Scrambling and last resort. *Linguistic Inquiry 29*, 347–366.

Bošković, Ž. (2005). Left branching extraction, structure of NP, and scrambling. In J. Sabel & M. Saito (eds.), The free word order phenomenon: Its syntactic sources and diversity. Berlin: Mouton de Gruyter.

Broekhuis, H. (2000). Against Feature Strength: The Case of Scandinavian Object Shift. *Natural Language and Linguistic Theory 18,* 673–721.

Brown, S. (1999). The syntax of negation in Russian: A Minimalist approach. Stanford, CA: CSLI Publications.

Brun, D. (2005). What children definitely know about definiteness: Evidence from Russian. In S. Franks, F.Y. Gladney & M. Tasseva-Kurktchieva (eds.), Formal Approaches to Slavic Linguistics 13, 68-79. Ann Arbor: Michigan Slavic Publications.

Büring, D. (1999). Topic. In: P. Bosch & R. van der Sandt (eds.), Focus - linguistic, cognitive, and computational perspectives, 142-165. CUP.

Büring, D. (2007). Intonation, semantics and Information Structure. In G. Ramchand & C. Reiss (eds.), The Oxford handbook of linguistic interfaces. Oxford: Oxford University Press.

Cardinaletti, A. & Starke, M. (1999). The typology of structural deficiency: A case study of the three classes of pronouns. In H. C. van Riemsdijk, G. Bosong, & B. Comrie (eds.), Clitics in languages of Europe, 145–234. Berlin, New York: Mouton de Gruyter.

Chen, A. & Fikkert P. (2007). Intonation of early two-word utterances in Dutch. In J. Trouvain & J. B., William (eds.), Proceedings of the 16th International Congress of Phonetic Sciences. Pirrot GmbH, Dudweiler.

Chen, A. (2007). Intonational realisation of topic and focus by Dutch-acquiring 4- to 5-year-olds. In J. Trouvain & J.B. William (eds.), Proceedings of the 16th International Congress of Phonetic Sciences, 1553–1556. Pirrot GmbH, Dudweiler.

Chen, A. (2010). Is there really an asymmetry in the acquisition of the focus-to-accentuation mapping? *Lingua, doi:10.1016/j.lingua.2010.02.012.*

Chen, A. (to appear). Tuning information structure: intonational realisation of topic and focus in child Dutch. *Journal of Child Language*, accepted for publication.

Chien, Y. C. & Wexler, K. (1991). Children's knowledge of locality conditions in Binding as evidence for the modularity of syntax and pragmatics. *Language Acquisition 1*, 225-295.

Chomsky, N. (1986). Knowledge of language: its nature, origins and use. Praeger: New York.

Chomsky, N. (1995). The Minimalist Program. Cambridge, MA: MIT Press.

Chomsky, N. (2001). Derivation by phase. In M. Kenstowicz (ed.), Ken Hale: A life in language. Cambridge, MA: MIT Press.

Cinque, G. (1993). A null theory of phrase and compound stress. *Linguistic Inquiry 24(2),* 239-297.

Cinque, G. (1999). Adverbs and Functional Heads. Oxford: Oxford University Press.

Clahsen, H. & Muysken, P. (1986). The availability of Universal Grammar to adult and child learners – a study of the acquisition of German word order. *Second Language Research 2,* 93-119.

Clahsen, H. (1990). Constraints on parameter setting. A grammatical analysis of some stages in German child language. *Language Acquisition 1*, 361-391.

Clahsen, H. (ed.) 1996. Generative perspective on language acquisition. Amsterdam, Philadelphia: John Benjamins.

Corver, N. & van Riemsdijk, H. (1997). The position of the head and the domain of scrambling. In B. Palek (ed.), Typology: prototypes, item orderings and universals. Proceedings of LP '96, 57-90. Prague: Karolinum - Charles University Press.

Corver, N. & van Riemsdijk, H. (eds.) (1994). Studies on scrambling. Movement and non-movement approaches to free word-order phenomena. Berlin, New York: Mouton de Gruyter.

Costa, J. & Szendröi, K. (2006). Acquisition of focus marking in European Portuguese. Evidence for a unified approach to focus. In V. Torrens & L. Escobar (eds.), The acquisition of syntax in Romance languages. Language acquisition and language disorders 41, 319-329. Amsterdam: John Benjamins.

Cummins, G. (1998). Indefiniteness in Czech. *Journal of Slavic Linguistics 6, 2*, 171-203.

Daneš, F. (1964). A three-level approach to syntax. *Travaux Linguistique de Prague 1:* 225-240.

Daneš, F. (1974). Functional sentence perspective and the organization of the text. In F. Daneš (ed.), Papers on functional sentence perspective, 106-128. Prague: Academia.

Dayal, V. (2003). Bare nominals: Non-Specific and contrastive readings under scrambling. In S. Karimi (ed.), Word order and scrambling. Malden, MA: Blackwell.

De Cat, C. (2003). Syntactic manifestations of very early pragmatic competence. In B. Beachley, A. Brown & F. Conlin (eds.), Proceedings of the 27th annual Boston University Conference on Language Development, 209-219. Somerville, MA: Cascadilla Press.

De Cat, C. (2009). Experimental evidence for preschoolers' mastery of topic. *Language Acquisition, 16, 4,* 224 – 239.

De Hoop, H. (1992). Case configuration and noun phrase interpretation. Doctoral dissertation, University of Groeningen.

De Hoop, H. (1998). Partitivity. *Glot International* 3-2:3--10.

De Hoop, H. (2000). Optional scrambling and interpretation. In H. Bennis, M. Everaert & E. Reuland (eds.), Interface strategies, 153-168. Amsterdam: Royal Netherlands Academy of Arts and Sciences.

De Hoop, H. (2003). Scrambling in Dutch: Optionality and Optimality. In S. Karimi (ed.), Word order and scrambling, 201-216. Oxford: Blackwell.

De Villiers, J., Cahillane, J. & Altreuter, E. (2006). What can production reveal about Principle B? In K.U. Deen, J. Nomura, B. Schulz & B.D. Schwartz (eds.),

The Proceedings of the Inaugural Conference on Generative Approaches to Language Acquisition–North America, 89-100. University of Connecticut Occasional Papers in Linguistics 4.

Deen, K. U. (2006). Object agreement and specificity in early Swahili. *Journal of Child Language 33*, 223-246.

Deguchi, M. & Kitagawa, Y. (2002). Prosody and wh-questions. In M. Hirotani (ed.), Proceedings of the Thirty-second Annual Meeting of the North Eastern Linguistic Society, 73-92.

Diesing, M. & Jelenek, E. (1993). The syntax and semantics of object shift. In *Working Papers in Scandinavian Syntax 51,* 1-54.

Diesing, M. (1992). Indefinites. Cambridge, MA: MIT Press.

Diesing, M. (1997). Yiddish VP structure and the typology of object movement. *Natural Language and Linguistic Theory 15.2,* 369-427.

Dyakonova, M. (2004). Information structure development: Evidence from acquisition of word order in Russian and English. In *Nordlyd: Tromso Working Papers on Language and Linguistics* 32 (1).

Dyakonova, M. (2009). A phase-based approach to Russian free word order. Doctoral Dissertation. Netherlands Graduate School of Linguistics.

É. Kiss, K. (1998). Identificational focus versus information focus. *Language 74(2)*, 245-273.

Enç, M. (1991). The semantics of specificity. *Linguistic Inquiry 22,* 1-25.

Ernst, T. (2002). The semantics of predicational adverbs, and the scopal basis of adverb licensing. In T. Ernst, The syntax of adjuncts, 41-91, 92-148. New York: Cambridge University Press.

Erteschik-Shir, N. (1997). The dynamics of focus structure. Cambridge: Cambridge University Press.

Fanselow, G. (1990). Scrambling as NP-movement. In G. Grewendorf & W. Sternefeld (eds.), Scrambling and barriers. Amsterdam: John Benjamins.

Farkas, D. F. (2002). Specificity distinctions. *Journal of Semantics 19*, 213–243.

Ferreira, F. & Fodor, J. D. (eds.) (1998). Reanalysis and sentence processing. Dordrecht: Kluwer.

Ferreira, V. & Yoshita, H. (2003). Given-new ordering effects on the production of scrambled sentences in Japanese. *Journal of Psycholinguistic Research 32,* 669-692.

Féry, C., Paslawska, A. & Fanselow, G. (2007). Nominal split constructions in Ukrainian. *Journal of Slavic Linguistics 15 (1)*, 3-48.

Fikkert, P. (1994). On the acquisition of prosodic structure. The Hague: Holland Academic Graphics.

Firbas, J. (1964). On defining the theme in functional sentence perspective. *Travaux linguistiques de Prague 1,* 267–280.

Firbas, J. (1992). Functional sentence perspective in written and spoken communication. Cambridge, New York: Cambridge University Press.

Flax, J., Lahey, M., Harris, K., & Boothroyd, A. (1991). Relations between prosodic variables and communicative functions. *Journal of Child Language, 18,* 3–19.

Fodor, J. D. (1978). Parsing strategies and constraints on transformations. *Linguistic Inquiry* 9, 427-473.

Fodor, J.D. & Sag, I. (1982). Referential and quantificational indefinites. *Linguistics and Philosophy 5,* 355-398.

Fodor, J.D. (2001). Setting syntactic parameters. In M. Baltin & C. Collins (eds.), The handbook of contemporary syntactic theory, 730-767. Oxford: Blackwell.

Franks, S. & King, T.H. (2000). A handbook of Slavic clitics. Oxford: Oxford University Press.

Franks, S. (1995). Parameters of Slavic morphosyntax. Oxford: Oxford University Press.

Frascarelli, M. (2000). The syntax-phonology interface in focus and topic constructions in Italian. Dordrecht: Kluwer.

Frazier, L. & Flores d'Arcais, G. B. (1989). Filler-driven parsing: A study of gap-filling in Dutch. *Journal of Memory and Language*, *28*, 331-344.

Frazier, L. (1993). Processing Dutch sentence structures. *Journal of Psycholinguistic Research* 22, 85-108.

Frege, G. (1892). Über Sinn und Bedeutung. Zeitschrift fur Philosophie und Philosophische Kritik, 100, 25-50. Translated as "On sense and reference" In P. Geach & M. Black (eds.), Translations from the philosophical writings of Gottlob Frege, 56-78). Oxford: Blackwell.

Gavarró, A. (2003). Economy and word order patterns in bilingual English-Dutch acquisition. *Bilingualism: Language and Cognition 6, 1*, 69–79.

Gordishevsky, G. & Avrutin, S. (2004). Optional omissions in an optionally null subject language. In J. van Kampen & S. Baauw (eds.), Proceedings of GALA 2003, Vol. 1.

Granfeldt, J. & Schlyter, S. (2004). Cliticization in the acquisition of French as L1 and L2. In P. Prévost & J. Paradis (eds.), The acquisition of French in different contexts: Focus on functional categories, 333-370. Amsterdam: John Benjamins.

Grewendorf, G. & Sabel, J. (1999). Scrambling in German and Japanese: Adjunction versus multiple specifiers. *Natural Language and Linguistic Theory 17*, 1-65.

Grewendorf, G. & Sternfeld, W. (eds.) (1990). Scrambling and barriers. Amsterdam, Philadelphia: John Benjamins.

Gundel, J. K. (1999). On different kinds of focus. In P. Bosch & R. van de Sandt (eds.), Focus: linguistic, cognitive, and computational. Cambridge: Cambridge University Press.

Gussenhoven, C. (2004). The phonology of tone and intonation. Cambridge: Cambridge University Press.

Gussenhoven, C. (2005). Transcription of Dutch intonation. In S. Jun (ed.), Prosodic typology and transcription: A unified approach. Oxford: Oxford University Press.

Gussenhoven, C. (2006). Types of focus in English. In C. Lee, M. Gordon, & D. Büring (eds.), Topic and focus: Cross-linguistic perspectives on meaning and intonation. Dordrecht: Kluwer.

Hajičová, E. (1974). Meaning, presupposition, and allegation. *Philologica Pragensia 17*,18-25.

Hamann, C. & Belletti, A. (2006). Developmental patterns in the acquisition of complement clitic pronouns: Comparing different acquisition modes with an emphasis on French, *Rivista di Grammatica Generativa*, 31.

Hawkins, J.A. (1988). Explaining language universals. In J.A. Hawkins (ed.), Explaining language universals. Oxford: Blackwell.

Hayes, B. & Lahiri, A. (1991). Bengali intonational phonology. *Natural Language and Linguistic Theory*, *9*, 47-96.

Hedberg, N. & Sosa, J. M. (2006). The prosody of topic and focus in spontaneous English dialogue. In C. Lee, M. Gordon, & D. Büring (eds.), Topic and focus: Cross-linguistic perspectives on meaning and intonation. Dordrecht: Kluwer.

Heim, I. (1991). On the projection problem for presuppositions. In S. Davis (ed.), Pragmatics, 397-405. Oxford: Oxford University Press.

Hiraiwa, K. (2001). Multipple Agree and the defective intervention constraint in Japanese. In O. Matushansky et al. (eds.), The Proceedings of the MIT-Harvard Joint Conference (HUMIT 2000). Cambridge, MA: MITWPL.

Hirsch-Pasek, K., Kemler-Nelson, D., Jusczyk, P., Wright-Cassiday, K., Dross, B., & Kennedy, L. J. (1978). Clauses as perceptual units for prelingual infants. *Cognition 26*, 269-86.

Hoekstra, T. & Jorden, P. (1994). From adjunct to head. In T. Hoekstra & B.D. Schwartz (eds.), Language acquisition: Studies in generative grammars: Papers in honor of Kenneth Wexler from the 1991 GLOW Workshops. Amsterdam: John Benjamins.

Holdgrafer, G. & Campbell, T. F. (1986). Children's comprehension of intonation as a marker for discourse topic collaboration. *Applied Psycholinguistics 7*, 373–384.

Holmberg, A. (1999). Remarks on Holmberg's Generalization, *Studia Linguistica 53 (1)*, 1-39.

Holmberg, A. (2000). Scandinavian stylistic fronting: How any category can become an expletive. *Linguistic Inquiry 31*, 445-483.

Hopp, H. (2005). Constraining second language word order optionality: Scrambling in advanced English-German and Japanese-German interlanguage. *Second Language Research 21*, 34-71.

Hornby, P. A. (1971). Surface structure and the topic-comment distinction: A developmental study. *Child Development 42*, 1975-1988.

Horváth, J. (1986). Focus in the theory of grammar and the structure of Hungarian. Dordrecht: Foris.

Horvath, J. (1995). Structural focus, structural case, and the notion of feature-assignment. In K. É. Kiss (ed.), Discourse configurational languages, 28-64. New York, Oxford: Oxford Press.

Hryščenko, A. P. et al. (1997). Sučasna ukrajins'ka literaturna mova. Kyiv: Vyšča škola.

Hulk, A. & Müller, N. (2000). Crosslinguistic influence at the interface between syntax and pragmatics. *Bilingualism: Language and Cognition* 3 (3), 227-244.

Igarashi, Y. (2002). Tak nazyvaemaja "nejtralizacija intonacii" - Fonologicheskoe opisanie russkoj intonacii- [in Russian (So-called "intonational neutralization" - a phonological description of Russian intonation-)]. *Bulletin of the Japanese Association of Russian Scholars 34*, 15-21.

Igarashi, Y. (2004). Fonetika i fonologija intonacii v voprositel'nyx predlozhenijax v russkom jazyke [in Russian (Phonetics and phonology of intonation in interrogative sentences in Russian)]. *Bulletin of the Japanese Association of Russian Scholars 36*, 85-92.

Ilić, T. & Deen, K. U. (2004). Object raising and cliticization in Serbo-Croatian child language. In J. van Kampen & S. Baauw (eds.), Proceedings to the 2003 GALA conference. Utrecht, Netherlands: LOT.

Ionin, T. (2003). Article semantics in second language acquisition. Doctoral dissertation, MIT.

Ionin, T., Ko, H. & Wexler, K. (2004). Article semantics in L2 acquisition: The role of specificity. *Language Acquisition 12, 1*, 3-69.

Jackendoff, R. (1972). Semantic interpretation in generative grammar. Cambridge, MA: MIT Press.

Josefsson, G. (1996). The acquisition of object shift in Swedish child language. In C. E. Johnson & J. H. V. Gilbert (eds.), Children's language 9, 153-165. Mahwah: Lawrence Erlbaum.

Junghanns, U. & Zybatow, G. (1997). Syntax and Information Structure of Russian clauses. In W. E. Browne et al. (eds.), Annual workshop on formal approaches to Slavic linguistics. The Cornell meeting 1995, 289-319. Ann Arbor: Michigan Slavic Publications.

Kaiser, E., & Trueswell, J. C. (2004). The role of discourse context in the processing of a flexible word-order language. *Cognition 94*, 113-147.

Kallestinova, E. (2007). Aspects of word order in Russian. Doctoral dissertation, Iowa University.

Karimi, S. (2003). On object positions, specificity, and scrambling in Persian. In S. Karimi (ed.), Word order and scrambling, 91-124. Malden, MA: Blackwell.

Karmiloff-Smith, A. (1979). A functional approach to child language. A study of determiners and reference. Cambridge: Cambridge University Press.

Kawamura, T. (2007). Some interactions of focus and focus sensitive elements. Doctoral dissertation, Stony Brook University.

Kehoe, M. & Stoel-Gammon, C. (1997). The Acquisition of prosodic structure: An investigation of current accounts of children's prosodic development. *Language 73(1)*, 113-144.

Kim, D.-B. (1993). The specificity/non-specificity distinction and scrambling theory. Seoul: Thaehaksa.

King, T. H. (1993). Configuring topic and focus in Russian. Doctoral Dissertation. Stanford University. (Published in 1995 by CSLI Publications).

Kitagawa, Y. & Deguchi, M. (2002). Prosody in syntactic analyses. Ms., Indiana University.

Kitahara, H. (1997). Elementary operations and optimal derivations. Cambridge, Mass.: MIT Press.

Kitahara, H. (2002). Scarmbling, case, and interpretability. In S. D. Epstein and T. D. Seely (Eds.), Derivation and explanation in the minimalist program. Oxford: Blackwell Publishing, 167-183.

Ko, H. (2005). Syntactic edges and linearization. Doctoral dissertation, MIT.

Ko, H., Ionin, T. & Wexler, K. (2008). Adult L2-learners lack the maximality presupposition, too. In The proceedings of the inaugural conference on GALANA, University of Connecticut Occasional Papers in Linguistics 4: 171-182.

Ko, H., Ionin, T. & Wexler, K. (2010). The role of presuppositionality in the second language acquisition of English articles. *Linguistic Inquiry 41(2).*

Kondrashova, N. (1996). The syntax of existential quantification. Doctoral dissertation, University of Wisconsin-Madison.

Koopman, H. (1998). The internal and external distribution of pronominal DPs. In K. Johson & I. Roberts (eds.), Papers in memory of Osvaldo Jaeggli. Dordrecht: Reidel.

Kornfilt, J. (1994). Some remarks on the interaction of case and word order in Turkish: Implications for acquisition. In B. Lust, M. Suner & J. Whitman (eds.), Syntactic theory and first language acquisition: Cross-linguistic perspectives, Vol. 1, 171-199. Hillsdale, NJ: Lawrence Earlbaum.

Kovtunova, I. I. (1976). Sovremennyj russkij jazyk. Poryadok slov i aktual'noe členenie predloženija. Moscow: Prosveščenie.

Krämer, I. (2000). Interpreting indefinites. An experimental study of children's language comprehension. Doctoral dissertation, Utrecht University.

Krifka, M. (2007). Basic notions of information structure. In C. Fery & M. Krifka (eds.), Interdisciplinary studies of Information Structure 6, Potsdam.

Krylova, O.A. & Khavronina, S.A. (1986). Poryadok slov v russkom jazyke. (Word order in Russian). Moscow: Russkij Jazyk.

Kučerova, I. (2007). The syntax of givenness. Doctoral dissertation, MIT.

Ladd, R. D. (1996). Intonational phonology. Cambridge: Cambridge University Press.

Lambrecht, K. (1994). Information structure and sentence form: Topics, focus, and the representations of discourse referents. Cambridge: Cambridge University Press.

Lapteva, O. A. (1976). Russkij razgovornyj sintaksis (Russian colloquial syntax). Moscow: Nauka.

Larson, R.K. (in press) Clauses, propositions and phases. In A-M. DiSciullo & C. Boeckx (eds.), Biolinguistic enterprise: New perspectives on the evolution and nature of the human language faculty. Oxford: Oxford University Press.

Lasnik, H. (2001). Subjects, objects, and the EPP. In W. Davies & S. Dubinsky (eds.), Objects and other subjects: Grammatical functions, functional categories and configurationality, 103-121. Dordrecht: Kluwer.

Lavine, J. (2005). The morphosyntax of Polish and Ukrainian *-no/-to*. *Journal of Slavic Linguistics 13*, 75–117.

Lee, D-W. & Cho, S. (2003). Argument scrambling and object shift. *Studies in Generative Grammar 13*, 39-59.

Lee, D-W. (2004). What is object shift triggered by? *Studies in Generative Grammar 14 (1),* 157-166.

Legate, J. (2003). Some interface properties of the phase. *Linguistic Inquiry 34 (3).*

Loeb, D. F. & Allen, G. D. (1993). Preschoolers' imitation of intonation contours. *Journal of Speech Hearing Research 36*, 4–13.

Lyons, C. (1987). Definitenes. Cambridge, UK: Cambridge University Press.

MacWhinney, B. & Bates, E. (1978). Sentential devices for conveying givenness and newness: A cross-cultural developmental study. *Journal of Verbal Learning and Verbal Behavior 17*, 539-558.

MacWhinney, B. & Price, D. (1980). The development of the comprehension of topic-comment marking. In D. Ingram, C. C. Peng & P. Dale (eds.), Proceedings of the first International Congress for the Study of Child Language. Lanham, MD: University Press of America.

Mahajan, A. (1991). The A/A' distinction and movement theory. Doctoral Dissertation, MIT.

Maratsos, M. (1976). The use of definite and indefinite reference in young children. Cambridge: Cambridge University Press.

Marcos, H. (1987). Communicative functions of pitch range and pitch direction in infants. *Journal of Child Language 14*, 255-268.

Mathesius, V. (1964 (original 1936)). On some problems of the systematic analysis of grammar. *Travaux du Cercle Linguistique de Prague VI,* 95-107. In J. Vachek (ed.), A Prague School reader in linguistics, 306-319. Bloomington: Indiana University Press.

Mathesius, V. (1975 (original 1939)). On information-bearing structure of the sentence. *Slovo a slovesnost* 55, 171–174. Cambridge, MA: Harvard Univ. Linguistics Dep.

McCloskey, J. (1996). On the scope of verb movement in Irish. *Natural Language & Linguistic Theory*, 14:1, 47-104.

McGinnis, M. (2001). Object asymmetries in a phase theory of syntax. In Proceedings of the 2001 CLA Annual Conference. University of Ottawa.

McShane, M. (2000). Verbal ellipsis in Russian, Polish and Czech. *Slavic and East European Journal 44(2)*, 195-233.

Meisel, J. (1989). Early differentiation of language in bilingual children. In K. Hyltenstam & L.Obler (eds.), Bilingualism across a lifespan: Aspects of acquisition, maturity and loss, 13-40. Cambridge: Cambridge University Press.

Merkulova, N.O. (2006). Zasoby tema-rematychnoho podilu vyslovlennja. (Methods of statement tema-rhema division). Doctoral Dissertation**,** Donetsk National University, Ukraine.

Mezhevich, I. (2001). Locative inversion, definiteness and free word order in Russian. *Calgary Working Papers in Linguistics*, 30-48.

Miyagawa, S. (1997). Against optional scrambling. *Linguistic Inquiry 28*, 1-26.

Miyagawa, S. (2001). The EPP, scrambling, and Wh-in-situ. In M. Kenstowicz (ed.), Ken Hale: A life in language, 293-338. Cambridge MA, London: MIT Press.

Miyagawa, S. (2003). A-movement scrambling and options without optionality. In S. Karimi (ed.), Word order and scrambling, 177-200. Blackwell Publishers.

Miyamoto, E., & Takahashi, S. (2002). Sources of difficulty in processing scrambling in Japanese. In M. Nakayama (ed.), Sentence processing in East-Asian languages. Stanford, CA: CSLI.

Müller, A., Höhle, B., Schmitz, M., & Weissenborn, J. (2005). Focus-to-stress alignment in 4 to 5-year-old German-learning children. In Proceedings of GALA 2005.

Mykhaylyk, R. & Ko, H. (2008). Object scrambling and specificity in bilingual English-Ukrainian acquisition. In A. Antonenko, J. F. Bailyn, & C.Y. Bethin (eds.), Annual workshop on FASL. The Stony Brook Meeting 2007. Ann Arbor: Michigan Slavic Publications.

Mykhaylyk, R. (2009a). Developmental Patterns in Flexible Word Order Acquisition. In J. Crawford, et al. (eds.), Proceedings of the 3rd Conference on Generative Approaches to Language Acquisition North America (GALANA 2008), 165-174. Somerville, MA: Cascadilla Proceedings Project.

Mykhaylyk, R. (2009b). Scrambling-specificity-telicity interaction. Paper presented at LSA, San-Francisco.

Nederstigt, U. (2001). The acquisition of additive 'focus particles' in German. In A. H.-J. Do, L. Domínguez, & A. Johansen (eds.), Proceedings of BUCLD 25, 554-565. Somerville, MA: Cascadilla Press.

Neeleman, A. & Reinhart, T. (1998). Scrambling and the PF interface. In M. Butt & W. Geuder (eds.), The projection of arguments: Lexical and compositional factors, 309-353. Stanford, CA: CSLI Publications.

Neeleman, A. & van de Koot, H. (2008). Dutch scrambling and the nature of discourse templates. *Journal of Comparative Germanic Linguistics 11,* 137–189.

Neeleman, A. & Weerman, F. (1997). L1 and L2 word order acquisition. *Language Acquisition 6*, 125-170.

Neidle, C. (1988). The role of case in Russian syntax. Dordrecht: Kluwer.

Nespor, M. & Vogel, I. (1986). Prosodic phonology. Dordrecht: Foris.

Nilsen, Ø. (2003). Eliminating positions. Doctoral Dissertation, Utrecht University.

Odé, C. (2003). Developing a transcription of Russian intonation (ToRI). In Proceedings of the 15th International Congress of Phonetic Sciences, Barcelona, August 3-9, 3097-3100.

Otsu, Y. (1994). Early acquisition of scrambling in Japanese. In T, Hoekstra & B. Schwartz (eds.), Language acquisition studies in generative grammar. Amsterdam: John Benjamins.

Ouhalla, J. (1994). Focus in Standard Arabic. *Linguistics in Potsdam 1*, 65-92.

Paducheva, E. V. (1985). Vyskazyvanie i ego sootnesennost' s dejstvitel'nost'ju (referencyal'nye aspecty semantiki mestoimenij). Moscow: Nauka.

Partee, B. H. & Borschev, V. (2004). The semantics of Russian genitive of negation: The nature and role of perspectival structure. In K. Watanabe & R. B. Young (eds.), Proceedings of Semantics and Linguistic Theory (SALT) 14. Ithaca NY: CLC Publications, Cornell University.

Partee, B. H. (1991). Topic, focus and quantification. In S. Moore & A. Z. Wyner (eds.), Proceedings from Semantics and Linguistics Theory I, 159-187. Ithaca, NY: CLC Publications, Cornell University.

Penner, Z., Tracy, R. & Weissenborn, J. (2000). Where scrambling begins: Triggering object scrambling at the early stage in German and Bernese Swiss German. In S. M. Powers & C. Hamann (eds.), The acquisition of scrambling and cliticization, 127-165. Dordrecht, Boston, London: Kluwer.

Pereltsvaig, A. (2004). Topic and focus as linear notions: evidence from Italian and Russian. *Lingua 114*, 325-344.

Pesetsky, D. & Torrego, E. (2001). T-to-C: Causes and consequences. In M. Kenstowicz (ed.), Ken Hale: A life in language. Cambridge, MA: MIT Press.

Pesetsky, D. (1982). Paths and categories. Cambridge, MA: MIT Press.

Pesetsky, D. (1987). Wh-in-situ: Movement and unselective binding. In E. Reuland & A. Meulen (eds.), The representation of (in)definiteness, 98-129. Cambridge MA: MIT Press.

Pierrehumbert, J. (1980). The phonology and phonetics of English intonation. Doctoral Dissertation, MIT.

Platzack, C. (1996). The Initial Hypothesis of syntax: A minimalist perspective on language acquisition and attrition. In H. Clahsen (ed.), Generative perspectives on language acquisition, 369-414. Amsterdam, Philadelphia: John Benjamins.

Platzack, C. (2001). The vulnerable C-domain. *Brain and Language* 77 (3), 364-377.

Poeppel, D. & Wexler, K. (1993). Structure in early German. *Language 69 (1),* 1-33.

Polinsky, M. (1996). American Russian: An endangered language? Ms., USC-UCSD.

Pollock, J.-Y. (1989). Verb movement, UG and the structure of IP. *Linguistic Inquiry 20*, 365-424.

Powers, S. M. (2000). Scrambling in the acquisition of English? In S. M. Powers & C. Hamann (eds.), The acquisition of scrambling and cliticization, 95-127. Dordrecht, Boston, London: Kluwer.

Prieto, P. & Vanrell, M. M. (2007). Early intonational development in Catalan. In J. Trouvain & J. B. William (eds.), Proceedings of the XVIth International Congress of Phonetic Sciences, 309-314. Dudweiler: Pirrot GmbH.

Progovac, L. (1998). Determiner phrase in a language without determiners. *Journal of Linguistics 34.1*.

Pugh, S. M. & Press, I. (1999). Ukrainian: a comprehensive grammar. London: Routledge.

Rackowski, A. & Richards, N. (2005). Phase edge and extraction: A Tagalog case study. *Linguistic Inquiry 36 (4),* 565–599.

Reinhart, T. (2004). The processing cost of reference-set computation: Acquisition of stress shift and focus. *Language Acquisition 12*, 109-155.

Reinhart, T. (2006). Interface strategies: Optimal and costly computations. Cambridge, MA: MIT Press.

Richards, M. (2004). Object Shift and Scrambling in North and West Germanic. A Case Study in Symmetrical Syntax. Doctoral dissertation, University of Cambridge.

Richards, M. (2006). Weak pronouns, object shift and multiple spell-out: Evidence for phases at the PF-interface. In C. Boeckx (ed.), Minimalist Essays, 160-181. Amsterdam, New York: John Benjamins.

Richards, N. (2010). Uttering trees. Cambridge, MA: MIT Press.

Rochemont, M. & Culicover, P. (1989). English focus constructions and the theory of grammar. Cambridge: Cambridge University Press.

Rochemont, M. (1986). Focus in generative grammar. Amsterdam: John Benjamins.

Rooth, M.E. (1985). Association with focus. Doctoral dissertation, University of Massachusetts, Amherst.

Rooth, M.E. (1992). A theory of focus interpretation. *Natural Language Semantics, 1*, 75-116.

Rosengren, I. (2002). EPP: A syntactic device in the service of semantics. *Studia Linguistica***,** 56: 2, 145 – 190.

Ross, J. (1967). Constrains on variables in syntax. Doctoral Dissertation, MIT.

Russell, B. (1903). The principles of mathematics. London: George Allen and Unwin.

Sabel, J. &. Saito, M. (eds.) (2005). The free word order phenomenon: its syntactic sources and diversity. Berlin, New York: Mouton de Gruyter.

Sabel, J. (2005). String vacuous scrambling and the effect on output condition. In J. Sabel & M. Saito (eds.), The free word order phenomenon: Its syntactic sources and diversity, 281-334. Berlin, New York: Mouton de Gruyter.

Saito, M. (1985). Some asymmetries in Japanese and their theoretical implications. Doctoral dissertation, MIT.

Saito, M. (1989). Scrambling as semantically vacuous A-movement. In M. Baltin & A. Kroch (eds.), Alternative conceptions of phrase structure, 182–200. Chicago: University of Chicago Press.

Saito, M. (1992). Long distance scrambling in Japanese. *Journal of East Asian Linguistics 1,* 69-118.

Saito, M. (2003). A derivational approach to the interpretation of scrambling chains. *Lingua 113,* 481-518.

Samek-Lodovici, V. (2005). Prosody-syntax interaction in the expression of focus. *Natural Language and Linguistic Theory 23*, 687-755.

Schaeffer, J. & Matthewson, L. (2005). Grammar and pragmatics in the acquisition of article systems. *Natural Language and Linguistic Theory* 23:53-101.

Schaeffer, J. (2000). The acquisition of direct object scrambling and clitic placement. Amsterdam, Philadelphia: John Benjamins.

Schafer, R. & de Villiers, J. (2000) Imagining Articles: What *a* and *the* can tell us about the emergence of DP. In Proceedings of the Boston University Language Development conference, Somerville: Cascadilla press.

Schwarzschild, R. (1999). GIVENness, AvoidF and other constraints on the placement of accent. *Natural Language Semantics 7.2*, 141-177.

Schwarzschild, R. (2001). Singleton indefinites. *Journal of Semantics,* 19.3.

Sekerina, I. A. (2003). Scrambling and processing: Dependencies, complexity, and constraints. In S. Karimi (ed.), Word order and scrambling, 301-324. Oxford: Blackwell.

Sekerina, I.A. (1997). The syntax and processing of split scrambling constructions in Russian. Doctoral Dissertation, CUNY.

Selkirk, E. (1984). Phonology and syntax: The relation between sound and structure. Cambridge, MA: MIT Press.

Selkirk, E. (1986). On derived domains in sentence phonology. *Phonology Yearbook 3*, 371-405.

Selkirk, E. (1995). Sentence prosody: intonation, stress, and phrasing. In J. Goldsmith (ed.), The handbook of phonological theory, 550-569. Cambridge, Oxford: Blackwell.

Sgall, P. (1967). Functional sentence perspective in a generative description. *Prague Studies in Mathematical Linguistics 2,* 203–225.

Sgall, P. (1972). Topic, focus, and the ordering of elements of semantic representations. *Philologica Pragensia 15*, 1-14.

Sgall, P., Hajičová, E. & Panevová, J. (1986). The meaning of the sentence in its semantic and pragmatic aspects. Dordrecht: D. Reidel.

Shevelov, G. Y. (1963). The syntax of modern literary Ukrainian. The simple sentence. The Hague: Mouton & CO.

Shevelov, G. Y. (1993). Ukrainian. In B. Comrie & G. G. Corbett (eds.), The Slavonic languages. 947-998. London, New York.

Shul'zhuk, K. F. (2010). Syntaksys ukrajins'koji movy. (Syntax of Ukrainian). 2nd edition. Kyiv: Akademia.

Siewierska, A. (1997). Variation in major constituent order: a global and an European perspective. In A. Siewierska (ed.), Constituent order in the languages of Europe, 475-551. Berlin: Mouton der Gruyter.

Sigurðsson, H. A. & Holmberg, A. (2008). Icelandic dative intervention: person and number as separate probes. In R. D'Alessandro (ed.), Agreement Restrictions. Berlin: Mouton de Gruyter.

Silva-Corvalán, C. (1994). Language, contact and change. Spanish in Los Angeles. Oxford: Oxford University Press.

Silverman, K., Beckman, M., Pitrelli, J., Ostendorf, M., Wightman, C., Price, P., Pierrehumbert, J., & Hirschberg, J. (1992). TOBI: A Standard for Labeling

English Prosody. In Proceedings of the International Conference on Spoken Language 92, Banff.

Sirotinina, O. B. (1965/2003). Porjadok slov v russkom jazyke (Word order in Russian) (2nd ed.). Moscow: Editorial URSS.

Slioussar, N. (2007). Grammar and Information Structure a study with reference to Russian. Doctoral dissertation, Utrecht University.

Snow, D. & Balog, H. L. (2002). Do children produce the melody before the words? A review of developmental intonation research. *Lingua 112*, 1025–1058.

Snow, D. (1994). Phrase-final syllable lengthening and intonation in early child speech. *Journal of Speech Hearing Research 37*, 831–840.

Sobin, N. (1985). Case assignment in Ukrainian morphological passive constructions. *Linguistic Inquiry 16*, 649–662.

Sorace, A. & Serratrice, L. (2009). Internal and external interfaces in bilingual language development: Beyond structural overlap. *International Journal of Bilingualism* 13: 1-16.

Sorace, A. (2005). Syntactic optionality at interfaces. In L. Cornips & K. Corrigan (eds). Syntax and variation: Reconciling the biological and the social, 46-111. Amsterdam: John Benjamins.

Spenader, J., Smits. E.-J., & Hendriks, P. (2009). Coherent discourse solves the pronoun interpretation problem. *Journal of Child Language*, 36:23-52.

Stanley, J. & Szabó, Z. G. (2000). On quantifier domain restriction. *Mind and Language 15 (2&3),* 219 – 261.

Stanley, J. (2002). Making it articulated. *Mind and Language 17*, 149-168.

Steedman, M. (2000). Information structure and the syntax-phonology interface. *Linguistic Inquiry 31,* 649–689.

Stojanović, D. (1999). Parsing and acquisition: Evidence from Serbo-Croatian. Doctoral dissertation, University of Ottawa.

Sturgeon, A. (2006). The syntax and pragmatics of contrastive topic in Czech. Doctoral Dissertation, UC Santa Cruz.

Svenonius, P. (2002). Subject positions and the placement of adverbials - how to get two subject positions without two functional heads. In P. Svenonius (ed.), Subjects, expletives, and the EPP, 199-240. Oxford, New York.

Szendrői, K. (2001). Focus and the syntax-phonology interface. Doctoral Dissertation, University College London.

Szendrői, K. (2004). Focus and the interaction between syntax and pragmatics. *Lingua 114*, 229-254.

Takano, Y. (1998). Object shift and scrambling. *Natural Language and Linguistic Theory 16*, 817-889.

Testelets, Ja. (2003). Are there strong and weak pronouns in Russian? In W. Browne et al (eds.), Formal Approaches to Slavic Linguistics: the Amherst Meeting. Ann Arbor: Michigan Slavic Publications.

Thornton, R. & Wexler, K. (1999). Principle B, VP ellipsis and interpretation in child grammars. Cambridge, MA: MIT Press.

Thráinsson, H. (2001). Object shift and scrambling. In M. Baltin & C. Collins (eds.), The handbook of contemporary syntactic theory. Oxford: Blackwell.

Torrego, E. (1998). The dependencies of objects. Cambridge, MA: MIT Press.

Truckenbrodt, H. (1999). On the relation between syntactic phrases and phonological phrases. *Linguistic Inquiry 30 (2),* 219-255.

Tsimpli, I. M. (1995). Focusing in Modern Greek. In K. É. Kiss (ed.), Discourse configurational languages, 176-206. Oxford: Oxford University Press.

Tuller, L. (1992). The syntax of postverbal focus constructions in Chadic. *Natural Language and Linguistic Theory 10,* 303 - 334.

Unsworth, S. & Helder, C (2008). Dissolving a Dutch delay: The case of specific indefinites. In M. J. Freitas and A. Gavarró (eds.) Proceedings of Generative Approaches to Language Acquisition 07, 472-782. Cambridge: Cambridge Scholars Publishing.

Unsworth, S. (2004). On the syntax-semantics interface in Dutch: Adult and child L2 acquisition compared. *IRAL 42:* 173-187.

Unsworth, S. (2005). Child L1, child L2 and adult L2 acquisition: Differences and similarities. A study on the acquisition of direct object scrambling in Dutch. Doctoral dissertation, Utrecht University.

Vallduví, E. & Engdahl, E. (1996). The linguistic realization of information packaging. *Linguistics 34*, 459-519.

Vallduví, E. & Vilkuna, M. (1998). On rheme and kontrast. In P. Culicover & L. McNally (eds.), Limits of syntax, 79-108. San Diego, CA: Academic Press.

Vallduvi, E. (1992). The informational component. NY: Garland.

Vallduví, E. (1995). Structural properties of information packaging in Catalan. In K. É. Kiss (ed.), Discourse configurational languages, 122-152. Oxford: Oxford University Press.

Van Geenhoven, V. (1998). Semantic Incorporation and indefinite descriptions: semantic and syntactic aspects of noun incorporation in West Greenlandic. Stanford, CA: CSLI Publications.

Van Gelderen, V. (2003). Scrambling unscrambled. Doctoral Dissertation, University of Leiden.

Vikner, S. (1994). Scandinavian object shift and West Germanic scrambling. In N. Corver & H. van Riemsdijk (eds.), Studies on scrambling: Movement and non-movement approaches to free-word order phenomena. Berlin: Mouton de Gruyter.

Vilkuna, M. (1995). Discourse configurationality in Finnish. In K. É. Kiss (ed.), Discourse configurational languages, 244-268. Oxford: Oxford University Press.

Von Heusinger, K. & Kaiser, G. A. (eds.) (2003). Proceedings of the Workshop Semantic and Syntactic Aspects of Specificity in Romance Languages.

Vyxovanec', I. R. (1993). Hramatyka ukrajins'koji movy. Syntaksys. (Grammar of Ukrainian. Syntax). Kyiv: Lybid'.

Wagner, M. (2005). Prosody as diagonalization of syntax. Evidence from complex predicates. In K. Moulton & M. Wolf (eds.), Proceeding of NELS 34, 587-602. Amherst, MA: GLSA.

Wagner, M. (2006). Givenness and locality. In M. Gibson & J. Howell (eds.), Proceedings of SALT XVI, 295—312. Ithaca, NY: CLC Publications.

Webelhuth, G. (1989). Syntactic saturation phenomena and the modern Germanic languages. Doctoral Dissertation, University of Massachusetts, Amherst.

Westergaard, M. R. (2004). The interaction of input and UG in the acquisition of verb movement in a dialect of Norwegian. *Nordlyd 32.1: Tromsø Working Papers in Language Acquisition*, 110-134.

Westergaard, M. R. (2008). Verb movement and subject placement in the acquisition of word order: Pragmatics or structural economy? In P. Guijarro-Fuentes, P.Larranaga & J. Clibbens (eds.), First language acquisition of morphology and syntax: Perspectives across languages and learners. Amsterdam: John Benjamins.

Wexler, K. (1996). The development of inflection in a biologically based theory of language acquisition. In M. L. Rice (ed.), Toward a genetics of language, 113-144. Mahwah, NJ: Lawrence Erlbaum.

Wexler, K. (1998). Very early parameter setting and the Unique Checking Constraint: A new explanation of the optional infinitive stage. *Lingua 106*, 23-79.

Yamashita, H. (1996). Processing of scrambling sentences in Japanese and types of preverbal information. Paper presented at the Ninth CUNY Conference on Human Sentence Processing, CUNY, New York.

Yokoyama, O. (1985). A diversified approach to Russian word order. In M. S. Flier & R. D. Brecht (eds.), Issues in Russian morphosyntax, 187-208. Columbus, Ohio: Slavica.

Yokoyama, O. (1986). Discourse and word order. Amsterdam, Philadelphia: John Benjamins.

Yokoyama, O. (2001). Neutral and non-neutral intonation in Russian: A reinterpretation of the IK system. In *Die Welt der SLaven XLVI*, 1-26.

Yokoyama, O. (2002). Markirovannost' t.n. nejtral'noj intonacii; po dannym detskoj reči. (The markedness of the so-called neutral intonation: evidence from child speech). *Problemy Fonetiki 4*, 148-157.

Zapata, G.C., Sanchez, L. & Toribio, A. J. (2005). Contact and contracting Spanish. *International Journal of Bilingualism 9 (3-4)*, 377-395.

Zubizarreta, M.L. (1998). Focus, prosody, and word order. Cambridge, MA: MIT Press.

Zuckerman, S. (2001). The acquisition of "Optional" movement. Doctoral Dissertation, Groningen University.

Zybatow, G. & Mehlhorn, G. (2000). Experimental evidence for focus structure in Russian. In T. Holloway King & I. A. Sekerina (eds.), Formal Approaches to Slavic Linguistics, 414-434. Ann Arbor: Michigan Slavic Publications.